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Developing Self-Evaluation Skills in Interprofessional Simulation Educators: A Multilevel Mixed-Methods Study

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DEVELOPING SELF-EVALUATION SKILLS IN INTERPROFESSIONAL SIMULATION EDUCATORS: A MULTILEVEL MIXED-METHODS STUDY

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ABSTRACT

DEVELOPING SELF-EVALUATION SKILLS IN INTERPROFESSIONAL SIMULATION EDUCATORS: A MULTILEVEL MIXED-METHODS STUDY

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This multilevel mixed methods investigation examines the experiences of developing self-evaluation skills for simulation fellows in an interprofessional simulation fellowship program. Interprofessional fellows (N = 12) and faculty (N = 4) engaged in a three-phase study using video-assisted learning tools to explore the differences in self-evaluation (perceived performance) and faculty evaluation (actual performance) in developing debriefing skills. For the quantitative component, fellows and faculty completed the DASH© tool to evaluate the quality of debriefing to help close the gaps between fellow self-evaluation and faculty evaluation. For the qualitative component, video-stimulated think-aloud and video-assisted debriefing the debriefer were utilized to understand how video-assisted learning tools contribute to self-evaluation skills from each level separately. A combined focus group and thematic analysis were utilized to identify facilitators and barriers to self-evaluation. Integrative case examples of developing self-evaluation skills are restoried for mixed analysis and data integration. Through which, meta-inferences are drawn out to understand the experiences, interactions, and mechanisms of the multilevel phenomenon. The results indicated that fellows generally overestimate their skills performance, and video-assisted learning tools support in the development of more realistic self-perception eliminating underestimation and closing the gap

between perceived and actual performance. A model for interprofessional collaboration is proposed for scaffolded feedback practices to promote self-evaluation of skills and performance. Implications for counselor education, healthcare simulation, and health professions education are presented. This dissertation is available in open access at AURA (https://aura.antioch.edu) and OhioLINK ETD Center (https://etd.ohiolink.edu).

Keywords: formative self-evaluation, video-stimulated think-aloud (or video review), debriefing, interprofessional education, counselor education

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CHAPTER I: INTRODUCTION

Statement of the Problem

In 2006, the World Health Organization (WHO) reported a shortage of 4.3 million health workers across the globe (WHO, 2010). As a result, the World Health Assembly adopted the WHA59.23 Resolution to rapidly scale up the health workforce by developing innovative teaching and education approaches to improve the capacity and quality of health professions education (2006). Within this time, the physical and psychological effects of the COVID-19 global pandemic have taken a toll on healthcare workers, resulting in health workers retiring early or leaving the field due to burnout (Galvin, 2021; Pappa et al., 2020; Rothman et al., 2022). In the United States alone, there will be a shortage of 3.2 million healthcare workers by 2026 (Bateman et al., 2021), further burdening the healthcare system. To avoid this detrimental shortage, 200,000 nurses must be hired yearly to meet the demands (American Hospital Association [AHA], 2021). Over the next three years, there will also be 510,000 vacancies of mental health workers in the United States, requiring states to meet significant hiring demands. It is projected that at least 55,000 mental health positions will go unfilled in twenty-seven states, suggesting that more than half of the country will not be able to meet the demand for mental health care (Bateman et al., 2021). Faculty shortages will also pose a challenge in meeting the education and workforce needs of health professions (AHA, 2021). Should these trends continue, by 2030, the global shortage of health workers will reach 10 million (WHO, 2016; Boniol et al., 2022). As a result, various health professions education programs need to consider how to integrate interprofessional education strategically and intentionally into their training programs to promote collaborative practice and integrated care to meet global care needs.

A commitment towards interdisciplinary teamwork and collaboration is further evidenced in the American Counseling Association Code of Ethics (ACA, 2014; D.1.c.) and the Council for Accreditation of Counseling and Related Educational Program standards (CACREP, 2016; F.1.b.). Phillips (2023) proposed that counselor educators consider establishing interprofessional partnerships with other health professions to co-develop education programs to address the health worker shortage and forge partnerships across health professions. In 2019, the Health Professions Accreditors Collaborative (HPAC) was formed to establish the *Guidance on Developing Quality Interprofessional Education for the Health Professions*. These comprehensive guidelines provided an overview for institutional leaders, program leaders, faculty, and accrediting boards to promote, develop, and evaluate interprofessional education initiatives and training among health professional students and programs. CACREP is one of the 24 accreditors who contributed to and endorsed the guidance, suggesting a vested interest in promoting interprofessional collaboration and education in the training of counselors and counselor educators (HPAC, 2019).

While CACREP endorsed these guidelines, the commitment to making interprofessional collaboration a reality within the counseling profession remains limited. At the time of writing, the 2016 CACREP education standards outlined core competencies within professional counseling orientation and ethical practice. For entry-level professional counselors, it highlighted the importance of role, function, and relationship within integrated care systems (CACREP, 2016; F.1.b.) as well as roles and responsibilities as interdisciplinary team members (CACREP, 2016; F.1.c.). These standards exist in relationship with the ACA Code Ethics emphasis on interdisciplinary teamwork in shared decision-making “drawing on the perspectives, values, and

experiences of the counseling profession and those colleagues from other disciplines" in the care and service of clients (ACA, 2014; D.1.c.). This emphasis was further refined within the proposed 2024 CACREP standards, as the standards evolve to emphasize the goals of interprofessional collaboration more specifically: "counselors' roles, responsibilities, and relationships as members of specialized practice and interprofessional teams including i) collaboration and consultation, ii) community outreach, and iii) emergency response management" (CACREP, 2024; F.1.c.). While an emphasis exists within master's level education standards to promote interprofessional collaboration, little to no guidance was offered in the doctoral standards to promote interprofessional collaboration and education from the role of the counselor educator. Furthermore, interprofessional education is not currently considered in the *Best Practices in Teaching in Counselor Education* (Wood et al., 2016). Yet, identifying opportunities for interprofessional collaboration in counselor education is imperative.

One opportunity for collaboration could include simulation-based learning. To address predicted shortages of 40,000 nurses by 2030, New York State passed the Clinical Nursing Simulation Legislation, allotting nursing students to complete one-third of the clinical education required for graduation and licensure through simulation-based learning activities (2023). Additionally, the field of counselor education and supervision would benefit from partnering with other health professions education programs to foster interprofessional collaboration and integrated care (Phillips, 2023; Schmidt, 2021). Previous research identified that the complexity of delivering quality care requires intentional collaboration among health care professionals (Ghassemi, 2017; O'Halloran & Glosoff, 2020; Schmidt, 2021; Wilkins, 2020). Despite the emergence of the Health Professions Accreditors Collaborative (2019), there is still very little

movement towards creating intentional learning collaboratives to learn with, from, and about each profession (WHO, 2010) in preparation to work interprofessionally to deliver quality care. For the field of interprofessional education and integrated care, this study aimed to increase interprofessional collaboration across health professions and consider novel approaches towards interprofessional mentorship.

Theoretical or Conceptual Framework

Learning is a process that involves a variety of mechanisms to arrive at the acquisition and application of knowledge and skills into practice/action. Educators utilize a variety of theories and approaches to teaching and learning to support learners in knowledge mobilization (Ambrose et al., 2010). To transfer knowledge and skills into practice, education scholars advocate that educators focus instruction on more complex learning (integrating attitudes, knowledge, and skills) rather than simple recall of information (Bloom, 1968; Zimmerman, 2015; Dreyfus, 2004). Despite the difficulty in learning complex skills, research showed that learners retain skills longer and find the application of the skills more useful in practice (Bloom, 1976). As the complexity of knowledge and skills progresses, learners work towards expertise or being able to perform skills they previously were unable to as novice learners (Dreyfus, 2004; Ronnestadt & Skovolt, 2003). Skills that were previously difficult to perform become more intuitive as learners begin to embody the necessary mental models to expertly perform (Opre, 2015). When considering the theories appropriate to this research study, the following theories and concepts were most applicable: mastery learning, self-regulated learning, the Dreyfus and Dreyfus model of skill acquisition, and adaptive expertise.

Mastery Learning

In 1968, Benjamin Bloom introduced the theory of mastery learning as an educational framework that holds the assumption that all learners can reach mastery performance if given expectations and necessary time (Bloom, 1968). Educators must determine if the aim of learning is simply to remember concepts or be able to apply concepts across contexts in a way that is meaningful for the learner (Guskey, 2023). McGaghie (2015) summarized mastery learning into two central tenets: "...(1) educational excellence is expected and can be achieved by all learners, and (2) little or no variation in measured outcomes will be seen among learners in a mastery environment" (p. 1439). Although learners may need different instructional guidance and time, all members of the learning community will be able to consistently perform expertise with mastery learning. It becomes necessary for learners to master certain concepts and skills at one level before mastering additional concepts and skills at the next level (Bloom, 1968). To achieve mastery within a specific domain, learners need to understand key components of a skill, practice toward fluency and automation, and know when to apply the learned skills appropriately (Ambrose, 2010). Mastery learning does not dictate content, educational strategies, or evaluation process but does stress the importance of consistency and instructional alignment to achieving mastery (Guskey, 2023).

To achieve mastery, learners need to engage in three steps: planning, managing, and evaluating mastery learning (Guskey, 2023). In the planning stage, educators typically review learning goals and curriculum to determine which skills are necessary for learning (Bloom, 1968). When planning, educators identify or develop strategies for formative and summative evaluation and corrective and enrichment activities (Guskey, 2023). Formative assessment is

used to understand how well someone is learning, identify areas of ongoing need, and improve the educator's instruction. Whereas summative assessment is concerned with summarizing overall achievements and high-stakes reporting at the end of learning (Sadler, 1989). In other words, formative assessment provides intentional feedback to learners and educators to drive future practice and instruction. Debriefing is a formative assessment in interprofessional healthcare simulation (Rudolph et al., 2008). Corrective and enrichment activities are individualized to help learners close the gap between current performance and ideal performance based on a set standard of practice (Bloom, 1976; Guskey, 2023). Formative assessment serves as a diagnosis, and correctives serve as a prescription of what the learner needs to further master the identified concept and skills. To be effective, these supplemental learning activities need to be different from what was previously prescribed for teaching (Guskey, 2015). The systematic use of feedback and corrective and enrichment activities are crucial to higher-level achievement. Deliberate practice serves as an example of a corrective or enrichment activity to further achieve mastery (Eppich & Cheng, 2015). Educators who offer variety in their instruction are more likely to decrease variety in results across the learning community (Bloom, 1968). By attending to learning needs on a frequent and ongoing basis, the learner attends to skill development before multiple microlearning needs become a major learning problem (Guskey, 2015). After learners attend to their corrective and enrichment activities, they follow up with a second formative assessment to evaluate the impact of the specific learning activity (Bloom, 1968) or move toward summative assessment to evaluate the degree of mastery achieved because of the learning process (Guskey, 2023).

Self-Assessment as Formative Assessment/Feedback

Research is clear that feedback facilitates learning and skill development (Berzins et al., 2022; Burns, 2015; Hatala et al., 2014; Kourgiantakis et al., 2019; Sadler, 2010). In skill development, learners benefit from engaging in formative assessment to improve their capacity for performing well on a summative assessment. While mastery learning does not necessarily integrate the use of self-assessment, self-assessment as a formative assessment can be quite useful in the learning process (Ambrose et al., 2010). As a formative assessment, self-assessment allows learners to reflect on their own performance rather than solely depend on the evaluation of the educator (Andrade & Valtcheva, 2009). Previous research demonstrated that feedback in the form of self-assessment has also proven fruitful in the learning process for achievement, academic self-regulation, self-efficacy, and self-monitoring of learning (Ambrose et al., 2010; Athanasou, 2005; Bandura, 1986; Winne, 2015). Learner self-assessment also supports performance improvement and lifelong learning (Cheng et al., 2021). More specifically, Andrade and Valtcheva (2009) proposed the use of criteria-reference self-assessment, where learners gather data about their own progress and performance and compare it to specific criteria, goals, or standards to revise their performance to close the gap. Connections can be drawn here to mastery learning and formative assessment, which Sadler (1989) argued involves the learner understanding the standards, comparing actual performance to standard performance, and taking action to close the gap. To be effective here, learners need clear expectations, space, and time to monitor their progress (self-assess) and implement feedback to improve their knowledge and skills (Sadler, 2010). Within the field of healthcare simulation, Cheng et al. (2021) offered that integrating criteria-references such as checklists into debriefing can support in closing

performance gaps. Educators cannot expect their learners to be immediately proficient in self-assessment. In fact, previous research indicates that learners find self-assessment valuable but need practice to appreciate the full benefit (Andrade & Du, 2007; Eldridge, 1983; Ambrose et al., 2010). If attended to, criteria-reference self-assessment helps improve focus, increase effectiveness in identifying strengths and growing edges, increase motivation, and decrease anxiety (Guskey, 2023; Bookhan et al., 2005; Andrade & Du, 2007; Eldridge, 1981; Ambrose et al., 2010). Without structure, self-assessment risks becoming inaccurate and ineffective to learning.

Self-Regulated Learning

An anticipated outcome from effective self-assessment is inspiring motivation in learners to take action to improve and further master skills in question (Ambrose et al., 2010). In doing so, self-assessment promotes self-regulated learning (Andrade, 2019), where the learner becomes a master of their own learning process (Zimmerman, 2015). To achieve this, learners strive to build knowledge and skills by "...metacognitively monitoring and regulating mental content and factors in the external environment" (Winne, 2015, p. 535). From this perspective, the goal is to engage in a self-directive process to move knowledge and ability into skills practice and mastery. Zimmerman (2015) offered that self-regulated learning is a cyclical interactive process that occurs across three phases: forethought, performance, and self-reflection. Learners in the forethought phase anticipate the amount of effort they may need to learn and consider their own motivation and self-efficacy with respect towards achieving the identified learning goal. Next, the learner moves into the performance phase, where they enact the knowledge and skills, experiment with alternative actions, and self-observe or self-monitor their process. Finally, in the

self-reflection phase, learners self-assess their learning performance for quality and outcomes as compared to standards of practice or personal outcome measures (Zimmerman, 2015); self-judgment of gaps that remain between actual performance and standard performance may bring emotional reactions out of learners that may require additional self-reflection (Lengetti et al., 2020; Usher & Schunk, 2017). At the end of the cycle, the learner may determine if a skill has been mastered or if they need to begin a new cycle (Zimmerman, 2015). Across each phase, self-regulated learners engage three cognitive subfunctions to develop and initiate self-regulated learning: self-observation, self-evaluation, and self-reaction (Usher & Schunk, 2017).

Self-regulated learners actively engage their cognition, behavior, metacognition, and motivation within the context of their learning and performing (Schunk & Greene, 2017). To develop self-regulatory competence, learners move from focusing on social and external influences, shifting the locus of control to internalized self-influences (Usher & Schunk, 2017). Schunk and Zimmerman (1997) proposed that learners move through four levels: observation, emulation, self-control, and self-regulation. First, novice learners take in the actions of a social model, often demonstrated by an educator or peer (White & DiBenedetto, 2017). Then, the learner attempts to perform an approximation of the observed actions and receive feedback. Through imitation, learners develop self-efficacy toward performing behavior. Finally, self-regulation is achieved when the learner can adapt their performance to meet new conditions and contexts (Schunk & Zimmerman, 1997; White & DiBenedetto, 2017). Personal agency and motivation guide the development of self-regulatory competence (Usher & Schunk, 2017). In exercising self-regulated learning, learners can self-assess their skills performance and determine solutions for continuous improvement.

Adaptive Expertise

Learners who can utilize their skills to meet the needs of a situation or innovate a new solution are applying the framework of adaptive expertise (Mylopoulos & Woods, 2017). Routine expertise is the effortless and consistent performance of a complex task or problem-solving in a familiar situation. Routine experts can only transfer knowledge in situations that are like their learning environment (Opre, 2015). Adaptive expertise, on the other hand, balances efficiency with innovation to continue to learn and gain understanding from each task performance to promote expert problem-solving and lifelong learning (Pusic et al., 2018). Adaptive experts can transfer their knowledge to unfamiliar and ambiguous situations (Opre, 2015) as they have the forethought to apply declarative, procedural, and conditional knowledge and skills (Bohle Carbonell et al., 2014). Learner characteristics that influence adaptive expertise include domain specific knowledge and skills, domain independent skills, self-regulation processes, and past experiences (Bohle Carbonell et al., 2014). It can be said that adaptive expertise requires self-regulation, especially metacognition and self-reactivity (Usher & Schunk, 2017). By applying metacognition, the learner can self-reflect on their own learning and thinking process and recognize their strengths and growing edges. Within health professions education, several factors influence the development of adaptive expertise, including predisposing factors such as knowledge, beliefs, and attitudes; enabling factors such as skills, resources, and environment; and reinforcing factors such as reminders and mentor-guided feedback (Kua et al., 2021). Moreover, adaptive expertise is best cultivated in a learning environment that includes supportive educators, promotes the development of solution strategies, and encourages errors to be made and transformed into future, flexible knowledge (Bohle Carbonell et al., 2014).

Adaptive expertise is best cultivated in a psychologically safe learning environment (Edmondson, 1999; Harrichand et al., 2022; Kolbe et al., 2020).

Dreyfus Model of Adult Skill Acquisition

From a constructivist developmental perspective, many health professions scholars have devised models that demonstrate the acquisition of knowledge and skills in their respective domains of education and operations (Dreyfus, 2004), counselor education (Ronnestad & Skovholt, 2003), and interprofessional debriefing (Cheng et al., 2020). In 1980, Stuart E. Dreyfus and Hubert L. Dreyfus proposed The Five-Stage Model of Adult Skill Acquisition which included the following learning stages: novice, advanced beginner, competence, proficiency, and expertise (Dreyfus & Dreyfus, 1980; Dreyfus, 2004). Novice learners often have little to no previous knowledge or experience, which leads them to rigidly follow rules and require supervision to complete tasks. Advanced beginner learners have learned basic knowledge and skills and can apply learning to real situations. They continue to explore how to rank problems as they treat each problem of equal importance and are able to perform better with feedback. Competent learners may start to feel overwhelmed by the amount they have learned and begin to develop deliberate plans to apply their skills to create a routine. They often take responsibility for their mistakes, flourish with positive praise, and begin to better understand what they still do not know. Proficient learners take an appropriate course of action to apply their skills in a variety of situations with increased confidence, less focus on the rules, and more independent self-evaluation (Dreyfus, 2004). These learners get deeply involved in their tasks and benefit from deliberate practice to continue to manage feelings of uncertainty (Ericsson, 2008). Finally, expert learners are driven by intuition from deep tacit knowledge and practice of skills. They can

analyze situations and arrive at creative problem-solving quickly because of past experiences (Dreyfus, 2004). Expert learners often experience a sense of flow in their work.

Summary of Conceptual Framework

Given the complex system of learning, the proposed theories and concepts are applied and integrated across this research study. A conceptual framework typically serves the purposes of argumentation, explanation, and generation (Crawford, 2020). Argumentation supports the justification of the research, whereas explanation aims to demonstrate the relationship between who and what is being studied. Generation offers a framework for all aspects of the study to emerge from the research problem through the interpretation of findings. This conceptual framework incorporates all three to justify the project, explain the relationship, and generate design elements (Crawford, 2020). Formative self-evaluation serves as both the skill being developed as well as the mechanism utilized to measure and gather data (Andrade & Valtcheva, 2009; Sadler, 2010).

Self-regulated theory was applied to the self-evaluation development of simulation fellows as they moved through the phases of forethought, performance, and self-reflection within the video-assisted evaluation learning process (Zimmerman, 2015). Data collected at each of these phases provided a deeper understanding of the inner workings of self-reflection and evaluation. Master learning theory provided context for the role and function of faculty in developing self-evaluation skills within the simulation fellows as faculty move through the parallel phases of planning, managing, and evaluating (Guskey, 2023). Data collected and analyzed from each of these phases provided insight into the strategies educators can apply to promote self-evaluation in their learners. The Dreyfus and Dreyfus Model of Adult Skills

Acquisition was applied during data collection and analysis to provide a framework to make meaning of self-evaluation skills development (Dreyfus, 2004). The theory of adaptive expertise provided a framework and lens through which the thematic analysis was reviewed to fully appreciate the data-rich sample and more comprehensively answer the research questions (Bohle Carbonell et al., 2014; Kua et al., 2021). By applying a theoretical lens to each level and the overall system, these combined theories allowed for a deeper understanding of the interactive system between learner, fellows, and faculty.

Statement of Purpose

This mixed methods study examined the self-evaluation of debriefing skills development for interprofessional healthcare simulation fellows. A multilevel mixed methods design was utilized, which is a type of design where quantitative and qualitative data are collected in parallel, analyzed separately, and then integrated. In the quantitative strand of this study, the Debriefing Assessment in Simulation Healthcare (DASH) tool was used to examine the differences in formative evaluation of debriefing skills and practice between fellow self-evaluation (perceived performance) and faculty evaluation (actual performance). The reflective ability of simulation fellows was quantitatively measured using the Groningen Reflective Ability Scale (GRAS). The qualitative data from video recordings of think-aloud and feedback sessions, questionnaires, and focus groups explored the experiences of developing self-evaluation skills for simulation fellows and simulation faculty at a Simulation Center in a public hospital system in New York. The reason for collecting both quantitative and qualitative data was to develop a deeper understanding of the multiple and interacting levels of faculty, simulation fellow, and learner by first appreciating the data at each individual level and then integrating these levels to

draw meta-inferences about the interactions and mechanisms that occur during skill development.

Research Questions

Within the field of mixed methods research, different scholars offer different approaches and considerations for formulating research questions. While some scholars advocated for one integrated mixed methods research question and sub-questions subscribing to specific inquiry (Tashakkori, et al., 2021), others advocated for separate quantitative, qualitative, and mixed methods questions (Creswell & Plano Clark, 2018). When scaffolding questions, the researcher holds in mind whether the questions are dependent or independent of each other (Creswell & Plano Clark, 2018). When the results of questions do not depend on each other, research questions can be listed in order of importance. If questions are dependent on each other, they should be listed in the order in which data would be collected.

Considering the multilevel nature and complex phenomenon in this research design, this study utilized an adaptation of the three-research question approach (Creswell & Creswell, 2018) to account for the multilevel nature of this study design. By doing so, the results from the qualitative and quantitative datasets can be viewed equally to the integration of each and support analysis across multiple levels (Creswell & Creswell, 2018; Tashakkori & Teddlie, 2020). Before sharing the research questions that guide this project, an overview of the purpose and function of research questions from each specific mode of inquiry are examined.

In mixed methods inquiry, an overarching integrated research question describes the mixing of methods and analysis (Creswell & Plano Clark, 2018). At times, multiple questions may be utilized that relate to each other, or they may be distinct and do not rely on each other.

Cresswell and Plano Clark (2018) provided three models for writing mixed methods research questions: methods-focused, content-focused, or combination. Methods-focused questions specifically reference how the qualitative and quantitative data will be utilized within the study. Content-focused questions center the content of the study while only implying specific methods. A combination approach would state clearly how both methods and content are referenced within the question itself (Creswell & Plano Clark, 2018). Researchers also determine at design if research questions should be preplanned or emergent (Tashakkori et al., 2021). Even if using predetermined research questions, it is advised that researchers remain flexible and allow the research process to generate new questions (Creswell & Plano Clark, 2018). Specifically, within multilevel mixed methods, integrated research questions within multilevel mixed methods employ interpretive and predictive reasoning to investigate unexplored systems and levels (Headley & Plano Clark, 2020). McCrudden and Marchand (2020) advised that research questions should be clearly aligned with a qualitative and a quantitative strand of inquiry, each of which addresses aspects of the overall structure/behavior of the multilevel system, the components, or the processes related to the behavior of the system (McCrudden & Marchand, 2020, p. 198). Overall, multilevel mixed methods research design advocates for research questions that drive the methodology and answer-seeking across the research study.

In quantitative inquiry, research questions or hypotheses are often informed by literature review and guide the research process (Tashakkori & Teddlie, 2010). Quantitative research questions are utilized when inquiring about a relationship between variables, whereas quantitative hypotheses are utilized to predict outcomes of relationships among variables (Creswell & Creswell, 2018). If working within deductive reasoning, researchers may formulate

a hypothesis, as they are better able to predict outcomes based on previous literature (Gliner et al. 2017). Quantitative research questions and hypotheses can be categorized as difference, associational, and descriptive (Gliner et al., 2017). When crafting a quantitative research question, researchers aim to formulate a very specific question that communicates the data collection and analysis needed to answer the question (Tashakkori & Teddlie, 2010). Many methodologists advise that quantitative research questions begin with how, what, or why and often signal connection between variables with differ, compare, or relate (Creswell & Creswell, 2018; Creswell & Plano Clark, 2018; Gliner et al., 2017; Tashakkori & Teddlie, 2010).

In qualitative inquiry, research questions, rather than hypotheses, guide the process. Creswell and Creswell (2018) advocated that qualitative research questions typically provide no more than two central research questions and no more than seven subquestions. In forming the central question, research design benefits from featuring the strategy of inquiry within the body of the question itself. Patton (2015) recommended forming questions that are open-ended, leaving space for exploration, suggesting that at the heart of qualitative inquiry is asking and pursuing answers to questions. In using inductive reasoning, qualitative research questions do not indicate a direction or outcome but guide or focus toward generating understanding and meaning (Tashakkori & Teddlie, 2010). Focusing on a single phenomenon, applying exploratory verbs that are emerging and nondirectional, and naming participants are all useful guidelines for forming an effective qualitative question (Creswell & Creswell, 2018).

In light of these recommendations and the uniqueness of the multilevel mixed methods research design, this study utilized a combination of question types to address the various and connected levels within this research. Following the guidance of Creswell and Plano Clark

(2018) and Tashakkori et al. (2021), an overarching integrated mixed methods research question that guides the study was presented, followed by subquestions associated with quantitative and qualitative methods, with the goal of mixing data to demonstrate how the strands of inquiry will be integrated to fully appreciate the phenomenon. Therefore, the overarching research question was, what are the experiences of developing self-evaluation skills for simulation fellows in an interprofessional simulation fellowship program? To appreciate the multidimensional nature of this integrated mixed methods question, this study was divided into three different phases/studies, which are each guided by their own subquestions.

Overarching Mixed Methods Research Question

OMMRQ: What are the experiences of developing self-evaluation skills for simulation fellows in an interprofessional simulation fellowship program?

Phase A

SUBQUAN A1: Is there a difference in evaluation of debriefing skills and practice between fellow self-evaluation (perceived performance) and faculty evaluation (actual performance)?

Phase B

SUBMM B1: How do video-assisted learning tools contribute to the development of self-evaluation skills for interprofessional fellows?

Stage 1: Video-Stimulated Think-Aloud

SUBQUAN B1: Is there a difference in pretest-posttest scores on the ability of self-reflection after engaging in video-stimulated think-aloud sessions?

SUBQUAL B1: How do video-stimulated think-aloud sessions influence self-evaluation skills for simulation fellows?

SUBQUAL B2: How does facilitating a video-stimulated think-aloud session impact faculty's impression of the self-evaluation skills and adaptive expertise of a simulation fellow?

Stage 2: Video-Assisted Debriefing the Debriefer with Faculty Coaching/Feedback

SUBQUAL B3: What are the experiences (critical incidents) of faculty using video-assisted debriefing with coaching and feedback to support simulation fellows in developing self-evaluation skills as a debriefer?

Phase C

SUBQUAL C1: How do themes from a combined simulation fellow and faculty focus group help to understand the facilitators and barriers of self-evaluation in the development of debriefing skills and practice for simulation educators?

Significance of the Study

Previous research suggested that formative assessments are often overlooked in training and education (Guskey, 2023; Peterson et al., 2020), which indicates the incoming workforce may not have the necessary skills to self-evaluate their performance on the job. Given the workforce changes and the need for competent health professionals to perform complex skills, it seems safe to assume that the knowledge and skills acquired during formal education are not sufficient to cover all the areas needed to perform (Frenk et al., 2022). Healthcare professionals from all disciplines are entering the workforce after training under unique conditions due to COVID-19 restrictions. The field of health care has not yet come to fully appreciate the knowledge and performance gaps for those entering the various health professions during this

staffing crisis. With less senior staff available, novice staff have fewer social models of behavior to learn from (White & DiBenedetto, 2017). Interprofessional healthcare workers face the risk of falling victim to the cognitive bias known as the Dunning-Kruger effect, as they overestimate their ability due to a lack of skill development in accurate self-evaluation of their skills competence; this incompetence results in poor performance and an inability to recognize poor performance in oneself (Dunning, 2011; Kruger & Dunning, 1999). As a result, it becomes increasingly important to train healthcare professionals in accurate and effective self-evaluation and self-regulation skills to approach their job functions with adaptive expertise (Bohle Carbonell et al., 2014; Kua et al., 2021). Kruger and Dunning (1999) found that training in metacognitive skills improved the accuracy of self-assessment of performance. While the Dunning-Kruger effect has been scrutinized, this project aims to understand the experiences and mechanisms of developing feedback literacy to self-evaluate knowledge and skills accurately (Tripodi et al., 2021). Considering the interprofessional nature of this research, this study aims to have a significant impact on the fields of counselor education, healthcare simulation, and interprofessional/integrated care.

In counselor education, Little et al. (2005) found that skills-based training improves counseling skills, cognitive complexity, and self-monitoring of behavior. This study aimed to expand on some of this research by examining the mechanisms at play in the system of learning between learner and educator in developing self-evaluation skills. Self-assessment and evaluation are critical skills to professional, ethical clinical practice, especially regarding effectiveness monitoring, competence, and decision-making (ACA, 2014; CACREP, 2016). To integrate learning, counseling students benefit from evaluating their own experience and

understanding before being able to take in the feedback of others (Cobia et al., 2011). To develop adaptive expertise, counseling students need to be trained in formative self-assessment, and this research aimed to examine mechanisms that can contribute to mastery learning around self-evaluation.

For the field of healthcare simulation, this project aimed to understand the mechanism at play in training future simulation educators. Among 148 simulation educators, 46.6% expressed feeling imposter syndrome in their role as simulation educators and that rates of imposter phenomenon do not decrease over time (Freeman et al., 2022). In light of this, simulation educators benefit from developing a strong capacity for self-evaluation and monitoring to be able to identify strengths and growing edges. Accurately evaluating performance may help to combat experiences with imposter phenomenon. Moreover, by centering on debriefing skills, this project aims to grow the field of competent debriefers to be able to facilitate simulation-enhanced interprofessional education (El-Awaisi et al., 2022; Lackie et al., 2023; MacLeod et al., 2022). Debriefing takes a certain amount of cognitive load, and being able to effectively self-monitor performance may support the debriefer in managing cognitive load (Fraser et al., 2018; Meguerdichian et al., 2022).

In focusing on interprofessional healthcare fellows, this research aimed to demonstrate how we can learn from different professions and move towards creating shared mental models around self-evaluation in integrated care. Increasing the capacity for self-evaluation among educators and learners alike may also help mitigate power dynamics that may also be at play during interprofessional education and collaborative care (Byrnes et al., 2021; Robertson et al., 2022). Finally, by focusing on debriefing skills, this project aimed to train interprofessional

simulation educators to become adaptive experts in facilitating debriefing sessions to promote learner self-assessment within the workforce and professional development and training.

For health professions educators from various fields, this study aimed to provide an understanding of the mechanisms that support learners in developing self-evaluation skills. In doing so, this project may shed light on how to better support learners in self-monitoring their own learning as they move towards mastery and skill acquisition (Bloom, 1968; Dreyfus, 2004; Zimmerman, 2015) and translate effective self-evaluation into clinical practice. Centering self-assessment as formative evaluation may have benefits in the classroom as well as the workplace (Ambrose et al., 2010; Sadler, 2010). Moreover, educators may come to appreciate the capacity for interprofessional training by appreciating the ways learners in this study collaborated to help the larger field of interprofessional education. Overall, this study aimed to share knowledge that can be of immediate benefit to adult learners and educators of adult learners to make an impact on the field of health professions education.

Definition of Terms and Operationalized Constructs

For the purpose of this study, these terms are defined as follows. A simulation fellow is a healthcare professional currently enrolled in a Fellowship in Healthcare Simulation accredited by the Society for Simulation in Healthcare. Educator/Faculty describes a healthcare professional who currently serves in the role of faculty in a Fellowship in Healthcare Simulation accredited by the Society for Simulation in Healthcare. Debriefing is a formal, structured, collaborative, reflective process within a simulation learning activity or post-clinical event to re-examine the experience and derive learning (Society for Simulation in Healthcare [SSH], 2020). Perceived performance describes a learner's self-evaluation of debriefing skills. Actual performance

describes an educator's evaluation of debriefing skills. Healthcare simulation is an array of structured activities that represent actual or potential situations in education and practice to develop or enhance knowledge, skills, and attitudes (SSH, 2020). Interprofessional education occurs when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes (WHO, 2010). PEARLS debriefing is a structured debriefing approach using a five-phase model: setting the scene, reactions, description, analysis, and takeaways (Eppich & Cheng, 2015). Video-assisted debriefing includes integrating video recordings of performance within the context of a simulation debriefing for the purpose of performance improvement. Self-evaluation includes a process of formative assessment during which learners reflect on the quality of their work, judge the degree to which it reflects explicitly stated goals or criteria, and revise accordingly (Andrade & Valtcheva, 2009, p. 13).

Assumptions and Limitations

Assumptions

The following assumptions were made regarding this study:

1. Interprofessional simulation education and debriefing is a potential solution to the healthcare workforce crisis.
2. All individuals have a capacity for self-assessment if given time to practice.
3. Adult learners want to improve their skills development.
4. Formative assessment is important to knowledge and skill development.
5. Developmental models are supportive of accurate self-assessment.
6. The complex phenomenon of learning can be captured in research design.

7. Self-reflection and faculty feedback are crucial for knowledge and skill development for adult learners.

Limitations

Foreseen limitations included using a small sample size of interprofessional fellows from a single simulation fellowship program. Time commitment from faculty and fellows may also pose a limitation, especially as faculty will need to undergo training to be able to utilize assessment tools. It can also be difficult to fully capture learning and expertise within a single study, especially with debriefing, as it involves a variety of knowledge and skills to be successful in the task. The content of the simulation could impact outcomes. Moreover, variation may exist around the type and quality of feedback offered by faculty. While the evaluation was grounded by a validated tool, variability may exist in faculty ability to identify growth opportunities for fellows.

Despite these limitations, it was important to understand how simulation fellows learn to self-evaluate to ensure they can self-monitor best practices in interprofessional education. By offering insight into the self-evaluation skills of simulation educators, this study aimed to fill a gap in the literature around faculty development and promote interprofessional collaboration.

CHAPTER II: LITERATURE REVIEW

Introduction to the Literature Review

This chapter contains a review of relevant literature supporting self-evaluation of debriefing skills in the training of simulation educators in relation to concepts of interprofessional education, mastery learning, skills acquisition, and adaptive expertise. This chapter is divided into several main sections: (a) interprofessional education, (b) debriefing for learning, (c) necessary competencies for educators, (d) self-evaluation of skills development, (e) video-assisted self-assessment, and (f) chapter summary. Keywords searched include interprofessional education, debriefing, self-evaluation, video review, video recording, faculty development, counselor education, simulation education, skills acquisition, adult learning, health professions education, self-assessment, formative assessment, mastery learning, self-regulated learning, deliberate practice, adaptive expertise, feedback, development models of learning, self-reflection, self-efficacy, self-directed, and healthcare simulation.

Theoretical Orientation

In the field of health professions education, Dreyfus and Dreyfus (1980) proposed a five stage model for skills acquisition as mastery learning progresses from novice to expert. In dental education, teaching expertise for dental educators has been examined using the Dreyfus and Dreyfus model of skills acquisition (Lyon, 2015). Participants were five academic deans in dental education and five experienced dental educators with more than 10 years of experience teaching. Using grounded theory methodology, dental educators participated in 60-minute, open-ended interviews to understand how they developed their expertise from their point of view. Findings demonstrated four main categories that influenced the growth process of these

educators: basic knowledge, functional skills, personal and behavioral qualities, and reflection. In developing their skills as educators, dental educators experience many of the challenges described by the Dreyfus and Dreyfus model of skills acquisition. Of particular importance to the context of this dissertation research, findings suggest that as teaching skills progress, faculty become more interested in the role of assessment and outcomes, with an increased interest in learner self-assessment. The dental educators in this study identified that growth and progression occurred when they met new challenges under stress and that deliberate practice supports development across skill mastery. Overall, the Dreyfus and Dreyfus model was reflective of the learning experiences of expert dental educators, and highlighted that personal growth, skill acquisition, assessment, and motivation were crucial to their own development as educators. A limitation includes the small sample size of educators, who were required to have over 10 years of experience, which means individuals with less experience were not considered in this sample. Future direction would benefit from expanding the population to include different experience levels and how to operationalize this skill development model in educator development (Lyon, 2015). As a result, the Dreyfus model is a beneficial framework as it provides a useful assessment framework for areas of strengths and ongoing development to be able to apply deliberate practice for skills mastery.

To evaluate skill development in experiential education, the Dreyfus model of skill acquisition has been integrated into pharmacy education. The perceptions of the effectiveness of a novel rubric based on the Dreyfus model of skill acquisition were implemented to assess pharmacy student performance in experiential education (Yeung et al., 2023). Participants were 70 pharmacy students, 103 practice educators, and four faculty connected to the Entry-to-

Practice Doctor of Pharmacy program at the University of British Columbia. Using an exploratory sequential mixed methods design, students, practice educators, and faculty were invited to participate in focus groups and semi-structured interviews about the novel rubric, from which data was gathered and utilized to generate a quantitative questionnaire that was then completed by students and practice educators to verify themes and collect additional data. After one full year of using the rubric, seven students, eight practice educators, and four faculty participated in a total of three focus groups and seven semi-structured interviews using the same facilitator script. Themes about the new rubric identified from the focus groups and interviews included improved clarity of expectations, accurate description of actual performance, relevance, usefulness in comparison to the old rubric, and challenges including aesthetics, redundancy, and time consumption. Quantitative data indicated that almost 62% of students and 80% of practice educators found that the tool clearly articulated the expectations of performance with respect to necessary knowledge, skills, and attitudes needed by the end of the practicum. Participants found the use of language borrowed from the Dreyfus model of skill acquisition helped clarify and differentiate expected performance across the different levels. In fact, more than 70% of students agreed or strongly agreed that the tool was useful as the rubric provides general direction on how to develop skills. Similarly, the rubric is useful as a formative assessment as per 58.1% of students and 77.4% of practice educators. The use of the Dreyfus model in this case provided a shared language and more objective tool for students and practice educators to share in feedback and skill development using a standard set of criteria. Limitations of this study include unknown validity and reliability of the questionnaire and low response rates compared to the overall population of students, practice educators, and faculty within the institution. Future direction

would benefit from tracking trends on the rubric for students over the course of study as well as comparing student self-evaluation with practice educator or faculty expert evaluation (Yeung et al., 2023). Using the Dreyfus model as a shared language on which health professions can build off of to inform stage development and offer set criteria for all students and educators to engage around formative assessment of skill development.

In applying a structured approach to formative assessment, learners are better able to achieve skill acquisition and translate knowledge and skills into practice through adaptive expertise. Lynch et al. (2022) examined the experiences of struggle and failure within the context of navigating difficult conversations in healthcare. Participants were five pediatric residents and eight pediatric attendings with less than five years of experience. Using constructivist grounded theory, pediatric residents and attendings individually participated in 45-60 minute, semi-structured interviews to explore how they prepared for and engaged in difficult conversations within clinical practice and the workplace. Moreover, researchers were particularly interested in what doctors learned from less successfully executed difficult conversations to better understand the role of adaptive expertise in communication. Interviews were conducted by the principal investigator and audio recorded for transcription and qualitative data analysis. Data was coded using constant comparative analysis and explored through the theoretical framework of adaptive expertise. Findings demonstrated that experiencing failure deepens physician understanding of difficult conversations and results in knowledge generation and mobilization toward future learning and experiences. Physicians identified that difficult conversations that elicited more uncertainty, such as long-term prognosis, caused a higher level of struggle. These experiences resulted in physicians extending themselves beyond their routine expertise and mobilizing new

solutions to promote adaptive expertise, which is coined as a productive struggle in this research. Participants reported that it is common for attendings to protect residents from difficult conversations, which limits their exposure and potential to develop adaptive expertise in this area of communication. Despite the intention of the supervisor to protect the supervisee, this protection is a disservice to skill development. In promoting an environment of productive struggle and failing safely, attendings need to balance interjecting during learning and give residents the opportunity to practice through struggle. Feedback and coaching are identified as crucial to maintaining a safe and productive learning environment for adaptive expertise. Educators benefit from operationalizing productive struggle as an instructional strategy to promote adaptive expertise in health professions education. Limitations include all participants coming from a single institution and relying on interviews rather than direct observation of skill performance. Future direction would benefit from exploring supervisor perspectives of protecting trainees, examining coaching and feedback around difficult conversations, and gathering the patient perspective to appreciate the multilevel nature of this phenomenon (Lynch et al., 2022). To achieve skill mastery, productive struggle offers learners the opportunity to advance beyond routine performance by applying adaptive expertise to new situations.

Expanding on the development of adaptive expertise through productive struggle, Gamborg et al. (2022) examined the learning process that occurs between supervisors and learners during formal and informal supervision. Participants were 27 first-year residents from two different emergency departments (ED). Using a focused ethnographic method, formal and informal supervision sessions were observed by the principal investigator of the study, who gathered data through 116 pages of field notes, interviews during observation, meetings with key

stakeholders, and 80 hours of observations of diagnostic reasoning activities with geriatric patients. In total, 75 supervision sessions were facilitated by senior members of the healthcare team, including physicians, nurses, and other allied health professionals working or collaborating with the ED. Data was analyzed using the framework of adaptive expertise to illuminate themes connected to cognitive concepts such as metacognition and productive struggle often associated with the development of adaptive expertise. Findings suggest that two types of interactions occur during supervision: closure-focused interactions and discovery-oriented interactions, both of which are crucial to developing adaptive expertise. In interactions of closure, learning interactions occur through direct teaching, verification of decision-making and information, and supervisor takeover, such as editing documentation. It was most common for residents to seek out clinical supervision to either confirm or learn. In interactions of discovery, learning interactions occur through metacognitive instruction, integration of conceptual with procedural knowledge, creating productive struggle, orientation to new aspects of cases, and shared discovery. Additionally, supervisor and learner have shared responsibility and accountability to co-create and co-regulate learning during clinical supervision to develop adaptive expertise. Formal and informal clinical supervision can be utilized to guide discovery by helping learners become more aware of their own knowledge and performance gaps. Moreover, utilizing productive struggle as an educational strategy in supervision, supervisors can use inquisitive supervision to facilitate learning and self-assessment by supporting idea generation and innovated problem solving in a safe learning environment away from direct patient care. As a result, supervisors may benefit from asking learners to share intentions and needs around supervision to match expectations in clinical supervision. Limitations of the study include

uneven distribution of supervision as physicians often followed a standard, required approach that may have been different from the supervision approach used by nurses and allied professionals. Future research could benefit from expanding the research design to include multiple observers and explore how interprofessional relationships impact the development of adaptive expertise, especially the experience of productive struggle (Gamborg et al., 2022). Regardless of whether the learning experience is centering closure or discovery, supervisors and learners are equally responsible for the development, moving procedural knowledge into conditional knowledge to practice adaptive expertise.

While previous research has focused on how adaptive expertise is achieved, more recent research has focused on the conditions that promote the development of adaptive expertise. Kua et al. (2022) aimed to understand how learning experiences and interactions at the intrapersonal, interpersonal, and organizational levels impact the development of adaptive expertise. Participants were 16 senior geriatricians (clinicians, educators, administrators), with the majority holding more than five years of experience working at two hospitals in Singapore. Using an exploratory qualitative study, semi-structured interviews were facilitated, and data was analyzed using reflective thematic analysis. Findings suggest that the learning process to develop adaptive expertise is marked by learning to know what you do not know. Adaptive experts view themselves as being on an ongoing journey toward expertise rather than an end goal. To achieve adaptive expertise, learners benefit from viewing their patients holistically, anchoring on the values of person-centered care. Intrapersonally, adaptive experts engage with empathy, self-awareness, and self-control, which, in combination, are essential to anticipate care needs and prioritize what matters most. Additionally, adaptive expertise is developed by holding a lens that

centers curiosity, including practicing reflection, setting aside time for learning, and allowing time for clinical maturity. From an organizational level, a work culture of psychological safety and mentoring, plays a critical role in more readily fostering adaptive expertise. A key cognitive component of adaptive expertise, curiosity can be operationalized through discussions with peers and supervisors to promote epistemic curiosity (knowledge seeking) and diversive curiosity (exploration of novelty). Limitations of the study include not differentiating between levels of clinical maturity and not accounting for sociocultural differences. Future research could benefit from quantitatively examining workplace culture, expanding to other disciplines or professions, and considering the influence of culture on the development of adaptive expertise (Kua et al., 2022). Attending to the development of adaptive expertise at the intrapersonal, interpersonal, and organizational levels offers learners the opportunity to practice and evaluate their skills performance to better meet the needs of various health professions.

Overall, the Dreyfus and Dreyfus model offers educators and learners alike a shared framework for skills development. In adapting the model to various skills in health professions education, the dyadic relationship of teacher and student has a shared mental model for the development of attitudes, knowledge, skills, and actions (Lyon, 2015; Yeung et al., 2023). To apply adaptive expertise in clinical practice, master learning serves as a guide to translate procedural knowledge to conditional knowledge as learners move from novice to expert (Gamborg et al., 2022). Educators can effectively use the framework of mastery learning and adaptive expertise to develop intentional educational strategies for learners that can be evaluated through the Dreyfus model of skills acquisition. Given the emphasis of this dissertation research,

this theoretical model is integrated across the study design, from conceptualization of intervention through data analysis.

Review of Research Literature and Synthesis of the Research Findings

Interprofessional Education

Interprofessional education has been highlighted as a strategy to prepare health professions to work collaboratively to deliver quality care by first learning with, from, and about each health profession within the classroom. To determine the effectiveness of interprofessional education, Ciani et al. (2023) designed and researched an IPE intervention to increase health profession students' knowledge and perceptions towards each other, with a particular emphasis on how other disciplines experience occupational therapists (Ciani et al., 2023). Participants were 219 health profession students from 10 different programs, including Athletic Training, Exercise Science, Health Administration, Medicine, Nurse Practitioner, Physician Assistants, Mental Health Counseling, Speech Language Pathology, Occupational Therapy, and Pharmacy. Using a mixed method, quasi-experimental, pretest-posttest design, perception was measured using The Interdisciplinary Education Perception Scale (IEPS) before and after the IPE learning experience. Participants were also invited to complete a post-IPE event survey to explore the rate of learning that occurred about occupational therapy as well as quality improvement of the learning experience. Focused on active learning and various pedagogical approaches to meet learner needs, the single, two-hour IPE event offered participants an opportunity to engage in small group discussions, and role plays where learners took on a role from a profession different than their own, team-based case discussion, and debriefing. The scenario focused on a cerebrovascular accident to explore the pathway of care from activation to discharge. The

statistically significant findings demonstrated that mean perception scores improved after participating in the IPE event. The most identified benefit of participating in the IPE event was interprofessional teamwork and communication (48.2%). Participants reported that it was beneficial to learn about scope of practice, comfort working across disciplines, active listening, and open communication. Findings suggest that health profession students developed positive perceptions of their own and each other's professions by learning about roles, responsibilities, and professional identities of different health professionals. Seventy-five percent of mental health counseling students reported learning a lot more and increasing the positive perception towards occupational therapy. All other disciplines had similar responses, with 40-80% reporting they had learned a lot and changed their perceptions of OT. Limitations included using convenience sampling from one geographical location, different numbers of representations across health professions, and limited expertise from small group facilitators. Researcher bias was also present, given the intentional focus on occupational therapy and all principal investigators coming from the field of OT. Future research would benefit from engaging in random sampling, increasing the sample size for each health profession, and examining the long-term influence of the IPE event on future practice (Ciani et al., 2023). Interprofessional education serves as a vehicle for disciplines to learn about each other and how to collaborate with each other.

For interprofessional education to be successful, educators need to consider what it takes to facilitate education initiatives that cover the needs of various health professions. To understand facilitator attitudes and experiences with interprofessional learning, El-Awaisi et al. (2021) facilitated semi-structured interviews with 21 experienced IPE facilitators from the fields

of medicine, pharmacy, nursing, biomedical science, respiratory therapy, and public health. Interviews were audio-recorded for transcription and review. Using thematic analysis to analyze the data, researchers identified four main themes: drivers to involvement, facilitator participation, student participation, and organizational support. Drivers focused on interest and ongoing commitment to facilitate IPE, such as curiosity, research opportunities, previous experiences, and positive perceptions around the outcomes of IPE interventions. To support student participation, IPE facilitators benefit from limiting the number of students in small groups, diversifying professional makeup of groups, and focusing on 2-3 professions for focused attention. In terms of facilitator participation, the most effective facilitators have attributes such as open-mindedness, flexibility, and active listening, along with preparedness to deliver courses as well as navigate work-related obstacles and healthcare hierarchies. Organizational support was cited as necessary for successfully implementing IPE activities, including financial support, a dedicated team of IPE facilitators, and stakeholder engagement. Limitations included missing perspectives from certain disciplines, no use of member checking, and interviews were not conducted in the native language of participants. Future research would benefit from exploring direct observation of facilitators and a mixed methods approach to appreciate the valuable experiences of the program's students (El-Awaisi et al., 2021). For interprofessional education to be impactful, educators need to consider how to best foster their own as well as student participation and consider best practices in creating effective learning experiences to promote interprofessional collaboration.

Simulation-Enhanced Interprofessional Education (SIM-IPE)

Simulation-enhanced interprofessional education is an educational strategy that can be implemented to meet the ongoing needs in the education of health professionals. In one study, MacLeod et al. (2022) investigated whether self-efficacy improved for interprofessional collaboration among nursing and social work students after simulation-based learning experiences. Participants in the study were 74 nursing students and nine undergraduate social work students who participated in the simulation as a mandatory assignment. Using a multiple method, quasi-experimental, pretest-posttest design, perceived self-efficacy was measured using the Interprofessional Experiential Learning (SEIEL) Scale before and after all learners participated in an interprofessional simulation and debriefing. Grounded in social cognitive theory, the trauma scenario simulation was designed to focus on implementing appropriate clinical interventions and navigating communication among the interprofessional team and the family members of the simulated patient to promote self-efficacy. Opportunities were intentionally embedded in the scenario to promote speaking-up behavior and interprofessional feedback during the debriefing session. After the posttest, participants completed a brief qualitative questionnaire to further share their perspectives on interprofessional collaboration and evaluate the quality of the simulation. Research demonstrated that pretest-posttest scores increased after participating in the simulation and debriefing. Participants who had previous experiences interacting with other health professionals had higher levels of self-efficacy for interprofessional collaboration when compared to those with no previous interactions. Thematic analysis of qualitative data revealed that the simulation and debriefing improved their understanding of roles and communication and increased the value of teamwork, which was

facilitated by the realism and the challenging scenario that stimulated their skills and knowledge. Both nursing and social work students indicated that ongoing simulation and debriefing of interprofessional collaboration, speaking up, and feedback would be beneficial for both departments. Limitations of the study include a smaller population of social work students than nursing students, and the trauma scenario utilized in the simulation was originally designed for critical care nursing rather than interprofessional collaboration. Future research would benefit from exploring self-efficacy longitudinally, employing video to observe interprofessional collaboration that occurred within the simulation and debriefing, and comparing perceived self-efficacy with demonstrated self-efficacy (MacLeod et al., 2022). As a result, simulation and debriefing provide a unique opportunity to increase the self-efficacy of interprofessional collaboration among various health professions.

Of particular interest to the context of this study, interprofessional simulation and debriefing is becoming more common in mental health care education. Exploring interprofessional simulation among community mental health providers, Piette et al. (2018) examined the impact of simulation and debriefing for 57 healthcare professionals, including mental health nurses, social workers, psychiatrists, psychologists, residents, occupational therapists, and managerial staff from various mental health teams in South London, UK. The interprofessional simulation course was designed using the theoretical foundations of the experiential learning cycle, social cognitive theory, and transformative learning theory. The simulation consisted of five scenarios, with a combined focus on improving core mental health assessment skills and replicating the reality of interprofessional care among community mental health teams. Using a mixed-methods design, quantitative data was collected using a pretest-

posttest measure on self-report of knowledge and confidence. Qualitative data was collected from post-course and one-to-one semi-structured interviews that took place at least 10 weeks after the courses were completed based on topics derived from the quantitative data. The statistically significant findings demonstrated that participants increased scores in both knowledge and confidence after the course, suggesting improved performance on assessment and care planning. The benefits of participation in the interprofessional simulation were identified as improved interprofessional understanding, attitudes in clinical practice, and staff well-being, such as team morale and reduction of burnout. Moreover, key mechanisms of interprofessional learning were identified, including practicing in a simulated environment using actors, feedback, client perspective taking, and interprofessional reflection during debriefing. Limitations included a small sample size, researcher bias in the form of dual roles, and the use of self-report measures designed for the study that were not validated. Future research could explore implementing a control group for comparison and considerations given around how to connect training outcomes to direct clinical care (Piette et al., 2018). Interprofessional simulation and debriefing support learners in increasing attitudes, knowledge, skills, and actions across and among collaborative disciplines.

Engagement in interprofessional simulation and debriefing is beneficial for those who directly engage in the simulation activities as well as those who take on the role of active observer. Reime et al. (2017) investigated the differences between hands-on learning and observational learning during interprofessional simulations (Reime et al., 2017). Participants were 262 post-graduate nursing students and medical students, who were divided into 44 teams, with members of the team randomly assigned to play as observers or active participants. Using

concurrent mixed-method design, teams participated in an interprofessional course that included two of four available simulation scenarios and a video-assisted debriefing session to reflect on team performance. After engaging in the simulation and debriefing, participants completed a learning outcome questionnaire to measure their experience with non-technical skills. Three months post-simulation, the interprofessional team engaged in a focus group interview about their overall experience in the course. In comparing participant and observer learning outcomes, hands-on participants scored higher than their observer counterparts in the areas of closed-loop communication, team cooperation, and treatment decision-making. Quantitatively, team performance overall improved significantly from the first to second scenario, and qualitative data from focus groups suggests that taking on the same role twice increased confidence in performance. Individuals with shorter professional experience scored lower in closed-loop communication and treatment decision-making when compared to their more experienced colleagues. Content analysis of focus group data suggests that observing interprofessional simulations was a valuable learning outcome for observer-participants and that the realistic nature of the simulation training helps translate practice skills to real-life clinical performance. While learning was derived from observing, participants preferred hands-on participation to build confidence further. Limitations include the use of multiple facilitators as well as the use of self-report of performance and focus group sessions, which can both have different influences on participants. Future direction would benefit from employing expert observations in addition to the observer participant, exploring ways to assess the observer role, as well as ways to observe the impact of the simulation training on clinical practice (Reime et al., 2017). With intentional

design, taking the role of observer or direct participant can support the achievement of course objectives within simulation and debriefing.

Expanding on the role of observer and direct participant, Cunningham and Cunningham (2019) examined the experience of learner perception of interprofessional collaboration from the role of observer and participant in interprofessional simulation (Cunningham & Cunningham, 2019). Participants were 28 physical therapy students and 25 nursing students from two different institutions. Using a quasi-experimental, pretest-posttest, crossover study design, half the participants engaged in an interprofessional simulation scenario where they directly interacted with the patient, and the other half engaged as observers witnessing the scenario from a remote classroom. One week later, participants returned and reversed roles to engage in a second interprofessional simulation scenario. Pre and post-simulation surveys were administered to measure perceptions of interprofessional care, focusing on the ability to care for others, value in working with others, and comfort in working with others. Overall, participants and observers improved across all three areas of collaborative practice. After the first simulation, active participants demonstrated a statistically significant increase across all three areas, yet observers only demonstrated an increase in comfort in working with others. After roles were reversed, active observers who previously played active participants continued to demonstrate improvement across all three areas. Active participants who played observers in the first simulation continued to improve only in the area of comfort. A limitation is the design of the intervention, as taking on the role of active participants first may better prime learners for the role of active observer, influencing performance during the second simulation. Future direction would benefit from exploring how to prime active observers for their role, considering a parallel

design, and expanding participants beyond nursing and physical therapy (Cunningham & Cunningham, 2019). To optimize active learning, intentionally designing a curriculum with active experiences to prime active observation creates an efficient learning experience for interprofessional education.

Debriefing

Debriefing provides learners an opportunity to reflect on action after engaging in simulation-based education activities and has been utilized as a crucial component of mastery learning across various professions. With origins in the military and air force, Moldjord and Hybersten (2015) examined the experiences of implementing Holistic Debriefs to reflect on practice and socio-emotional issues among military aircrew communities of practice. Focusing on the experience of the debriefers, participants were seven aircrew commanders and one aircrew system operator who were responsible for facilitating a new form of structured debriefing with military units and professional team members working at the Norwegian Aeromedical Detachment in Afghanistan. Team members who participated in the debriefings were responsible for evacuating wounded soldiers from combat areas. Using qualitative methods, researchers conducted in depth interviews with debriefers to explore their experiences of implementing Holistic Debriefs. Holistic debriefs supported team members in coping with stressful events and fostered relational trust, which increased after critical incidents and repeated debriefs. Moreover, debriefers experienced learning as more impactful within the debriefing process when affect or emotion were connected to the incident being processed, and the facilitator initiated curiosity around team members' experiences. In light of this, debriefers may need specific training to support more active learning within Holistic Debriefs. Limitations included a small sample size

and did not necessarily take into consideration the power dynamics of the debriefings. Future research could explore which factors within the debriefing contributed to relational trust and how learning within the debriefing impacts practice outside of the debriefings (Moldjord & Hybersten, 2015). Debriefing is an effective way for participants to share their feelings, build trust among peers, and deepen learning through curiosity.

In an effort to understand what components of a debriefing best support learning, Boet and colleagues (2016) examined which topics facilitate reflection among learners during within-team (no instructor) and instructor-led debriefing (Boet et al., 2016). There were 126 participants divided into 42 interprofessional teams who engaged in an operative room crisis simulation scenario followed by a 20-minute post-simulation debriefing. Each team was assigned to participate in either a debriefing with or without an instructor. Using an exploratory case-study approach, thirty-seven debriefing sessions were audio-recorded and transcribed for qualitative analysis using constant comparison to generate narrative descriptions for each debriefing style. In terms of what contributed to reflection, three themes emerged: the debriefing itself, the experience of the simulation modality, and performance. Instructor-led debriefings were exclusively facilitated by the debriefer, whereas participants negotiated how to best approach the debriefing process; within-team debriefings often relied on the use of debriefing forms to guide the conversation. With respect to education value, both teams identified that video-assisted debriefing allowed participants to observe, reflect, and assess performance and behavior. Participants engaged in the instructor-led debriefing reported that it was useful having a facilitator guide them through a reflection on areas for improvement. Within-team participants reported a desire to have a facilitator to guide their process more effectively. Regardless of

condition, participants were able to reflect on individual and team skills performance and found both styles of debriefing effective for improving crisis management for teams. Within-team, participants were able to ask each other for specific feedback on individual performance, whereas the debriefer often initiated feedback for participants in the instructor-led group. Overall, these findings emphasize the need for debriefing to focus more on generating reflection rather than being consumed by the structure of the debriefing itself. Limitations include using a single simulation program, a small sample size, and no control group. Future research may benefit from having a control group for comparison as well as exploring how previous debriefing experiences may impact performance across debriefing styles (Boet et al., 2016). Reflection on performance becomes crucial to translating skills, and video recording helps facilitate both self-assessment and peer feedback to highlight strengths and growing edges.

Given the role that video recording has served in previous research, more recent research has sought to intentionally investigate the impact of video-assisted debriefing. Zhang et al. (2020) developed and investigated the impact of a three-phase video-assisted debriefing (VAD) intervention on learners' experiences and debriefer practices within debriefing. Participants were 145 third year nursing students enrolled in a simulation rotation as well as eight simulation educators who formed the education team within the simulation program at a university in Singapore. To examine the dual experiences, the method involved a multilevel mixed methods design, where participants engaged in a simulation and debriefing either using video-assisted debriefing or verbal debriefing (VD). Student participants were randomly assigned into either the VAD group or verbal debriefing only (control group). Simulation educator participants were randomly assigned as VAD facilitators or VD facilitators. For the quantitative approach, student

participants completed a series of pretest-posttest measures on debriefing experience and debriefing assessment of facilitators' practice. They also completed a perceived stress assessment three times across the study: before simulation, before debriefing, and post debriefing. Educator participants completed a self-assessment of their debriefing facilitation as well as a survey questionnaire to gather written qualitative responses. Results showed that VAD caused similar stress to VD, improved debriefing experiences, and enhanced debriefer facilitation. While VAD and VD student participants experienced comparable stress, the stress of the VAD student participants decreased across the study, suggesting that as students became more comfortable with video review, they experienced less stress. Additionally, VAD student participants rated the effectiveness and quality of the debriefs higher than VD student participants. From the educator perspective, they appreciated the three-phase VAD approach as it gave more structure and improved student engagement. VAD facilitators focused more on a learner-centered approach compared to VD facilitators, which may account for the increased engagement. VAD facilitators also shared that using video required increased cognitive load with having to manage and navigate technology during the debriefing session. Faculty only received a one-hour training on VAD, which is a limitation of this study that could be addressed in future research. Additional limitations included a sample of participants from only one academic institution, and qualitative data gathered from a survey questionnaire rather than verbal interviews. Future research would benefit from comparison to another academic institution, faculty training towards standardized VAD practice, and faculty interviews to gather data-rich information more effectively in a mixed methods design (Zhang et al., 2020).

While previous research indicates the benefits of debriefing as a tool for reflection, more recent research aims to highlight the effectiveness of different approaches to debriefing. Brown et al. (2018) examined best practices in interprofessional debriefing, comparing the effectiveness of virtual debriefing with in-person debriefing and co-debriefing with a single debriefer (Brown et al., 2018). Participants were 135 senior level critical care students in nursing, respiratory therapy, and medicine with previous experience in simulation and training in advanced life support. The method involved a two group quasi-experimental cohort comparative design. After completing pre-learning on teamwork and communication, participants were randomly assigned to interprofessional teams and engaged in three simulation activities. Learners participated in debriefing immediately following each simulation and evaluated the effectiveness of each debrief using the validated Debriefing Assessment for Simulation in Healthcare-Student Version (DASH-SV). Statistically significant results showed higher DASH scores for in-person debriefing compared to virtual debriefing. While not statistically significant, results also showed higher DASH scores for single debriefers when compared to interprofessional co-debriefers. Regardless, all DASH scores were above a four, which was considered acceptable standards in terms of effectiveness of debriefing, suggesting that effective interprofessional debriefing can be achieved through a variety of methods. Limitations included participants being recruited from a single institution, reliance on self-report, and not gathering qualitative data on debriefing experiences. Future research could explore faculty development on interprofessional debriefing examined through a mixed methods design (Brown et al., 2018). Educators need to consider which approach best serves the needs of their learners, holding in mind in-person debriefing facilitated by a solo-debriefer has shown more favorable in recent research.

In addition to the approach, debriefers need to consider how interprofessional dynamics play out in the context of interprofessional simulation and debriefing. Robertson et al. (2022) investigated how power dynamics impact content and form during debriefing after interprofessional simulations (Robertson et al., 2022). Participants were interprofessional healthcare teams composed of physicians, nurses, residents, and pharmacists who were participating in a simulated-based team training program at the University of California San Francisco Benioff Children's Hospital. Using a descriptive, exploratory study of communication, researchers explored the function and presence of power in interprofessional and intraprofessional debriefing sessions. Data was collected during 14 interprofessional debriefing sessions composed of multiple disciplines and 14 intraprofessional debriefings composed of single disciplines. At least two researchers observed the debriefing session in-vivo as well as video recorded the session for transcription purposes. Focus groups were conducted with participants, and semi-structured interviews were conducted with facilitators. Data was analyzed using an inductive approach for content analysis and coding to examine how power discrepancies influenced verbal communication between health professionals. Regarding the content of interprofessional debriefing sessions, they found that power dynamics were not explicit but focused on clinical considerations and positive feedback across disciplines. Conversely, power dynamics were discussed during intraprofessional debriefings, suggesting that siloed debriefing creates space for health professions to discuss the power dynamics observed during interprofessional team dynamics. Interestingly, they found that the content among physicians and nurses differed during intraprofessional debriefings. Physicians expressed appreciation for their nursing colleagues' actions during the simulation, and residents expressed

feeling vulnerable and powerless compared to the nurses in the simulation. In these moments, physicians and residents are acknowledging the expert power nurses hold within the clinical context. During intraprofessional nursing debriefing sessions, nurses discussed strategies to further empower themselves when interacting with physicians, with an explicit focus on speaking up and challenging the perceived power dynamic. Nurses were more likely to discuss positional power. Each interprofessional debriefing was facilitated by one physician and one nurse. Within interprofessional debriefing sessions, the traditional patterns of power dynamics between physicians and nurses were evident as the physician-lead focused their attention on other physicians, and the nurse-lead only contributed when prompted by their physician co-facilitator. Feedback was rarely shared across disciplines from facilitators during interprofessional debriefings, and when feedback was shared, it was often between participants. In these moments, feedback was often vague, and power dynamics were usually limited. Intentional strategies need to be developed to promote conversations of power dynamics during debriefing so as not to perpetuate status quo and power dynamics within the clinic. To bridge this gap, facilitators may consider engaging in explicit dialogue around roles and responsibilities, reducing tension by addressing and exploring the origins of power dynamics, and embracing learning conversations to promote feedback. Creating opportunities for both intraprofessional and interprofessional debriefings may provide a viable solution to practice difficult dialogue in different psychologically safe settings. Limitations of this study include the focus on one training program, no nurses were involved as researchers, researchers were involved as facilitators, and physicians did not have a set time for debriefing which made it difficult to draw comparisons. Future research would benefit from examining how conversations about power dynamics can be

integrated into debriefing, how this may impact interprofessional debriefing sessions, and how feedback is given and received across professional disciplines (Robertson et al., 2022). Given the inevitability of power dynamics in health professions education, educators and learners alike benefit from holding a growth mindset to shift workplace culture, and debriefing serves as a potential conduit to promote more collaborative discourse across disciplines.

Despite the benefits of debriefing, shifting the culture in health professions education away from corrective feedback to include reflection on performance through debriefing requires intentionality. Ahmed et al. (2013) compared the perceived ideal with the actual practice of debriefing for surgical trainers and the barriers that may exist to conducting effective debriefings in surgical practice. Participants were ten surgical trainees and 10 surgical trainers from various subdisciplines at a larger university hospital in London, UK. Using a two-part qualitative study, participants engaged in individual semi-structured interviews and then ethnographic observation of direct practice of debriefing. Real-time observations of 35 cases occurred over the course of two months. In terms of perceived performance, surgical trainers felt they provided routine feedback and debriefing, whereas trainees disagreed. In actual practice, feedback and debriefing were observed in less than half of all cases. When actual feedback was provided, it occurred within the context of the case rather than after the case, despite the majority perception being that feedback is best served during and after the case for more comprehensive debriefing. In actual performance, feedback was not structured, mostly unidirectional, and exclusively focused on technical skills. Perceived performance suggests that the preference is for structured debriefing with shared analysis of performance, a focus on technical and non-technical skills, and a concrete action plan for continuous improvement. These ideal components were rare or nonexistent in the

observation of actual performance. Identified barriers to implementing effective debriefing include time, culture, competing clinical and educational commitments, rapport, and case complexity. Within this study, time was not necessarily a barrier but rather an identified scapegoat, as debriefing does not occur because there is a lack of a culture of debriefing within surgical practice. Limitations of this study include a small sample size in a single institution, and consideration should be given to the presence of an observer during practice. Future direction would benefit from expanding to other institutions to draw comparisons as well as consider a quantitative standard to explore the frequency, quality, and impact of debriefing (Ahmed et al., 2013). In creating effective debriefing experiences for learners, educators need to consider how to close the gap between the current state and the ideal state to promote collaborative learning through debriefing.

PEARLS Debriefing Framework

To promote a culture of debriefing, using a structured approach to the learning conversation promotes a shared framework for educator and learner engagement. Hoegh-Larsen et al. (2023) examined the competency outcome differences between the PEARLS debriefing and standard debriefing. Participants were 133 nursing students who were halfway through their bachelor's program at a Norwegian university. Using a quasi-experimental pretest-posttest design, participants were either enrolled in the intervention group or the control group. Both groups engaged in the same simulation-based learning experiences. After the simulation, however, the intervention group received debriefing using the PEARLS framework, whereas the control group received standard debriefing (no specific structure, framework, or script). While results were not statistically significant between groups, the study yielded statistically significant

results within the intervention group. Nursing students who participated in PEARLS debriefing demonstrated statistically significant improvement on self-reported professional competencies and clinical judgment. Nursing students who participated in the unstructured debriefing on the other hand, did not demonstrate any significant improvement in learning outcomes. Given this difference, the PEARLS structure and script may have contributed to the significant improvements in nursing students. Limitations included the newness of PEARLS to faculty, the lack of cultural validation of the assessment tools in a Norwegian context, and the risk of self-report measures not accurately reflecting actual competency. Future research could include faculty with more experience facilitating PEARLS debriefing, exploring differences across learner experience levels, and randomized control design to have more comparable groups (Hoegh-Larsen et al., 2023). The PEARLS debriefing framework offers an effective approach to improve learner self-assessment of competencies and clinical performance.

Additional frameworks can influence the topics of conversation and reflection within the context of debriefing. In a recent retrospective pilot study, Byrnes et al. (2021) aimed to identify the factors influencing interprofessional engagement during post-simulation debriefings (Byrnes et al., 2021). Participants in the debriefing sessions were 236 healthcare professionals from various clinical disciplines working in a children's hospital. Debriefings were facilitated by trained debriefers using the PEARLS debriefing framework. Twenty recorded debriefings were selected, and at least two reviewers observed the recording to assess learner engagement using a modified Strobe tool to assign numerical scores to observed learner behavior. Using descriptive statistics, engagement scores were calculated to examine the association between learner scores and participant-related variables. In terms of oral contributions, physicians were more likely to

orally engage in debriefing sessions as both learners and co-debriefers. Interestingly, when accounting for nonverbal communication, physician and nurse engagement scores were similar. Students from all professions were least likely to orally engage during debriefing sessions. Debriefers may benefit from exploring strategies to encourage more novice learners to increase engagement during interprofessional debriefings. Learner engagement scores were higher when learners asked more questions than when debriefers asked more questions, suggesting that debriefers need to be more judicious in their question asking to increase interprofessional engagement. Moreover, the presence of observable co-debriefing behavior increased learner engagement, whereas the size of the group decreased learner engagement. Findings suggest that the ideal group size is 8-12, as it promoted the highest engagement scores. Finally, debriefer behavior also influenced learner behavior, with nurse debriefers with less experience yielding lower overall engagement scores for learners but not average nurse learner engagement scores; this may be explained by the shared competencies and expertise shared between nurses. To increase interprofessional learner engagement during debriefing, co-debriefers may benefit from huddling before the debriefing, using an established framework, and aligning the debriefing to meet interprofessional needs of the learners rather than appealing to their own professional perspective. The modifiable factors may prove useful in the training of interprofessional simulation educators and debriefers. Limitations were the generalizability of the study as it was conducted as a single institution and measuring engagement is difficult even when guided by an observation tool. Future research may benefit from adding a qualitative strand to explore the perspectives of the participants, utilize a validated tool to capture self-perception of engagement during debriefings, and expand beyond a single institution to improve generalizability (Byrnes et

al., 2021). Debriefers benefit from understanding the different aspects of educator performance that can influence and impact the learning experiences in debriefing, including structure, question asking, group size, interprofessional dynamics, and co-debriefing strategies.

Necessary Competencies for Educators

To be able to train effective simulation educators, competencies are needed to ground the learning experience and maintain best practices in the field of simulation education. Recently, Christensen et al. (2023) conducted a study to understand how learners, facilitators, and facilitator trainers constitute competence for simulation educators across three different countries: Denmark, Korea, and Australia (Christensen et al., 2023). Forty-one learner participants were nurses, physicians, and paramedics from various large-scale simulation centers who had participated in at least one simulation session. Seventeen facilitator participants were educators who were responsible for simulation-based learning in large-scale simulation centers, conducting team-based care courses. Seventeen facilitator-trainer participants were educators who were exclusively involved in faculty development training future simulation educators, each having years of experience in both simulation and facilitator training. Twenty-four semi-structured group interviews were conducted with representatives from each participant category. Using content and comparative analysis, transcripts from each interview were analyzed for themes. Findings from this study suggest that competence can be divided into two broad categories: facilitator characteristics (being) and facilitators' educational behaviors (doing). Facilitator characters focus on what the facilitators do and the mindset they bring into the classroom. Competent facilitators have a familiarity with the content of the course, bring self-awareness and reflection, being able to evaluate their own performance for strengths and

weaknesses, and accessibly communicate with learners so content is well understood. Facilitator educational behaviors focus on overall course delivery, including interaction with content and participants. Competent facilitators establish and maintain a safe learning environment, create simulation experiences that are goal-oriented, and facilitate simulation and debriefing sessions that bring participants into a zone of proximal development. In terms of debriefing specifically, a competent facilitator creates a learning environment where participants can integrate and translate their simulation experiences into achievable objectives while also considering the various needs of the learning community. Additionally, cultural differences were identified as they relate to these two competencies as well. Korean participants focused more on the credibility of the educator, whereas Australian participants focused more on the educator's ability to engage in the simulation education processes and tasks. All countries believe that a competent educator is prepared and strives to help learners meet their education goals. Cultural differences, however, emerged in the role of evaluation of learning outcomes. Participants from Korea believe competent educators use systematic evaluation and adapt their approach when learners do not achieve the identified objectives. Participants from Australia believe a growth mindset should be applied, and the simulation is where mistakes can be made, and learning is derived regardless. Participants from Denmark focused on the importance of competent educators ensuring their learners do not leave simulations with negative learning that can impact patient care. Differences were also identified with respect to the evaluation of learning outcomes. Overall, findings suggest that competent educators benefit from combining their skills with educational approaches with an authentic way of being to be successful in simulation and debriefing. Limitations were not interviewing participants across groups to explore ideas

together, content was analyzed only after all interviews were conducted, and a seven year gap between data collection and publication. Future research may benefit from facilitating cross-cultural group interviews as well as taking these initial findings and expanding them to a larger audience of simulation educators (Christensen et al., 2023). Functional and dispositional competencies are essential to training and evaluating simulation educators.

Additionally, simulation educators need to understand instructional design. In a scoping review of 13 papers, Connolly et al. (2022) examined the barriers and facilitators of effective instructional design of interprofessional simulation for adult learning. Using deductive content analysis, findings were reported using a narrative review to facilitate interpretation and understanding more fully. Three sub-themes emerged from the content analysis: characteristics of simulated learning, outcomes of IPE simulation, and interprofessional dynamics. In terms of characteristics, facilitators included realism, psychological safety, the ability to make mistakes, and debriefing. Conversely, characteristics that serve as barriers include a lack of realism and preparation for simulation. In terms of outcomes, facilitators focused on skill level and effective leadership. Outcome barriers were not discussed. In terms of interprofessional dynamics, facilitators were interprofessional communication, role clarity, shared leadership, interprofessional co-operation. Dynamic barriers focused on debriefing not being interdisciplinary, and professional hierarchy. In terms of learning transfer, interprofessional dynamics were identified as the greatest facilitator, which was specifically effective for improved teamwork, communication, and role awareness. Moreover, psychologically safe debriefing was identified as necessary for effective learning, and the preference was often for high realism. Limitations included the focus only on qualitative research, the lack of educator

perspective, and lack of differentiation among simulators or simulation methods. Future research may benefit from examining interprofessional work patterns and the role of organizational support for interprofessional simulation (Connolly et al., 2022). Simulation educators benefit from a strong foundation in instructional design to meet the needs of learners, which can be improved by considering their perceptions of interprofessional simulation.

In addition to instructional design, simulation educators need to have technical competencies as well to be able to utilize the necessary simulation technology to facilitate learning experiences. Ahmed et al. (2022) completed a program evaluation of a curriculum designed to train simulation fellows in technical competence and operational skills for course delivery. Participants were eight simulation fellows with professional backgrounds in emergency medicine, pediatrics emergency, and pediatric critical care who participated in a simulation fellowship between 2018-2021 in The Simulation Center at Fairbanks Hall. After eight months of design, the education goals of the program were to teach the basic skills of independently using and troubleshooting simulation equipment. The five-day program included twelve hours of formative learning sessions (3-hour sessions per day) and three-hour long summative evaluation spread over a two-week period. Skill stations focused on central line trainer, arterial line trainer, lumbar trainer, airway heads, and trauma man. The course was evaluated using program evaluation, learner assessment, and course feedback summary. In terms of assessment of learning, all fellows scored above 80 on each skill station, with most scoring 100%. Findings from the program evaluation identified several strengths, including the compressed schedule between formative training and summative evaluation, adequate time to perform skills and troubleshoot challenges, a homogenous training group, and time to ask questions. In particular,

fellows appreciated the use of deliberate practice with real-time coaching and feedback from faculty to work towards mastery learning. Limitations of this program evaluation are the small sample size and limited focus on the outcomes of learner assessments and checklists. Future research would benefit from focusing on fellow confidence and performance during the simulation activities and consideration for longitudinal impact of the program (Ahmed et al., 2022). In developing competencies, simulation educators benefit from deliberate practice guided by coaching and feedback to be able to become competent simulation educators.

A growing area of competency within the field of simulation education is around equity, diversity, and inclusion, which are lifelong learning competencies. Purdy et al. (2023) investigated the experiences of a simulation delivery team implementing the SIM-EDI tool to promote reflective conversations around equity, diversity, and inclusion in simulation and debriefing (Purdy et al., 2023). Participants were ten simulation educators working in the emergency department at Gold Coast University Hospital in Queensland, Australia. Using collaborative autoethnography, simulation educators were invited to share their experiences of implementing the SIM-EDI tool over a 12-month period to understand the transformative learning experiences of the simulation delivery team. Data took the form of interviews, field notes, team meetings, documents, self-reflection, and group reflection to appreciate the situated social and cultural experiences of the team. Inductive thematic analysis was utilized to understand the impact of using the tool. Overall, the SIM-EDI tool enhanced the simulation educators' reflexivity around equity, diversity, and inclusion in simulation design, delivery, and debriefing. Importantly, simulation educators developed an appreciation for everyday experiences that influence the design and delivery of simulation and debriefing for educators and

shape the experience for learners. As a result, simulation educators benefit from continuous self-education and reflection to investigate their own assumptions. In implementing an intentional tool for practice, these simulation educators were able to appreciate the subtle interactions of equity, diversity, and inclusion in all simulation experiences, which further influenced their interest in developing future equity-centered learning objectives. The tool also served as an educator self-assessment as it prompted reflection around the potential deficits that exist among the team, including limited expertise and resources, which motivates the team towards ongoing professional development in the areas of equity, diversity, and inclusion in simulation-based education. The reflective framework of the tool allowed the team to have honest conversations with each other to promote a shared mental model and lifelong, transformative learning. A limitation of this study includes the use of one team of educators who were willing to engage in this conversation, which suggests a shared worldview. Future direction would benefit from researching the impact of the tool in different contexts with different teams of educators to support the generalizability of the tool (Purdy et al., 2023). Opportunities for self-assessment are crucial to skill and competency development, and frameworks to promote accurate self-assessment are needed to guide master learning.

Counselor Educators

Educator competencies are important to the training of counselor educators. Hall and Hulse (2010) examined the perceptions and effectiveness of training experiences during their doctoral programs. Participants were a national sample of 202 counselor educators who were teaching in CACREP accredited counseling programs. Using a quantitative questionnaire, perspectives were gathered using an instrument design for this study called the Preparation for

Teaching Survey (PFTS). Findings suggest that doctoral students who taught entire courses at a higher frequency were better prepared for overall teaching. Additionally, doctoral students who received frequent feedback were more likely to rate themselves as better prepared to teach. Being able to reflect on the feedback received increased self-report of preparedness for teaching, suggesting that more structured opportunities to self-reflect on feedback may increase overall preparedness. Self-assessment was identified as particularly impactful for teaching preparedness, receiving a high mean rating of effectiveness. Overall, doctoral students would appreciate more experiential training opportunities to teach that are supported by mentorship, supervision, self-assessment, and faculty feedback. A limitation of this study is the sample, which may not be representative of all doctoral student experiences, especially due to the poor response rate of less than 25%. Future direction would benefit from exploring structured approaches to teaching training, including educational strategies to promote self-assessment of progress and reflection on feedback, which may be best captured in a qualitative study (Hall & Hulse, 2010). To develop skills as counselor educators, experiential learning is highlighted as a best practice when doctoral students can reflect on the learning experiences.

In an effort to arrive at more specific competencies, Swank and Houseknecht (2019) conducted a Delphi study to identify teaching competencies for counselor educators. Participants were counselor educators with doctoral degrees who had been currently employed as counselor educators for at least three years, had been published on teaching, held a leadership role, or received a teaching excellence award. A Delphi method was utilized to generate competencies through expert consensus across three phases of review with 13-19 counselor educators. At the end of the third phase, 152 items were identified as counselor educator competencies across four

domains: knowledge, skills, professional behaviors, and dispositions. While a full appreciation of all competencies is beyond the scope of this dissertation, there are several competencies that are particularly connected to the topic of this project. In terms of knowledge, counselor educators benefit from knowing theories and best practices, ethical and accreditation standards, and understanding student characteristics and goals. Of particular interest to this project, several skills were identified as counselor educator competencies, including engagement with students and course instruction. Competence counselor educators use learner-centered pedagogy to promote active and shared accountability for learning, such as giving and receiving feedback to improve skill development. Skilled counselor educators can facilitate group discussions, learning through role play and simulation, and raising self-awareness and reflection. For ongoing professional improvement, counselor educators engage in teacher evaluation, including self-evaluation of effectiveness, recognition of strengths and growing edges, and participation in peer review. Professional behavior competencies attend to the ethical and legal development of self as educator and student interactions, such as creating opportunities for students to practice within and outside of class. Finally, dispositions cover traits, beliefs/values, and interpersonal. Of relevance to this project, ideal interpersonal dispositions were being able to admit mistakes, open to dialogue, and being able to receive feedback. Overall, counselor educators benefit from an awareness of these competencies and prioritizing the development and evaluation of certain competencies over others depending on the value they hold to the counselor educator.

Limitations of the study were a small number of participants, a quick reduction of items between phase one and phase two, and a limited number of diverse perspectives among participants. Future research would benefit from expanding the diversity of perspectives, developing

instruments for counselor educator self-assessment, and applying these competencies to teaching doctoral trainees (Swank & Houseknecht, 2019). Learners benefit from having a base understanding of competency expectations and being able to operationalize competent performance in training and practice.

Self-Evaluation of Skills Development

Regardless of health profession discipline, previous research in competency and skill development all suggest that self-evaluation plays a crucial role in professional development. For this study, an understanding of the research on self-evaluation and self-assessment in education is important. In early counselor education research, Martin and Gazda (1970) explored the capacity and benefits of self-evaluation for counseling students (Martin & Gazda, 1970). Participants were 43 graduate students who were enrolled in a counseling practicum class at the University of Georgia. Using a pretest-posttest control group design, participants were divided into two groups, comparing a group of students who were self-evaluating their performance with students who did not engage in self-evaluation. Self-evaluation scores were also compared with supervisor evaluation of counseling performance. Counseling performance was assessed using four psychotherapeutic interaction scales: Non-Possessive Warmth, Accurate Empathy, Intensity and Intimacy of Interpersonal Contact, and Therapist Genuineness or Self-Congruence. Trainees in the self-evaluation group evaluated their counseling performance immediately after facilitating live counseling sessions using the four scales, whereas supervisors evaluated a video recording of the session. Self-evaluation scores were compared to the supervisor's evaluation of counseling performance. Findings suggest that counselor self-evaluation of counseling performance had high concurrent validity when compared to the supervisor evaluation of counseling skills,

suggesting that scores were similar between evaluation type. Trainees who self-evaluated their performance increased empathy levels when compared to trainees who did not self-evaluate. Overall, self-evaluation of counseling performance is not only beneficial to counselor education but, given these results, beneficial to ethical counseling practice. Limitations of this study include supervisors only evaluating select clips from the video recording as well as not adding a qualitative branch to appreciate the facilitators and barriers of self-evaluation. Future research may benefit from a multilevel mixed methods design to appreciate both qualitative and quantitative levels of counseling students and supervisors/educators (Martin & Gazda, 1970). Self-evaluation of skill development improves performance.

In a more recent study on comparing self-assessment with supervisor assessment, Gonsalvez et al. (2023) examined the differences in developmental competency ratings comparing supervisee self-assessment with supervisor assessment. Participants were 141 psychology trainees-supervisor dyads during a two-year training period. Trainee participants were enrolled in either a master's level or doctoral level psychology program and completing clinical placements in Australia. Trainees were divided into three categories based on completed placement hours: less than 299 hours, 300-599 hours, and 600 or more hours. Supervisor participants were board-approved clinical supervisors for clinical psychology trainees. At the end of the clinical placement, the trainee and supervisor dyads each blindly completed the Clinical Psychology Practicum Competencies Rating Scale no more than two weeks apart from each other. Data for this study was sourced from a different multisite study on competency assessment. Using between-groups experimental design, self-rating scores by trainees were compared to supervisor rating scores to examine trajectories across the trainee level and

competency domain. Findings suggest a growth trajectory as trainees rated themselves as gaining competencies across the two years of training, with no sign of plateau. Trainees rated themselves as stronger in foundational competencies when focused on relational skills, attitudes, and values and weaker when competencies focused on knowledge and knowledge application. When compared to supervisors, trainees may be more likely to acknowledge limitations in areas of knowledge and less likely to acknowledge limitations in areas of relationship skills. Overall, supervisors and trainees differed in their evaluation of competency development. Trainees significantly underestimated self-assessment of skills development early in training and overestimated skill development as they approached graduation, suggesting a steeper growth trajectory. On the other hand, supervisor evaluation suggests a flatter growth trajectory than trainee self-assessment. Supervisor assessments indicated that trainees demonstrate significant underestimation early in training, slight improvement during the midpoint of training, and slight overestimation at the end of training. The imposter phenomenon for trainees is suggested as one explanation for under-estimation early in development. Regardless, it is recommended that evaluation discrepancies should be monitored and reflected upon during supervision. Limitations were the use of a between-groups experiment rather than a repeated-measures design as well as social desirability, as supervisors and trainees were aware scores would be shared with each other. Future research would benefit from a qualitative branch to understand the differences in competency scores as well as explore the role feedback plays in changing competency scores (Gonsalvez et al., 2023). When comparing self-assessment to supervisor assessment in training, educators need to remember that differences may exist among scorings.

Given the number of skill and competencies associated with counselor education, educators have made efforts to develop intentional programs that account for skill development. Little et al. (2005) examined the impact of a skills based training program on skill development, self-evaluation, and cognitive complexity (Little et al., 2005). Participants were 59 counselor trainees who were taking a counseling theories course at a CACREP accredited counselor program. Using a quasi-experimental pretest posttest design, 40 counselor trainees were enrolled in the experimental group and participated in the Skilled Counselor Training Model, and 19 counselor trainees were enrolled in the control group and received a traditional introduction to counseling curriculum. The Skilled Counselor Training Model (SCTM) promotes skill acquisition through mastery of counseling skills, applying skills in simulated sessions, engaging in supervision, and promoting accurate self-evaluation. The Skilled Counseling Scale (SCS) was utilized for self-report and expert report through observation to rate the trainee's application of counseling skills during a simulated session. Three trained reviewers measured cognitive complexity using the Role Category Questionnaire (RCQ), which relies on the written observation of behaviors of the trainee in session. Findings suggest that skills-based training enhances counseling skills and behaviors that are associated with quality counseling and outcomes. Trainees in the experimental group scored significantly higher than the control group on post-test measures. When comparing self-report to the expert report, trainees in the control group rated their skill performance as higher than trained raters on the posttest, whereas trainees in the skilled-based training rated their performance lower than trained raters. These findings suggest that engaging in skills-based training promoted a different quality of self-assessment, where before the skills-based training trainees overestimated their skill performance. Accuracy

of self-assessment can be improved by offering trainees the results of their pretest performance, which promotes skill mastery and more accurate self-monitoring. Overall, skills-based training that promotes self-assessment results in early skills acquisition and promotes other valuable counseling skills including self-monitoring, self-efficacy, and cognitive complexity. Limitations were the use of intact groups within the same institution and a smaller control group than experimental group. Future research may benefit from exploring cognitive complexity and self-assessment at various stages of counselor development and the impact of specific education strategies to enhance trainee self-evaluation skills (Little et al., 2005). To promote self-assessment, educators and learners benefit more accurately from sharing in results of assessments with each other to promote more accurate self-monitoring as it relates to a specific standard of practice.

More recent research has attempted to examine unique research designs to capture accurate self-assessment among students. Soto et al. (2023) examined accurate self-assessment of multicultural awareness and knowledge by having students reflect back on baseline levels of knowledge and awareness at the end of a multicultural course. Participants were 169 undergraduate students enrolled in an upper level multicultural psychology course. The Multicultural Learning Assessment (MLA) was utilized to measure perceived knowledge and awareness of multicultural competency. Using a retrospective pretest-posttest design, students completed the MLA before the start of the course, and then retrospective reassessment using the MLA at the end of the course. The retrospective reassessment asked participants to reflect back on their initial knowledge and awareness after having completed the entire course. Findings suggest that students may not have the skills to accurately self-assess their multicultural

awareness until after they have received content on multicultural competence. Students' retrospective reassessment scores were lower than their original pretest scores. At the start of the course, students overestimated their knowledge and awareness. At the end of the course, students recalibrated their self-assessment to reflect their knowledge and awareness more accurately before engaging in the multicultural course. Educators may achieve more accurate baseline assessments from students if asked to adjust their assessment at the end of a course or training. Limitations of this study include the use of a new measure of multicultural competence as well as the risk that students may have determined the goals of the project, which could have influenced their responses. Future direction could benefit from comparing self-assessment scores with behavioral assessment, utilizing a more well established assessment tool, and considering capturing qualitative data about the experiences of retrospective reassessment (Soto et al., 2023). Allowing opportunities for learners to reflect and re-assess performance builds capacity for future self-evaluation.

As a creative approach to self-evaluation, journaling has been implemented in counselor training to support skill development for reflection. Karayigit et al. (2023) investigate the impact of reflective journaling after role play scenarios supports microskills development for graduate students in helping professions. Participants were 22 graduate students from clinical psychology, school psychology, or school counseling programs who had completed a Techniques of Counseling and Psychotherapy course. As an experiential component of the course, students practiced counseling microskills through role play sessions with classmates and then participated in a supervision session focusing on feedback from peers and the instructor. After supervision, students were invited to write journal entry for each practice session reflecting on the counseling

session, skills demonstrated, skills needing practice, feedback received, and overall experience. Using qualitative content analysis, journal entries were examined for key themes. Findings suggest that five themes emerged, including emotional experience, self-efficacy, challenges and complexities of counseling skills, feedback, and self-evaluation. Trainees described various affective experiences before and during role play sessions, with some highlighting that anxiety decreased as they engage in more roleplay sessions. On the other hand, some students expressed increased anxiety as new skills were added to the practice repertoire. In terms of self-efficacy, overall confidence increased as students participated consistently in role play session, which increase their confidence in the role of counselor. Despite increased confidence, trainees acknowledged difficulty in implementing counseling skills and the overall complexities of counseling. Silence was identified as one of the more difficult skills to practice. Continuous and immediate feedback were identified as important to growth, especially when both positive and constructive feedback is shared in psychological safe environment. For evaluation, students reported that watching video recordings of role play sessions offered an opportunity to gain new perspectives; by reflecting on their strengths, weaknesses, and specific microskill needs, students were able to map plans for ongoing skill development. Overall, reflective practice in the form of journaling post role play scenarios supports self-efficacy in skill development and performance. Limitations were the use of convenience sampling with a small sample size from three different degree programs and participants having participated in a course facilitated by the principal investigator. Future research would benefit from member checking the themes with participants to ensure their ideas are accurately reflected as well as considering quantitative approach to

measuring reflective ability (Karayigit et al., 2023). Creating opportunities for learners to self-evaluate supports reflective practice and improves self-efficacy for skill performance.

Self-Debriefing in Simulation Education

In the field of healthcare simulation, self-debriefing has been utilized as an approach to formative self-evaluation. Kang and Yu (2018) aimed to compare the effectiveness of student self-debriefing (SSD) before instructor-led debriefing (ID) and instructor-led debriefing (ID). The participants were 123 nursing students in their fourth year who had a year of clinical practice at two universities in South Korea. Using a quasi-experimental, pretest-posttest design, participants were divided into either the experimental group (SSD and ID) or control group (ID only) to compare the effectiveness of debriefing on problem-solving, team effectiveness, debriefing assessment, and debriefing satisfaction. Problem-solving was measured using the Problem Solving Process Inventory for Adults. Team effectiveness was measured using a validated tool on team effectiveness. Debriefing quality was measured using the Debriefing Assessment for Simulation in Healthcare (DASH), and satisfaction was measured using a visual analog scale. Each measure was captured before and after each simulation and debriefing experience. Nursing students in the experimental group engaged in a simulation, followed by a video review of performance, and then completed a self-debriefing questionnaire, followed by an instructor-led debriefing; participants were randomly assigned to participate in a range of 1-5 SSD depending on the number of simulation scenarios depending on their assigned sequence. Nursing students in the control group participated in the simulation immediately followed by an instructor-led debriefing. Findings suggest that participants who engaged in self-debriefing and instructor-led debriefing scored significantly higher in problem solving and debriefing

satisfaction. The more times participants engaged in SSD and ID together the great their scores improved in all areas except for team effectiveness. Implementing SSD before ID created opportunities for participants to identify their own strengths and weaknesses before engaging in peer feedback. While not significant, debriefing assessment and team effectiveness improved as students completed the SSD more frequently, suggesting that as students became more familiar with the tools utilized, their assessment scores increased. Debriefing satisfaction was higher for participants in the experimental group than the control group. Limitations of this study include the time needed to complete SSD after simulation and self-debriefing being a new skill for participants. Future research could benefit from standardizing the process for self-debriefing and consider the qualitative experiences of engaging in both types of debriefings (Kang & Yu, 2018). Implementing self-debriefing before instructor-led debriefing may benefit learner outcomes in simulation-based education.

More recent research has aimed to better understand the impact of self-debriefing on knowledge and experience. Within the realm of virtual simulation, Verkuyl et al. (2019) examined the differences in impact for self-debriefing, self-debriefing followed by small group debrief (no more than 15), and self-debriefing followed by large group debriefing (no more than 30). Participants were 254 undergraduate nursing students who completed a virtual game simulation on prenatal care followed by a self-debriefing document. Using a mixed methods design, participants were assigned to one of three conditions. The control condition consisted of self-debriefing alone. Individuals who were assigned to the experimental conditions returned a week later to participate in either a small or large group debriefing session. Nursing knowledge was assessed on multiple choice test developed for this study, and debriefing experience was

measured using the Debriefing Experience Scale (DES). Findings suggest that nursing students valued the self-debrief before the group session, as it allowed them to gather and evaluate their thoughts before engaging in conversation. Additionally, findings across the small and large group conditions were almost identical for satisfaction and knowledge. Nursing students who participated in self-debriefing followed by group debriefing scored their debriefing satisfaction higher than those who participated in self-debriefing alone. Interestingly enough, nursing students enrolled in self-debriefing alone spent the least amount of time completing the self-debriefing document, suggesting that value was lower as these students were not going to have to reference them in a group discussion. Qualitative data suggests that those nursing students who participated in self and group debriefing appreciated the opportunity to share and hear perspectives from others, reflect on their self-debrief, and to gather answers from faculty. Limitations of this study include the use of random assignment rather than random sampling and low reliability of the knowledge assessment. Future research could benefit from engaging learners across different learner levels, consider the difference in being debriefed by a familiar or unfamiliar faculty member, and larger group sizes (Verkuyl et al., 2019). Self-debriefing may be most beneficial when paired with group debriefing, especially as it relates to learner satisfaction.

To better understand what occurs for learners during self-debriefing, Verkuyl et al. (2020) conducted a qualitative, focus group study to understand the experiences of students engaging in self and group debriefing sessions after in-person simulation. Participants were 24 fourth year undergraduate nursing students at three different universities who engaged in collaborative simulation as part of a nursing practice course. Four focus group sessions were conducted with six to 10 nursing students, using six semi-structured, open-ended questions to

better understand their experiences. Using thematic analysis, four interconnected themes emerged from the data: psychological safety, learning, methodology, and reflection. In terms of psychological safety, nursing students shared that self-debrief offered them an opportunity to pre-process, which reduced stress. Moreover, students felt safer relying on the self-debrief as no one was required to review their answers, and students were empowered to share aspects of their self-debrief in the group debrief voluntarily. The increased psychological safety associated with self-debriefing allowed for more honest reflections, which contributed to more productive dialogue during the group sessions. In terms of learning, self-debriefing allowed students to organize and evaluate their thoughts before sharing them in the group forum. Engaging in the self-debrief left students feeling more confident in their knowledge and performance, as they evaluated themselves as knowing more than they thought during the simulation. Those individuals who only observed the simulation found the self-debriefing created a near-to experience that made them feel like they performed hands-on during the scenario. In terms of methodology, the questions asked to guide the self-debriefing were seen as impactful for guiding the reflection process, and that 10-15 minutes was adequate for self-reflection. Using the same questions for the self-debrief in the group debrief was also highlighted as beneficial for repetition. In terms of reflection, self-debriefing offers a scaffolded reflection being able to write down experiences, which then allowed for more efficient use of time and translation to practice during the group debriefing. Overall, self-debriefing optimizes self-assessment for learners to contextualize knowledge, identify knowledge gaps, and draw connections to future practice, which prepare them to better hear feedback and perspectives from others during group debriefing. A limitation of this study is the used of convenience sampling for focus group, as

self-selection may demonstrate motivation to provide positive answers. Future research could benefit from examining the relationship between self-debriefing and psychological safety, and the best ways to implement self-debriefing (Verkuyl et al., 2020). As a formative self-assessment, self-debriefing shows promise as a useful tool for learning, which educators responsible for faculty development may be able to optimize in the skill development of future faculty.

Video-Assisted Self-Assessment

Video recording has been utilized in health professions education for training and skills development for many years, from recording live encounters with clients to simulated sessions utilizing peer role plays. Kpanja (2001) examined the effectiveness of videotape recording in teacher education prior to full-time employment. The participants were 40 student-teachers at a university in Nigeria. Using a quasi-experimental pretest-posttest design, 20 student-teachers enrolled in the experimental group, where they engaged in microteaching with video recording and playback, and 20 student-teachers enrolled in the control group, where they engaged in microteaching without video recording. Microteaching skills sessions involved student-teachers using peer role playing to practice brief teaching strategies. Findings suggest that student-teachers who used video recording and playback had significant improvement in microteaching compared to the control group. Faculty observation also indicates that student-teachers who used video playback engaged more confidently with microteaching, whereas student-teachers who did not engage in video playback struggled in subsequent experiential activities. Limitations of this study include limited control over peer role plays, learning taking place outside of the classroom, and cultural differences among students. Future research could benefit from a more complex

research design to understand the outcomes of video recording interventions as well as the mechanisms that support learning through self-evaluation (Kpanja, 2001). Video recording has been shown to be beneficial in skills training and development.

Expanding research into nursing education, Eom et al. (2020) examined skills practice using video recordings and self-evaluation of core nursing skills. Participants were 43 nursing students attending a four year undergraduate university in Korea. Using a quasi-experimental, pretest-posttest design, 21 nursing students were enrolled in the experimental group, where they engaged in video recording of core nursing skills and self-evaluation, and 21 nursing students were enrolled in the control group, where they engaged in traditional training. Over the course of a two-hour practice lab, nursing students in the experimental group were oriented to video recording, given the opportunity to practice intramuscular injection and suction, followed by a recording session of skills performance and then self-evaluation through video review Pretest-posttest was measured using a Confidence to Practice scale and a Problem Solving Ability scale. Posttest skills performance was measured using a performance checklist that was developed for this study; the performance checklist was utilized for student self-evaluation and expert rating by the researcher. Findings suggest that nursing students who engaged in video recording and self-evaluation score significantly higher on performance and confidence to practice compared to nursing students engaged in traditional training. Being able to review their own performance, nursing students were able to self-evaluate for areas of improvement, which promotes self-regulated learning. Problem solving, however, did not yield a statistically significant difference between the two groups. Limitations of this study include the use of convenience sampling rather than randomized controlled design and that blind review by expert rater was not guaranteed.

Future research would benefit from examining the impact of intervention using a more complex research design, consideration for using simulated patient methodology over manikin simulation, and gather qualitative experiences of conducting self-evaluation (Eom et al., 2020). Self-evaluation using video recordings supports learners in increasing performance and confidence in skills practice.

Using a more complex research design to understand the best approaches for feedback on skills practice, Halim et al. (2021) examined the most effective form of feedback for suturing skills by comparing expert feedback, video feedback, and self-assessment (Halim et al., 2021). Participants were 51 university students and junior doctors who were all novices in laparoscopic surgery. Using a prospective randomized, blinded trial, participants were equally divided into three groups to compare expert feedback, video feedback, and self-assessment. All participants underwent a familiarization process, which involved a short lecture, orientation to equipment, and skills practice prior to engaging in skills performance. Pre-feedback assessment involved each participant completing a laparoscopic suture within a 10-minute time frame, which was recorded for feedback. Participants then participated in one of the three feedback conditions. For post-feedback, participants engaged in a second round of practice and re-performed and recorded a laparoscopic suture. At the end of the study session, all participants completed a questionnaire about their experience and confidence. Findings suggest that all types of feedback yielded statistically significant improvements in checklist scores and global scores of improvement. Specifically, video feedback had the largest improvement, followed by self-assessment, the verbal feedback yielded the smallest improvement. Expert feedback is more effective with video review, as engaging with an expert during video review can promote a deeper reflective practice.

Self-assessment offers learners the opportunity to replay their performance to be able to engage in ongoing learning from their practice session, especially learning from their mistakes and tracking the progress of skill development. Limitations of this study include participants not being trained to proficiency and utilizing a skill that has a steep learning curve requiring repetitive, deliberate practice. Future directions could benefit from evaluating the long-term benefits of video feedback and self-assessment, implementing a data collection tool to gather specific changes learners make for skills acquisition, and using a longer period of study to evaluate toward competency (Halim et al., 2021). Educators may find video-assisted feedback and self-assessment more beneficial than verbal feedback, as both support master learning towards skills acquisition for novice learners.

Video-assisted self-debriefing provides a unique opportunity for a self-assessment and structured approach to identify areas of strength and improvement to drive self-regulated learning. Tudor et al. (2019) compared the learning outcomes of video-assisted self-debriefing and standard debriefing after simulation (Tudor et al., 2019). Participants were 49 emergency medicine residents with between 1-3 years of experience. Using a randomized cohort study, 25 residents used video self-assessment, while 24 residents participated in standard debriefing after engaging in two emergency department procedural sedation simulations (EDPS). Skills performance was measured using an observer checklist created for the study and completed as self-evaluation and expert rater to guide standard debriefing. Quality of care was measured using the Quality of Patient Care Assessment by each learner as well as two core faculty members in the residency. Findings suggest that video-assisted self-debriefing using the checklist yielded similar evaluation scores between learner self-assessment and faculty assessment. Performance

improvement was similar for residents in both groups. Video review may be particularly beneficial for more novice learners or early skill development. Limitations of this study include losing participants in the standard debriefing group and residents may not focus on the same aspects of performance as faculty. Future research could benefit from understanding the focus of assessment for both learners and faculty as well as examining the structures needed to optimize self-regulated learning in health professions education (Tudor et al., 2019). Self-assessment can be impactful and yield similar outcomes with faculty evaluation when guided by a checklist or criteria-reference.

Expanding the self-assessment research from simulation to virtual reality (VR), Andersen et al. (2023) compared the impact of structured self-assessment during VR simulation training on cadaveric dissection performance (Andersen et al., 2023). Participants were 35 otorhinolaryngology residents in post-graduate years two through five with limited experience with temporal bone surgery. Using a prospective, educational intervention study, 17 residents participated in the intervention cohort, and 18 participants from a reference cohort—a historic cohort that did not engage in VR or structured self-assessment. The learning intervention included structured self-assessment during a virtual reality (VR) simulation training, where participants rated themselves using a self-assessment rating form consisting of eight items. Participants were oriented to the assessment tool and reviewed instructional videos on the content areas. Following each VR simulation experience, participants completed the structured self-assessment. Findings suggest that structured self-assessment improved performance across VR simulation practice as well as during cadaveric dissection. Higher performance during VR simulation training also contributes to higher performance on cadaveric dissection, pointing

towards the positive effect of transferring skills from virtual reality to tactile skills practice. Limitations include the use of a reference cohort and the inability to control the potentially difficult anatomy of an actual cadaver, which can impact skill performance for novice learners. Future direction could benefit from exploring the qualitative perspectives of learners to understand how they made changes to their skill performance and what contributed to those changes (Andersen et al., 2023). For self-assessment to be successful, learners need to have some understanding of the criteria or standards used to evaluate their performance.

To understand what influences performance changes because of self-assessment, Plant et al. (2013) examined the process of informed self-assessment to understand what contributes to adjusting self-assessment of performance. Participants were 16 residents who were either in their second or third year. Using mixed methods design, quantitative and qualitative data were gathered to understand how and why residents adjust their self-assessment of performance during a simulated resuscitation. Skills performance was measured using the Ottawa Crisis Resource Management Global Resource Scale (Ottawa GRS). Residents completed a self-assessment of the Ottawa GRS after the simulation and then again after a video review of the same simulation. As a comparison, three trained raters assessed the residents' performance by reviewing the video recording and completing the Ottawa GRS but did not provide qualitative feedback. For qualitative data, semi-structured interviews were conducted one month after the simulation and were audio-recorded for transcription and thematic analysis. Findings suggest that trained rater scores were similar to resident self-assessment scores. All but one resident lowered the majority of their self-assessment scores after video review. Video review served as a significant resource that contributed to adjustments in self-assessment scores. Overall, residents felt self-assessment

was necessary for ongoing learning and support self-directed learning by independently reflecting on performance. When residents received the quantitative scores alone from trainer reviewers, they found the feedback limited as it was not contextualized in qualitative feedback. The anonymity of the reviewers may have contributed to the rejection of feedback despite the objective nature of the evaluation. Additionally, residents are more likely to focus on negative aspects of their self-assessment despite each resident stabilizing the patient during the simulation; an over-emphasis on weaknesses may negatively bias accurate self-assessment. Moreover, corrective feedback serves as a driver for skill development and improvement, as it drives learners to seek out additional feedback and deliberate practice. Finally, while video review was seen as useful, residents also reflect that it was challenging or stressful, yet the benefits of the assessment lead to more accurate evaluation. Limitations of the study include using only one group of learners and the time period between simulation and video review. Future research could benefit from exploring what occurs for learners during video review to better understand performance level and approach to self-assessment (Plant et al., 2013). Educators benefit from understanding what contributes to learner self-assessment, as intentional processes can be used to guide accurate and effective self-evaluation for skills development.

Rationale

Previous research demonstrates that health professionals are not always accurate in assessing their own performance (Bradley et al., 2022; Dunning, 2011; Kruger & Dunning, 1999; Rahmani, 2020; Soto et al., 2023). What we know is that formative assessment is a crucial step for knowledge and skills development (Ambrose, 2010; Bloom, 1968; Guskey, 2023). Within interprofessional simulation education, self-reflection within debriefing is considered the most

impactful tool for knowledge elicitation and mobilization (Guerrero et al., 2022; Ryoo & Ha, 2015). What we do not know is how interprofessional simulation educators develop self-evaluation skills to improve the skills and quality of debriefing and learning. This matters because interprofessional education among health professionals is one proposed solution to closing the workforce gaps that currently exist in health care (WHO, 2006). This study aims to understand how to best train future interprofessional educators not only in their own ability to self-evaluate but provide guidance on how to teach and promote self-evaluation in their future learners.

CHAPTER III: METHOD

Introduction to the Method

To better understand the role of self-evaluation in debriefing skill development, this research aimed to appreciate the perspectives of simulation fellows, faculty, and learners. The multilevel examination required a methodological approach that can account for different levels of analysis, including individuals, teachers, and classrooms (Headley & Plano Clark, 2020). In designing multilevel research, researchers investigate phenomena within these interactive systems to make sense of the bidirectional interplay that occurs among and between the levels (McCrudden & Marchand, 2020). As a result, the overarching integrated mixed methods research question was: what are the experiences of developing self-evaluation skills for simulation fellows in an interprofessional simulation fellowship program?

To answer this research question, the study was broken down into three phases. Phase A aimed to measure and understand how self-evaluation improves performance for simulation fellows. The first quantitative subquestion aimed to compare the differences in debriefing assessment scores by answering the question: Is there a difference in evaluation of debriefing skills and practice between fellow self-evaluation (perceived performance) and faculty evaluation (actual performance)?

Phase B aimed to understand the experience and mechanism at play in developing self-evaluation skills through video-assisted learning tools. To explore this, a mixed methods subquestion guided the process: how do video-assisted learning tools contribute to the development of self-evaluation skills for interprofessional fellows? To understand the impact and influence of video-assisted learning tools, research questions were examined at each stage of the

two stage intervention. First, the impact of video-stimulated think-aloud (Stage One) was guided by one quantitative question: is there a difference in pretest-posttest scores on the ability of self-reflection after engaging in video-stimulated think-aloud sessions? To appreciate the inner workings of the self-evaluation process, two qualitative questions were applied to appreciate the level of the fellow and the faculty separately. The qualitative research subquestion for the fellow examined: how does video-stimulated think-aloud sessions influence self-evaluation skills for simulation fellows? The qualitative research subquestion for the faculty level examined, how does facilitating a video-stimulated think-aloud session impact faculty's impression of the self-evaluation skills and adaptive expertise of a simulation fellow? Second, the impact of video-assisted debriefing the debriefer with faculty coaching/feedback (Stage Two) was guided by one qualitative subquestion. To understand the critical incidents that occur during the feedback process, the qualitative subquestion asked, what are the experiences (critical incidents) of faculty using video-assisted debriefing with coaching and feedback to support simulation fellows in developing self-evaluation skills as a debriefer?

Finally, Phase C aimed to investigate the facilitators and barriers of self-evaluation skill development. The qualitative subquestion that guided this phase examined: how do themes from combined simulation fellow and faculty focus groups help to understand the facilitators and barriers of self-evaluation in the development of debriefing skills and practice for simulation educators?

Considering the questions proposed for this research project, the approach to answering them was deemed multilevel mixed method. Mixing and integration were implemented across the complete design of the study to better understand the phenomenon of self-evaluation. An

interleaving approach to presenting data collection, data analysis, and findings was utilized as it was a more accessible approach to sharing data and was easier for readers to follow (McCrudden & Marchand, 2020). In using a multilevel mixed methods approach, the researcher intended to characterize the complexity and situatedness of self-evaluation of skill development within simulation education.

Study Design

A multilevel mixed methods study was conducted with interprofessional healthcare workers who were part of a simulation fellowship within a large public hospital system in New York City. Headley and Plano Clark (2020) offered a refined definition of multilevel mixed methods research design (MMRD) as driven by a multilevel theory about a system for a better understanding of three characteristics of that system: the holistic structure, the individual components (levels) that emerge from, give rise to or evolve in tandem with the structure, and the processes (mechanisms) at work between the components and the structure (p. 153). In other words, MMRD not only integrates quantitative and qualitative methodologies, but it also explores different levels and inquiry to examine a complex phenomenon (McCrudden & Marchand, 2020) more comprehensively. It requires a working theory for the multiple levels and data and analysis at each level to derive meta-inferences from a multilevel phenomenon (Headley & Plano Clark, 2020). McCrudden and Marchand (2020) argued that MMRD is particularly useful in addressing critical needs within education, which aligns nicely with exploring the system that exists between fellow, faculty, learner, and intervention. In this study, data will be collected from three levels (fellow, faculty, intervention) to examine the experiences

and processes that support learners and educators in developing self-evaluation skills through video-assisted learning tools to enhance debriefing skill development.

In consideration of study design, Headly and Plano Clark (2020) argued that MMRD benefits from attending to six defining features: theoretical grounding, mixed methods research design, sampling strategy, data collection, data analysis, and integration (p. 155). Each phase attends to the multiple levels and systems with respect to the structure, levels, and mechanisms. Theoretical grounding invites the researcher to ground their research within a theory about the multilevel system. The design needed to include at least one strand of qualitative and quantitative inquiry and aim to generate inferences from both strands as well as meta-inferences from integrating inquiries. The sampling strategy needed to consider more than one level within the identified system under investigation. Data collection worked to uncover evidence about, between, and among the levels, utilizing collection tools that uncover knowledge about the multiple levels. From this perspective, the researcher gathered data with the intention to crosswalk during data analysis. Finally, integration leads to meta-inferences by examining the additional insights and characteristics that arise from mining both the quantitative and qualitative data across multiple levels (Headly & Plano Clark, 2020). By attending to the six defining features of MMRD, researchers intentionally design studies that attend to multilevel systems and complex phenomena.

Within the context of this study, a fixed mixed methods design was applied, implying that the qualitative and quantitative strands of research have been preplanned and will be carried out as designed (Creswell & Plano Clark, 2018). Mixed methodologists advised researchers to select a personal approach to design and guide their research projects. In a typology-based approach,

the researcher selects a design from a specific category based on the purpose of study and research questions (Creswell & Plano Clark, 2018). Intent, sequencing, importance, and interactions (mixing) between strands of inquiry inform the selection of a specific typology. Given the integrative nature and focus on the systems of learning, a complex-level typology was the best approach for this proposed research. Complex-level typology may be labeled as integrated, iterative, and synergistic, to synthesize the basic typologies and more specifically embrace mixed methods as a third research paradigm (Tashakkori & Teddlie, 2010). Tashakkori, et al. (2021) proposed mixed methods multistrand designs, which emphasize mixing and integrating methods across conceptualization, experimentation, and inference. More specifically, this research project employed a parallel, multilevel mixed design to answer the proposed set of related research questions (Tashakkori et al., 2021). A parallel approach was considered given the nature of the triadic relationship levels of learners, fellows, and faculty, yet these three separate levels integrate into the qualitative strand of inquiry at two points across the study design. In some respects, these points of convergence borrow from a more iterative and dynamic design (Maxwell et al., 2015) while appreciating the framing of fixed methods design (Creswell & Plano Clark, 2018). This convergence mirrors the integration of knowledge this project seeks to understand by involving interprofessional simulation fellows as participants. Within the lens of mixed methods research, interdisciplinarity aimed to create common ground and generate comprehensive understanding among disciplines, more commonly known as team building (Szostak, 2015).

To answer the overarching mixed methods research question, what are the experiences of developing self-evaluation skills for simulation fellows in an interprofessional simulation

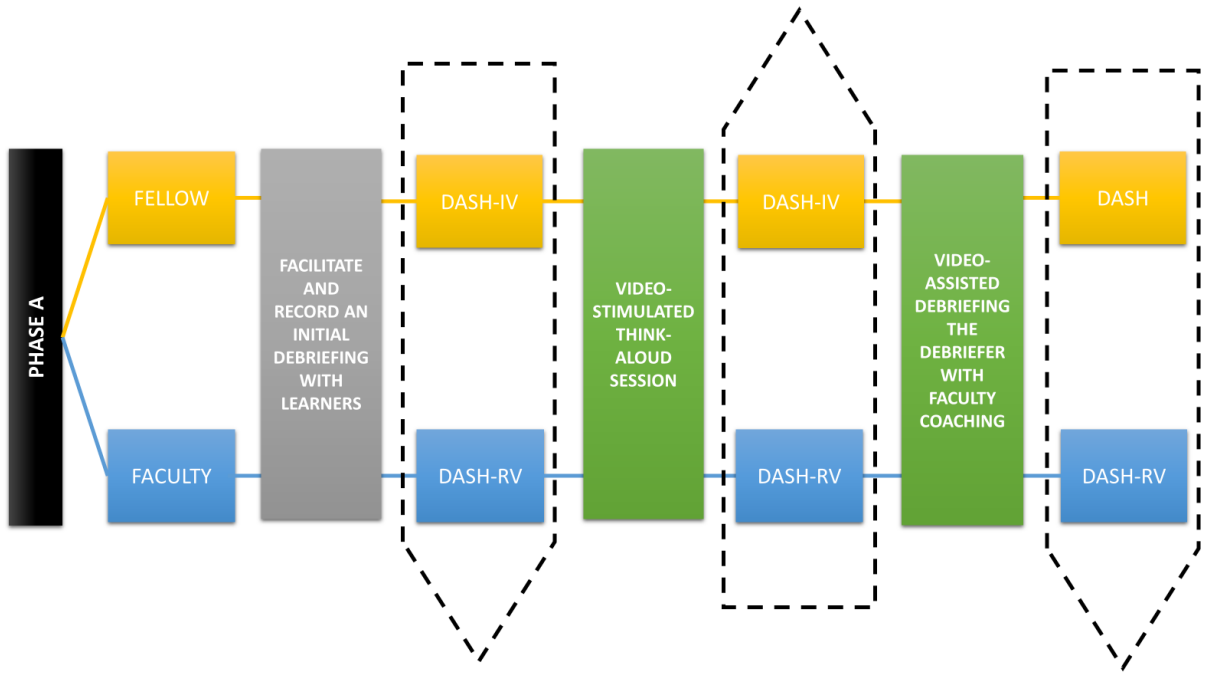
fellowship program, this dissertation included three nested studies using a multilevel mixed methods research design. As a result, this study investigated across levels between participant groups and levels within the research design, suggesting an integrative approach to mixed methods (Tashakkori et al., 2021). Each phase of the overall study aims to answer nested subquestions in service of answers for the overarching research question.

Phase A

The first study aimed to answer one research question: SUBQUAN A1: Is there a difference in evaluation of debriefing skills and practice between fellow self-evaluation (perceived performance) and faculty evaluation (actual performance)?

Figure 1

Visual Display of Study Design for Phase A



Note. This visual display highlights the data collection process for Phase A.

For the quantitative strand of this multilevel mixed methods research design, a one-group pretest-posttest pre-experimental design was utilized to examine the overall impact of the video-assisted learning tools intervention between two debriefing sessions. Pre-experimental design aims to study a single group's experience with a specific intervention in the context of the experiment without a control group comparison (Creswell & Creswell, 2018). This design was often selected when investigating a new intervention for an educational program (Gliner et al., 2017). Purposive sampling was utilized to engage a group of Simulation Fellows already in a cohort within a Fellowship Program managed by the primary investigator's Simulation Center. Simulation fellows facilitated a 10-15 minute debriefing session with a group of learners attending a prescheduled course, then engaged in a structured video-assisted self-evaluation process (intervention). Data was collected from simulation fellows in the form of a demographic survey and self-assessment using the Debriefing Assessment for Simulation in Healthcare-Instructor Version (Simon et al., 2012). Data from faculty was collected using the DASH-Rater Version (Simon et al., 2018) as a formative assessment of the debriefing skills and practice of the fellow in the debriefing session. Since external events and maturation are threats to validity in this study design, the length of the study took place across a three-week period to mitigate internal validity threats (Creswell & Creswell, 2018).

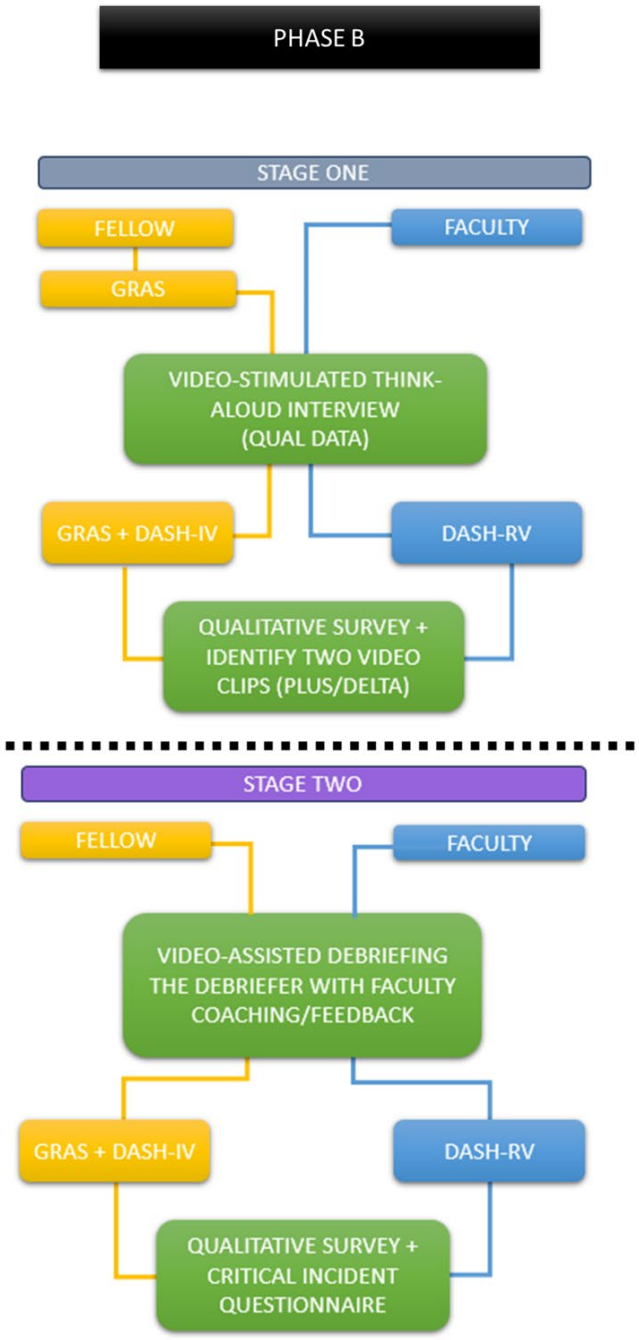
Phase B Video-Assisted Evaluation Learning Tools (Nested within Phase A)

The second study aimed to examine the experiences of developing self-evaluation skills through self-reflection and self-assessment with coaching and feedback. Phase B was nested within the Phase A as this phase aims to illuminate the mechanisms that promote self-evaluation within this intervention. Being that the research questions investigated the systematic

relationship between fellows and faculty, the research approach for Phase B borrowed from a parallel multilevel mixed methods approach (Tashakkori et al., 2021). This mixed methods study aimed to answer the overarching mixed methods subquestion. SUBMM B1: How do video-assisted learning tools contribute to the development of self-evaluation skills for interprofessional fellows? Both Stage 1 and Stage 2 occurred in the same study visit typically across a reserved two-hour period.

Figure 2

Visual Display of Study Design for Phase B



Note. This visual display highlights the data collection process for Phase B.

Stage 1: Video-Stimulated Think-Aloud

Stage 1 aimed to answer the following subquestions: SUBQUAN B1: Is there a difference in pretest-posttest scores on the ability of self-reflection after engaging in video-stimulated think-aloud sessions? SUBQUAL B1: How does video-stimulated think-aloud sessions influence self-evaluation skills for simulation fellows? SUBQUAL B2: How does facilitating a video-stimulated think-aloud session impact faculty's impression of the self-evaluation skills and adaptive expertise of a simulation fellow?

Before engaging in any video-assisted evaluation learning tools, fellows completed the necessary quantitative tools. For the quantitative strand, simulation fellows completed the DASH-Instructor Version (Simon et al., 2012) to self-evaluate their debriefing skills and performance in Phase A. To measure capacity for self-reflection, simulation fellows completed the Groningen Reflection Ability Scale (GRAS; Aukes et al., 2007). Next, simulation fellows engaged in a structured self-reflection process by viewing the video recording of their debriefing from Phase A. For the qualitative strand, a video-assisted think-aloud interview protocol (Johnson et al., 2023; McIntyre, 2022) was implemented to record the thought process and reflections of simulation fellows reviewing their debriefing skills and performance through video recording. Think-aloud offered an interview approach where the individual shares their internal thought process with minimal interruption from the interviewer (Ericson & Simon, 1993; Johnson et al., 2023). While watching their video recording, simulation fellows were guided by faculty to reflect aloud on the plus/delta of their debriefing skills and performance. The think-aloud self-reflection session was recorded to generate transcripts for data collection, quality assurance, and future thematic analysis. After the video-stimulated think-aloud protocol

was completed, fellows completed the DASH-IV and the GRAS tools again to explore any change in self-evaluation that may have occurred after the self-reflection process, along with a qualitative questionnaire on their experience engaging in the think-aloud.

Simultaneously to the fellow's self-evaluation process, faculty witnessed and guided the video-stimulated think-aloud interview and completed the DASH-RV as a second measure of debriefing skills and performance as well as consider a plus/delta for the fellow to generate data to discuss in a feedback session during Stage 2. Faculty also completed a qualitative questionnaire on their experience with facilitating the think-aloud as well as commentary on the fellow's capacity for self-evaluation by making meaning of the Fellow's score on the GRAS. Through the qualitative questionnaires, both simulation fellows and faculty identified short video clips from the video-recorded debriefing session that they each think displayed one strength (plus) and one growing edge (delta) for the fellow's debriefing practice to be collaboratively examined in Stage Two.

Stage 2: Video-Assisted Debriefing the Debriefer with Faculty Coaching/Feedback

After completing Stage One of the intervention, simulation fellows engaged in a video-assisted debriefing the debriefer (VAD the D) with faculty coaching and feedback session. In building on the skills developed in Stage One, the second stage was guided by the following research question: SUBQUAL B3: What are the experiences (critical incidents) of faculty using video-assisted debriefing with coaching and feedback to support simulation fellows in developing self-evaluation skills as a debriefer?

Faculty facilitated the session using the Debriefing the Debriefer approach (Cheng et al., 2017) guided by the PEARLS debriefing framework (Eppich & Cheng, 2015). Training and

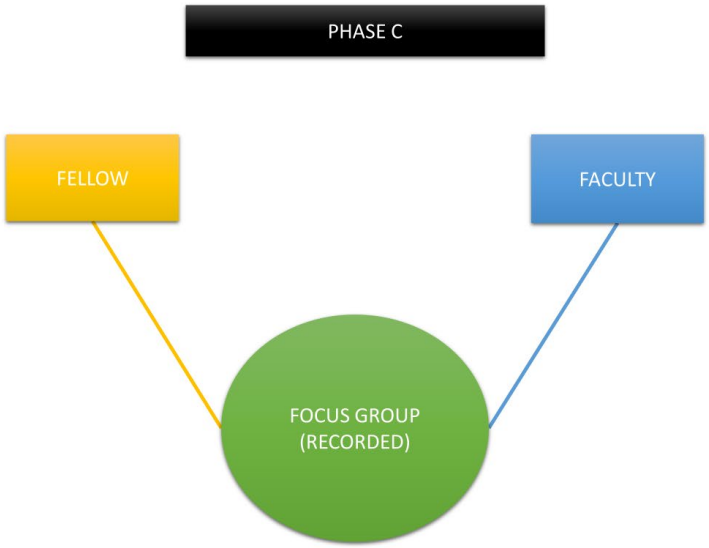
facilitator instruction guide was provided to faculty. Video recordings were reviewed during the analysis phase, where faculty utilized a blended approach to support self-assessment, direct feedback, and coaching (Eppich & Cheng, 2015). At the end of the video-assisted debriefing, simulation fellows completed the DASH-IR and GRAS, while faculty completed the DASH-RV. In addition to their quantitative tools, both simulation fellows and faculty completed a qualitative questionnaire about their experiences in the video-assisted debriefing the debriefer with faculty coaching and feedback.

Phase C (Nesting between Phase A and B)

The final phase of this research involved a qualitative strand. Simulation fellows and faculty participated in a focus group to discuss their experiences in the research process overall as it relates to developing self-evaluation skills. Study C aimed to answer the research question: how do themes from combined simulation fellow and faculty focus groups help to understand the facilitators and barriers of self-evaluation in the development of debriefing skills and practice for simulation educators? The principal investigator conducted the focus group session using a facilitator guidebook (Morgan & Spanish, 1984). The focus group conversation was recorded for transcription and thematic analysis to answer the proposed research question.

Figure 3

Visual Display of Study Design for Phase C



Note. This visual display highlights the data collection process for Phase C.

Study Context and Intervention

This study took place in a Simulation Center within a large public healthcare system in New York. Informed consent and a demographic questionnaire were formulated into an electronic survey that participants completed prior to engaging in the study. Informed consent included contact information for the academic researcher, an introduction, a statement of purpose, a note about voluntary participation with questions to elucidate understanding, type of data collection and procedures, recording procedures, risk and benefits, and confidentiality (ACA, 2014; G.2.a), sharing of results, right to refuse or withdraw, and whom to contact (Creswell & Creswell, 2017; ACA, 2014, G.2.c.; Patton, 2015).

Intervention

A three stage process to develop self-evaluation skills using video-assisted evaluation learning tools was developed as the intervention for this dissertation project. Given the multilevel nature of this project, the interventions for the simulation fellow and the interventions for the faculty ran parallel to each other. The intervention design for the simulation fellow was scaffolded after self-regulated learning theory, which offers a three stage process of forethought, performance, reflection (Zimmerman, 2015). The intervention design for the faculty was scaffolded after mastery learning theory, which offers a three stage process of planning, managing, and evaluating (Guskey, 2023). The interactive system the two processes create as they relate with one another was at the heart of this investigation around self-evaluation skill development. Prior to engaging in the intervention, simulation fellows had already facilitated a 10-15 minute debriefing session that was recorded. Simulation fellows and faculty completed an initial Debriefing Assessment for Simulation in Healthcare (DASH) tool (Brett-Fleeger et al., 2012). Each of these measures served as a pre-assessment (Guskey, 2023) of debriefing skills and performance.

Stage 1: Forethought/Planning

In the forethought phase, the simulation fellow considered the amount of effort and self-efficacy it may take to learn and improve by considering their own competence and task analysis (Zimmerman, 2015). Simulation Fellows watched the video recording of their debriefing session, while using a retrospective, video-stimulated think-aloud reflection process on their performance, focusing on the plus/delta of debriefing skills and performance. After the review, they completed the Debriefing Assessment for Simulation in Healthcare-Instructor

Version (DASH-IV), the Groningen Reflection Ability Scale (GRAS), and a short qualitative questionnaire. During the think-aloud session, fellows identified one short video clip that represents their strengths and one short video clip that represents a growing edge to be utilized for structured debriefing in Stage Two.

Parallel to the simulation fellow, the faculty engaged in the planning phase of the mastery learning instructional process. In planning for mastery learning, the educator identifies the learning goals and standards for practice (Guskey, 2023). Engaging with pre-assessment materials (debriefing recording, evaluations, previous evaluations, classroom engagement), faculty may be able to determine what additional knowledge and skills the learner may need to move closer to mastery. Within this phase, faculty facilitated the video-stimulated think-aloud session. During the think-aloud, faculty only engage with the fellow by sharing reminders to pause and think-aloud; no feedback or coaching is provided by faculty during this stage. They also identified one short clip that represents a strength of debriefing skills, and one short clip that represents a growing edge or area of improvement of debriefing skills. After facilitating the think-aloud session, faculty completed the Debriefing Assessment for Simulation in Healthcare-Rater Version (DASH-RV) along with a qualitative questionnaire around their experience of witnessing the think-aloud session as well as provide insights around how they understand the fellow arrived at their score on the GRAS.

Stage 2: Performance/Managing

In the performance phase of self-regulated learning, the fellow aimed to optimize their efforts by considering time management, practicing their skills, and engaging in a self-observation process (Zimmerman, 2015). Within the context of this intervention, the

performance in question was the simulation fellow's performance of self-evaluation in relationship to the faculty's feedback and coaching. Simulation fellows brought two self-identified video clips from their debriefing to engage in a targeted and intentional review of learner assessed strengths and growing edges.

In managing towards mastery learning, faculty prepared to facilitate formative assessment to diagnose knowledge and performance gaps and offer corrective and enrichment activities to bridge/close the identified learning gap (Guskey, 2023). To facilitate the learning process, faculty utilized a Debriefing the Debriefer approach (Cheng et al., 2017) by implementing the PEARLS debriefing framework to guide the coaching and feedback session (Eppich & Cheng, 2015). The hidden curriculum involved social and skill modeling by using the same framework simulation fellows were using to facilitate debriefings with learners. The ritual of using the same framework reduced the potential for surprise and increased psychological safety promoting more explicit reflection (Cheng et al., 2017; Kolbe et al., 2020). Faculty also brought the two video clips they identified that represent a strength and growing edge of the simulation fellow from a facilitator focused perspective.

Stage 3: Self-Reflection/Evaluating

Formative assessment is crucial to skills acquisition and mastery learning for adaptive expertise (Bloom, 1968; Rudolph et al., 2008; Sadler, 1989; Wood et al., 2016). In the self-reflection phase of self-regulated learning, the fellow self-evaluated their performance as it relates to their identified goals during the forethought phase (Zimmerman, 2015). Fellows also began to make attributions as to why their performance turned out the way that it did, while also appreciating their emotional reactions to their performance and progress (Winne, 2015). Learner

self-assessment using plus delta was one approach to explore formative self-assessment (Cheng et al., 2021). Video clips were reviewed during the analysis phase of the debriefing, with an intentional focus on the strengths and growing edges for targeted feedback and coaching (Cheng et al., 2017).

Faculty and fellows used the recently completed DASH tools as a criteria-referenced assessment tool to explore perceived performance (self-report) and actual performance (direct measure) as it relates to standards of debriefing (Andrade & Valtcheva, 2009; Cheng et al., 2017; Guskey, 2023). Faculty were able to utilize the PEARLS Debriefing Checklist (Cheng et al., 2016) or the Peer Coaching: Debriefing Form (Cheng et al., 2017) to help guide the feedback process, but none of them elected to do so given familiarity with the tools and the shared mental model of the fellowship program. After the video-assisted debriefing the debriefer, simulation fellows and faculty completed their respective DASH tools as well as qualitative questionnaires about their experiences during the Debriefing of the Debriefer. This process ended with a collaborative focus group discussion between all fellows and faculty about the overall learning experience.

Participants

When considering a mixed methods sampling design, Collins et al. (2007) encouraged researchers to consider time orientation and the relationship of the data. For this study, multilevel mixed methods sampling will be utilized to appreciate sets of samples gathered from at least three different levels within the study (Onwuegbuzie & Collins, 2007). Previous research demonstrated that multilevel sampling is used more than 50% of the time in mixed methods research design within educational psychology (Collins et al., 2007; Tashakkori et al., 2021). The

three levels within this study involved the learners (classroom), the fellow (student), and the faculty (teacher). To achieve these three levels of participants, purposive sampling (Gliner et al., 2017) and case sampling (Tashakkori et al., 2021) were utilized to select intact groups of learners, fellows, and faculty from the healthcare simulation program. This sampling model provided the necessary flexibility to be able to involve multiple components or phases within the research design. For this study, participants were four Simulation Faculty and 12 Simulation Fellows.

Simulation Fellows

Fellows came from a variety of professional backgrounds including doctors, nurses, social workers, creative arts therapists, and infection prevention. Being an interprofessional fellowship, they also came from different departments and service areas, including emergency medicine, pediatrics, behavioral health, community care, home health, obstetrics, emergency preparedness, respiratory therapy, and nursing education. Considering current fellow engagement in research, it was made clear that participation has no impact on standing within the Fellowship program (ACA, 2014; G.2.b.). No inducements were provided for participation in this study.

Simulation Faculty

Simulation Faculty contributed to the Fellowship Program in the role of faculty or mentor. They were either graduates of a Simulation Fellowship Program themselves or have worked extensively in Healthcare Simulation for several years. They represented a variety of clinical disciplines including emergency management services, respiratory therapy, emergency medicine, staff wellness, obstetrics, and nursing education. Faculty were recruited based on their

past experiences as debriefers and availability to participate in the research study. No inducements were provided for participation in this study.

Learners

Learners came from the courses currently being conducted by Simulation Fellows. They participated in the debriefing sessions but were not enrolled as participants. As they were captured on recording, learners completed informed consent forms. Participation from learners was voluntary.

Data Sources

Demographic Questionnaire

The demographic questionnaire asked about Age, Gender, Ethnicity/Race, Profession, Role, Department/Service Area, Percentage of teaching in current roles, Years of Experience, Title, Previous debriefing experience/training, and Interprofessional Collaboration. The following tools were utilized for data collection.

Debriefing Assessment for Simulation Healthcare

The Debriefing Assessment in Simulation Healthcare (DASH) was developed to evaluate the quality of debriefings within healthcare simulation (Brett-Fleeger et al., 2012). The DASH tool was created to meet a need within the field of simulation-based education to offer a valid and reliable assessment tool. To guide the assessment of debriefings, this tool utilizes a 7-point Likert scale from extremely ineffective (one) to extremely effective (seven) to determine debriefing effectiveness across six elements. As a behaviorally anchored rating scale, the DASH is based on characteristics and behaviors of effective and ineffective debriefings (Brett-Fleeger et al., 2012; Simon et al., 2010a). The six key elements assessed by this tool include establishing an

engaging learning environment, maintaining an engaging learning environment, structuring debriefing in an organized way, provoking engaging discussions, identifying and exploring performance gaps, and helping trainees achieve or sustain good future performance. To support rater scoring, the tool offers elements, dimensions, and behaviors that help guide the rater while scoring a debriefing (Brett-Fleeger et al., 2012). Elements speak to the debriefing behavior. Dimensions speak to competency level. Behaviors are specific examples of how elements may be performed, and the full tool evaluates 23 distinct behaviors across the six elements. Raters offer a score that represents the overall effectiveness of each specific element and are advised to approach the rating from a holistic perspective (Simon et al., 2010a). The DASH-Rater Version (DASH-RV) is designed to be utilized by trained raters, and a comprehensive Rater's Handbook is available as an open-access resource from the Center for Medical Simulation, which provides detailed information necessary to evaluate the elements, dimensions, and behaviors that qualify an effective debriefing (Simon et al., 2010a). The Center for Medical Simulation at Harvard offer a four-hour training course to train raters in reliable and valid scoring. In addition to a rater version, there is also the DASH-Instructor Version (DASH-IV), which is designed for instructors to self-assess their own debriefing and provides diagnostic feedback on performance (Simon et al., 2012). The DASH-Student Version (DASH-SV) is designed for students to evaluate the debriefing practices of their facilitator/debriefer (Simon et al., 2010b). The DASH is available as a short form and long form. The short form is recommended for summative evaluation as it focuses on element scores only (Simon et al., 2011), whereas the long form is recommended for formative feedback as it focuses on dimensions and element scores (Simon et al., 2018). DASH tools are accessible for evaluation as they can be completed in a few minutes and provide useful

information for debriefers to improve the effectiveness of their facilitation (Simon et al., 2010; Simon et al., 2012).

The DASH is considered a best practice evaluation tool within the field of healthcare simulation. In terms of initial validity, the tool was developed based on a literature review and an expert panel of simulation educators and debriefers (Brett-Fleegler et al., 2012). The tool has an overall intraclass correlation of 0.74 and a Cronbach's alpha of 0.89 (Brett-Fleegler et al., 2012). Since its initial development, the DASH has been used in several research studies to evaluate the effectiveness of debriefing skills and practice (Brown et al., 2018; Coggins et al., 2020; Cooper et al., 2012; Durand et al., 2017; Glatts et al., 2021; Kolbe et al., 2013; Meguerdichian et al., 2022; Tanoubi et al., 2019; Zhang et al., 2020). The DASH tool has also been translated for multiple languages and underwent cross-cultural validation including Portuguese for Portugal and Brazil (Couto et al., 2021), Spanish for eight Spanish speaking countries (Muller-Botti et al., 2021), and French (Policard, 2015); it is also available in German, Chinese, Japanese, and Korean from the Center for Medical Simulation. Given the multilevel of educator and learner within this study, educators utilized the DASH-RV to evaluate the performance of learners and learners utilized the DASH-IV to self-assess their own performance. This tool was specifically selected as it is considered a best practice in debriefing assessment in the field of healthcare simulation and the principal investigator is a formally trained DASH rater.

Groningen Reflection Ability Scale (GRAS)

The Groningen Reflection Ability Scale uses a 5-point Likert scale of 23 items to measure health professionals' personal reflective abilities (Aukes et al., 2007). It evaluates three relevant aspects: self-reflection, empathetic reflection, and reflective communication. Self-

reflection looks at self-exploration of thoughts and feelings. Empathic reflection examines understanding the experiences of others. Reflective communication considers openness and responsiveness to feedback. After completing the tool, participants are left with one GRAS personal reflection score, with scores ranging from 23-115 with higher scores representing greater ability for self-reflection. The tool carries satisfactory content validity and acceptable internal consistency, with Cronbach's alpha of 0.74-0.83 (Aukes et al., 2007). Previous research administering the GRAS has yielded similar scores for internal consistency with health care management students (Rostami et al., 2019), nursing students in debriefing (Zhang et al., 2020), medical students in problem-based learning (Grosseman et al., 2014), narrative medicine with medical students (Gowda et al., 2018) and undergraduate social work students (Stanley & Bhuvaneswari, 2016). This tool was specifically selected to capture the reflective ability of fellows to given insights into their internal cognitive processes.

Qualitative Data Sources

Qualitative questionnaires provided participants an opportunity to self-report their attitudes, feelings, and behaviors in their own words and meaning as they relate to a specific area of interest (Tashakkori et al., 2021). Patton (2015) offered a useful metaphor when they described a questionnaire like a photograph–a capture of a moment in time. When formulating questions for a questionnaire, researchers need to consider the literacy level of participants and ensure that questions are simple and clear to all individuals completing them (Tashakkori et al., 2021). Moreover, questionnaires should only include singular questions containing no more than one idea per question (Patton, 2015). Using questionnaire variants (Creswell & Plano Clark, 2018), the qualitative questionnaire was attached to the DASH assessment for participants to

complete. Two distinct qualitative questionnaires were administered at two different points during the research study.

Video-Stimulated Think-Aloud Protocol (TAP)-Qualitative Interview Process

The think-aloud approach is a form of one-to-one interview that allows researchers to understand the internal thoughts of participants. Ericsson and Simon (1993) introduced the Think-Aloud Interview and Protocol Analysis, which invites learners to share their thought processes aloud as they perform a specific task or skill. Their complete protocol offered the think-aloud interview as a form of data collection and the protocol analysis as a hypothesis-driven data analysis through deductive coding (Ericsson & Simon, 1993). For the purposes of this research study, think-aloud interview process was utilized for data collection, but thematic analysis was utilized for data analysis. Johnson et al. (2023) advocated that think-aloud interview paired with thematic analysis offers a unique opportunity to explore self-monitoring. It allows data to be collected in real-time, which may provide different insights into complex phenomena like learning and thinking (Koro-Ljungberg et al., 2013). Through this process, thoughts from participants can be verbalized at three hierarchical levels: simple verbalization, descriptive verbalization, and explanatory verbalization (Ericsson & Simon, 1993). The aim of the TAP in this study was to have folks reach explanatory vocalizations, where they explain their thoughts and processes rather than just simply verbalizing what occurred. In other words, this approach was utilized to overtly manifest inner monologue around choice making during debriefing skills practice.

Through this process, participants transformed their thoughts from working memory into verbal data that can be collected and analyzed (Johnson et al., 2023). This transformation can

occur concurrently while performing the task or skills or retrospectively immediately after completing the task or skill (Johnson et al., 2023). This study borrowed from both as it utilized video recording for retrospective TAP, while allowing the simulation fellow to re-experience their skills through video. Video has been utilized in research to support self-observation after completing a task or skill (Koro-Ljungberg et al., 2013) and has more recently been referred to as video-stimulated think-aloud in educational research (McIntyre, 2022). Video-stimulated think-aloud can be useful when reflecting on tasks or skills that occur over a lengthy period that could compromise the reliability of traditional retrospective TAP (Ericsson & Simon, 1993).

Johnson et al. (2023) described the think-aloud interview as occurring in four steps: task selection, verbal timing selection, participant preparation, and verbal data collection. First, researchers select the task, with recommendations that cognitive tasks be particularly useful for think-aloud. For this study, the task selected is debriefing. Second, the researcher determines verbal timing, where they identify how long a pause can be between vocalizations while reviewing the task or skill (Johnson et al., 2023). In their original proposal, Ericsson and Simon (1993) advised that pauses be no shorter than five seconds and no longer than 60 seconds. In this study, pauses can be no longer than 60 seconds, at which point the simulation fellow was asked to think-aloud. Faculty only engage with the fellow to offer these reminders. Third, participant preparation is required to help learners best engage in the think-aloud process (Ericsson & Simon, 1993; Johnson et al., 2023). Simulation fellows were given a practice exercise to complete to become familiar with the protocol. Finally, verbal data collection involves clear directions for the learner as well as consistent procedures around reminders and interruptions (Johnson et al., 2023).

Post Video-Stimulated Think-Aloud Fellow Qualitative Questionnaire

The following questions composed a qualitative questionnaire to be completed by the fellow in addition to the DASH and GRAS:

1. What was your initial reaction to watching the video recording of the debriefing?
2. On the Dreyfus and Dreyfus Model of Skills Acquisition, which stage are you currently in and why?
    - Novice;
    - Advanced Beginner;
    - Competent;
    - Proficient;
    - Expert

    [COMMENT BOX]
3. What phase of the PEARLS debriefing did you perform well and why/how?
    - Setting the Scene
    - Reactions
    - Description
    - Analysis
    - Takeaways

    [COMMENT BOX]
4. What phase of PEARLS debriefing are you hoping to improve performance and why?
    - Setting the Scene
    - Reactions

- Description
- Analysis
- Takeaways

[COMMENT BOX]

5. After reviewing the video recording, what advice or coaching would you offer the debriefer in the video to improve their skills?
6. What goal do you have for yourself as it relates to your skill development?
7. How confident are you in your debriefing skills?
8. During your next video-assisted evaluation session, you will collaborate with a simulation faculty member in a feedback and coaching session. What clip would you like to show that demonstrates a strength of yours in debriefing?
9. During your next video-assisted evaluation session, you will collaborate with a simulation faculty member in a feedback and coaching session. What clip would you like to show that demonstrates a growing edge of yours in debriefing?

Post Video-Stimulated Think-Aloud Faculty Qualitative Questionnaire

The following questions compose a qualitative questionnaire to be completed by the faculty in addition to the DASH:

1. What was your initial reaction to watching the video recording of the debriefing?
2. On the Dreyfus and Dreyfus Model of Skills Acquisition, which stage is the fellow currently in and why?
   - Novice;
   - Advanced Beginner;

- Competent;
- Proficient;
- Expert

[COMMENT BOX]

3. What phase of the PEARLS debriefing does the fellow perform well and why/how?
   - Setting the Scene
   - Reactions
   - Description
   - Analysis
   - Takeaways

   [COMMENT BOX]
4. What phase of PEARLS debriefing are you hoping the fellow improves performance and why?
   - Setting the Scene
   - Reactions
   - Description
   - Analysis
   - Takeaways

   [COMMENT BOX]
5. After reviewing the video recording, what advice or coaching would you offer the debriefer in the video to improve their skills?

6. Review the GRAS score from the Fellow. How do you explain the score the fellow gave themself on the GRAS?
7. What goal would you recommend for them for their skill development?
8. During your next video-assisted evaluation session, you will collaborate with the fellow in a feedback and coaching session about their debriefing skills and quality. What clip would you like to show that demonstrates a strength in their debriefing?
9. During your next video-assisted evaluation session, you will collaborate with the fellow in a feedback and coaching session about their debriefing skills and quality. What clip would you like to show that demonstrates a strength in their debriefing?

Critical Incident Questionnaire

To generate experiences from the video-assisted debriefing the debriefer session, the Critical Incident Questionnaire (CIQ; Brookfield, 1995) was implemented to gather data. As a qualitative survey, it was originally designed to gather information from students about their experiences with learning and educator instruction in the classroom. The tool consists of five questions that guide participants to reflect on specific, critical moments, thoughts, or emotions that occurred for them during a specific class session. Within counselor education, the tool has been effectively utilized as a formative evaluation to determine which aspects of a multicultural counseling course were most impactful, or not, to students (Linstrum et al., 2012). It has also been highly implemented in group counseling as a group assessment tool for treatment monitoring and evaluation (Brouzos et al., 2015; Kivlighan & Goldfine, 1991; Nitza, 2011). It was selected for this study due to its ease of completion and brevity, encouraging participants to spend no more than 5 minutes on each question. Writing expands the approaches for experience

generating to diversify the data collection process and support diverse learning and communication styles. Multiple sources of data are common in qualitative research and further demonstrate legitimacy (Creswell & Creswell, 2017). In the context of this study, the classroom language was replaced to reflect intentional focus and reflection on the video-assisted debriefing the debriefer.

Video-Assisted Debriefing the Debriefer with Faculty Coaching/Feedback Fellow Qualitative Questionnaire

Directions: Now that you have completed the video-assisted debriefing the debriefer with faculty coaching and feedback, please complete the following critical incident questionnaire thinking about the critical moments that occurred during this feedback and coaching session. Please spend no more than 5-minutes responding to each prompt.

1) At what moment in the video-assisted debriefing the debriefer did you feel most engaged with what was happening?
2) At what moment in the video-assisted debriefing the debriefer were you most disconnected from what was happening?
3) What actions that anyone (faculty or fellow) took during the session did you find most affirming or helpful?
4) What action that anyone took during the session did you find most puzzling or confusing?
5) What about the video-assisted debriefing the debriefer session surprised you the most? (This could be about your own reactions, or something someone else did, or anything else that occurs?)

6) From what phase of the PEARLS debriefing did the FELLOW (you) select a strength video clip?
    - Setting the Scene
    - Reactions
    - Description
    - Analysis
    - Takeaways
7) For what phase of the PEARLS debriefing, did FACULTY select a strength video clip?
    - Setting the Scene
    - Reactions
    - Description
    - Analysis
    - Takeaways
8) What do you make of these two selections?
9) From what phase of the PEARLS debriefing did the FELLOW (you) select a growing edge clip?
    - Setting the Scene
    - Reactions
    - Description
    - Analysis
    - Takeaways
10) From what phase of the PEARLS debriefing did the FACULTY select a growing edge?

- Setting the Scene
- Reactions
- Description
- Analysis
- Takeaways

11) What do you make of these two selections?

12) During the debriefing of the debriefer, do you believe you experienced a moment where you realized your skills needed to be improved? If yes, briefly describe that moment and what you will do to improve skills for next time. If no, what factors contributed to your answering no.

13) Which of the following contributed to promoting self-evaluation during this session?

- Faculty support
- A challenge from your faculty
- Watching your performance in video
- Debriefing
- Your own self-reflection
- Something else:___

14) On the Dreyfus and Dreyfus Model of Skills Acquisition, which stage are currently in and why?

- Novice;
- Advanced Beginner;
- Competent;

- Proficient;
- Expert

15) What can you do to progress to the next stage on the Dreyfus and Dreyfus model?

Video-Assisted Debriefing the Debriefer with Faculty Coaching/Feedback Faculty Qualitative Questionnaire

1. At what moment in the video-assisted debriefing the debriefer did you feel most engaged with what was happening?
2. At what moment in the video-assisted debriefing the debriefer were you most disconnected from what was happening?
3. What actions that anyone (faculty or fellow) took during the session did you find most affirming or helpful?
4. What action that anyone took during the session did you find most puzzling or confusing?
5. What about the video-assisted debriefing the debriefer session surprised you the most? (This could be about your own reactions, or something someone else did, or anything else that occurs?)
6. From what phase of the PEARLS debriefing did the FELLOW select a strength video clip?
    - Setting the Scene
    - Reactions
    - Description
    - Analysis
    - Takeaways

7. For what phase of the PEARLS debriefing, did FACULTY (you) select a strength video clip?
    - Setting the Scene
    - Reactions
    - Description
    - Analysis
    - Takeaways
8. What do you make of these two selections?
9. From what phase of the PEARLS debriefing did the FELLOW select a growing edge clip?
    - Setting the Scene
    - Reactions
    - Description
    - Analysis
    - Takeaways
10. From what phase of the PEARLS debriefing did the FACULTY (you) select a growing edge?
    - Setting the Scene
    - Reactions
    - Description
    - Analysis
    - Takeaways

11. What do you make of these two selections?
12. During the debriefing of the debriefer, do you believe the fellow experienced a moment where they realized their skills needed to be improved? If yes, briefly describe that moment and what you think they will do to improve skills for next time. If no, what factors contributed to your answering no.
13. Which of the following contributed to promoting self-evaluation during this session? (Select one or multiple?)
    - ☐ Faculty support
    - ☐ A challenge from your faculty
    - ☐ Watching your performance in video
    - ☐ Debriefing
    - ☐ Your own self-reflection
    - ☐ Something else:___
14. On the Dreyfus and Dreyfus Model of Skills Acquisition, which stage is the fellow currently in and why?
    - ☐ Novice;
    - ☐ Advanced Beginner;
    - ☐ Competent;
    - ☐ Proficient;
    - ☐ Expert
15. What can they do to progress to the next stage on the Dreyfus and Dreyfus model?

Focus Group Discussion

A focus group brings together a group of individuals to discuss a topic of mutual interest to both participants and researchers within the context of a research study. As an approach to data collection, focus groups offer researchers multiple inputs of information, including asking open-ended interview questions, listening to answers from and among participants, as well as observing participant interactions and dynamics in the group process (Tashakkori et al., 2021). Focus groups are moderated by a facilitator who guides the process by asking a series of questions to solicit narrative responses from participants. Focus groups can be utilized as their own self-contained data collection process (Morgan & Spanish, 1984) or be used to make deeper meaning of data collected during a quantitative, qualitative, or mixed methods research design and to illuminate patterns of responses to better explain the previous results (Creswell & Plano Clark, 2018). In other words, focus groups bring together multiple perspectives and voices to construct knowledge about a mutual experience or phenomenon. It can help participants and researchers make sense of the vicarious experiences of all participants around a particular phenomenon (Morgan & Spanish, 1984). While the strengths of focus groups include exploring deep, subjective meaning and observing interactions among participants, weaknesses may include dominating perspectives from one or two individuals and moderator bias (Tashakkori et al., 2021). To mitigate these weaknesses, focus groups benefit from a skilled moderator and clear guidelines for group engagement (Morgan & Spanish, 1984). Unique to mixed methods design, focus groups may also take a mixed methods approach, where researchers collect qualitative and quantitative data within the context of the session (Tashakkori et al., 2021). Quantitative data strategies that are commonly implemented in mixed methods focus groups include the

percentage of participants, rank of ideas, or number of participants who agree with certain themes (Tashakkori et al., 2021). For this study, the following questions guided the focus group between simulation fellows and faculty:

1. What are your initial reactions to the overall experience?
2. What impact did this project have on your ability to self-evaluate?
3. What were some facilitators (supports, influences) for you in developing your debriefing skills? Self-evaluation?
4. What were some barriers for you in developing your debriefing skills? Self-evaluation?
5. What have you learned about the role of faculty and fellows in the development of self-evaluation and debriefing skills? What role did faculty play in the process?
6. How did reviewing the video recording and reviewing impact the self-evaluation (evaluation) of debriefing skills development and practice?
7. Anything else you would like to share that has not been covered?

Data Collection

Multiple sources of data are common in qualitative research and further demonstrate legitimacy (Creswell & Creswell, 2017). Multilevel mixed methods involve data collection across at least two levels to better understand the interactive system and from multiple paths of inquiry (Tashakkori et al., 2021). As a result, qualitative and quantitative data were collected from simulation fellows and faculty. At certain times, data was collected from each level separately and from the interaction between the two levels. For this project, data collection

followed the learning phases of contextualization, decontextualization, recontextualization, and integration.

Contextualization Phase

After obtaining institutional review board (IRB) approvals (University and Hospital System), demographic information and informed consent were obtained from participants electronically. First, each simulation fellow facilitated a 10-15-minute debriefing session using PEARLS debriefing with learners enrolled in a simulation course. The debriefing session was video recorded. Faculty watched the debriefing via video recording. Next, simulation fellows completed the DASH-IV to self-evaluate the quality and skills of the debriefing session. Faculty completed the DASH-Rater Version to evaluate the debriefing skills and performance of the simulation fellow.

Decontextualization Phase

At this point, simulation fellows and faculty engaged in the intervention of the study: video assisted learning evaluation learning tools. This phase included a three stage process grounded in self-regulated learning theory (Zimmerman, 2015) for simulation fellows and mastery learning (Bloom, 1968; Guskey, 2023) theory for faculty.

Stage 1: Forethought/Planning

Simulation Fellows engaged in a video-stimulated think-aloud interview process to reflect upon their skill performance with a particular focus on plus/delta. These think-aloud sessions were recorded for transcription, quality assurance, data checking, and future thematic analysis. After the review, they completed the DASH-IV along with a qualitative questionnaire around their experience of witnessing themselves and their debriefing skills and performance

through video recording. Faculty who facilitated the think-aloud process also took notes of their own as they considered the plus/delta of the fellow's performance. They also identified one short clip that represents a strength of their debriefing skills and one short clip that represents a growing edge or area of improvement in their debriefing skills. After reviewing the recording, faculty completed the DASH-RV along with a qualitative questionnaire about their experience of witnessing the simulation fellow's debriefing skills and performance in the video.

Stage 2: Performance/Managing

Within the context of this intervention, the performance in question was the simulation fellow's performance of self-evaluation in relationship to the faculty's feedback and coaching. Simulation fellows brought two self-identified video clips from their debriefing to engage in a targeted and intentional review of learner assessed strengths and growing edges. Faculty also brought the two video clips they identified that represent a strength and growing edge of the simulation fellow. To facilitate the self-evaluation learning process, faculty utilized a Debriefing the Debriefer approach (Cheng et al., 2017) by implementing the PEARLS debriefing framework to guide the coaching and feedback session (Eppich & Cheng, 2015). These sessions were recorded to ensure quality and for transcription and data analysis if needed for review or data check.

Stage 3: Self-Reflection (Evaluating)

During the video-assisted debriefing of the debrief, simulation fellows were guided to make attributions as to why their performance turned out the way that it did, while also appreciating their emotional reactions to their performance and progress (Winne, 2015). Learner self-assessment using plus/delta and focused facilitation were utilized to examine the video clips

during the analysis phase of the debriefing. Reflection and evaluation focused intentionally on the strengths and then targeted coaching (Cheng et al., 2017) on the growing edges of the fellow. Faculty and fellows utilized their recently completed DASH tools as a criteria-referenced assessment tool to explore perceived performance and actual performance as it relates to standards of debriefing (Andrade & Valtcheva, 2009; Cheng et al., 2017; Guskey, 2023). After the video assisted formative assessment, simulation fellows and faculty completed their respective DASH tools as well as qualitative questionnaires about their experiences during the debriefing of the debriefer.

Recontextualization Phase

After the intervention was completed, simulation fellows had the opportunity to reflect on their experiences through self-assessment and self-reflection, identifying areas for future skills practice. Simulation Fellows completed a self-assessment using the DASH-IV to evaluate their own debriefing skills and performance. Faculty completed the DASH-RV to evaluate the simulation fellows debriefing skills and performance.

Integration (Efficiency & Innovation) Phase

The final point of data collection was an integrated focus group with simulation fellows and faculty. The focus group was conducted by the principal investigator, who followed an interviewer guidebook with focused questions (Morgan & Spanish, 1984). Conversation focused on the overall experience within the context of the study, as well as exploring facilitators and barriers to developing self-evaluation skills as a simulation educator. Focus group sessions were audio-recorded for transcription and reflexive thematic analysis.

Data Analysis

For quantitative data, the analysis was determined by the research question and the selection of a statistical test to address the research question (Creswell & Plano Clark, 2018). For qualitative data, the analysis was determined by the research question and selecting the best approach to interpret the data, which involved simultaneous procedures and winnowing of the data (Creswell & Creswell, 2018). It also involved a mixed method analysis by integrating or mixing the qualitative and quantitative data (Creswell & Creswell, 2018; Creswell & Plano Clark, 2018). A meta-inference process was used to make sense of both sets of data (Tashakkori et al., 2021).

Quantitative Data

Quantitative data was analyzed using JASP, which is a free and open-source program for statistical analysis. Wave analysis was implemented to check for response bias (Creswell & Creswell, 2018). Descriptive analysis of data was utilized to describe, summarize, and explain the quantitative data to examine the relationship between evaluation on debriefing skills and practice between learner participant self-evaluation and educator evaluation (Tashakkori et al., 2021). Difference inferential statistics was utilized to compare the difference in pretest-posttest scores for fellows on the GRAS using a dependent samples t-test (Gliner et al., 2017). Box Plots, Stack Bar Graphs, and visual displays were utilized to compare self-report scores from fellows and direct measures from faculty and learners.

Qualitative Data Analysis

To build legitimacy and trustworthiness in the research process, a specific method needs to be implemented to appreciate and examine the collected qualitative data. Creswell and

Creswell (2017) utilized the metaphor of peeling back the layers of an onion to highlight the core of the findings. Regardless of the qualitative approach, they offered a sequential framework for qualitative analysis: organize and prepare data for analysis, read, and look at all data, start coding all data, generate descriptions and themes, and represent description and themes (p. 193-194). Qualitative data was be analyzed using reflexive thematic analysis originally proposed by Braun and Clarke (2006).

Thematic analysis has been proposed as accessible to multimethod research (Braun & Clarke, 2012), and data was analyzed using MAXQDA. Thematic analysis focused on patterns of meaning across a data set, where the researcher works to identify and organize collective meaning. Reflexivity was central to thematic analysis, and researcher subjectivity drives analysis with the importance of interpretation focusing on constructing themes into meaning-based patterns (Terry & Hayfield, 2021). The researcher's theoretical orientation served as a guide to engage with the data and produce knowledge within that context, or situated truth (Terry & Hayfield, 2021). Within thematic analysis, engagement with the data demonstrated rigor rather than focusing on reliability (Terry & Hayfield, 2021). As a result, effective thematic analysis required the researcher to allow the qualitative research questions to direct the analysis of the data; the researcher focused on identifying meaning-based patterns that aim to answer the proposed research questions (Braun & Clarke, 2012). To engage the data, reflexive thematic analysis involved a systematic six-phase process: familiarization, coding, initial theme generation, developing and reviewing themes, defining and naming themes, and writing the report (Terry & Hayfield, 2021). While Braun & Clarke (2006) offered a phased approach to data analysis, thematic analysis benefits from remaining iterative and focused on quality of

engagement. Reflexive thematic analysis offered reflexibility, while previous researchers offer that data analysis should start with familiarization and coding, before playing with the order of the phases (Braun & Clarke, 2012; Terry & Hayfield, 2021). Intentionality within the first two phases provided a strong foundation for knowledge producing across the latter phases.

As the first phase, familiarization focused on the researcher developing a full appreciation for the data set and beginning to think analytically about it. The researcher started to become intimately familiar with the data before all the data was gathered, which may further inform data collection. During familiarization, it is recommended that the researcher keep notes on initial observations and feelings and consider ways to split the data to make it more manageable. The researcher read and re-read the data to begin the meaning-making process. Researchers asked themselves questions like, “How does this participant make sense of their experiences? What assumptions do they make in interpreting their experiences?” (Braun & Clarke, 2012, p. 61). While there is no prescription for familiarization, Terry and Hayfield (2021) offered the following tips: engage with an analytic mindset, embrace data collection as part of familiarization, keep a journal for reflection, immerse in the audio recordings or written responses, be curious, and keep familiarization notes in a separate notebook. At the end of familiarization, the researcher aimed to be well versed in the data prior to coding and make relevant noticing guided by research questions (Braun & Clarke, 2012).

After becoming familiar with the data, the researcher moved into systematic analysis by generating initial codes based on their relevance to the research questions. Coding allowed the researcher to break down the data into manageable chunks and assign a name or label to the identified chunks (Terry & Hayfield, 2021). By engaging the data through coding, the researcher

began to make the data more meaningful and accessible for further examination. Labels should be specific and succinct yet content-rich enough not to have to review the original data set (Terry & Hayfield, 2021). Coding occurred by labeling your first chunk of data, continuing the review, and deciding if the next chunk of data aligns with an already established code or requires a new code (Braun & Clarke, 2012). Codes took many forms, including descriptive/semantic, or latent/interpretive (Braun & Clarke, 2012). Descriptive codes focused on the content of the data and participant meaning and mirror language. Interpretive codes focused on the meta-meaning that lies underneath the content and rely on in-depth engagement (Braun & Clarke, 2012). It was important to attend to the coding phases as the coded list needs to succinctly communicate the content of interest for the next phases of thematic analysis. Fine-grained coding allowed the researcher to methodically engage and code all relevant data as they relate to and answer the proposed research questions and theoretical orientation (Terry & Hayfield, 2021). Before moving to the next phase, it was useful to conduct another review of coding to attend to the data at a micro and macro level of analysis to ensure that the codes consistently capture the content (Braun & Clarke, 2012; Terry & Hayfield, 2021).

After coding, the researcher actively worked to make meaning of the codes and resources (journal, notes) for the initial theme generation phase (Terry & Hayfield, 2021). While holding in mind the research questions, the coded data was reviewed for similarities and overlap between the codes to begin to illuminate the themes or meaning-based patterns and the best way to "story" the data (Braun & Clarke, 2006; Braun & Clarke, 2012). In developing themes during this phase, Terry and Hayfield (2021) proposed a best practice of approaching themes in this early phase as prototypes, to suggest that themes can change and for the researcher to hold onto

flexibility. They proposed that to arrive at high-quality themes, initial theme generation evolves through a process of construction, deconstruction, and reconstruction. In constructing prototype themes, the researcher clustered, according to their similarities and connections, and promoting, recognizing the relevance of the code to stand alone as a theme (Terry & Hayfield, 2021). Themes benefit from being grounded in data such as extracts from the text and offer organizing concepts that hold the coded data together (Braun et al., 2018). Researchers who approach reflexive thematic analysis with an iterative process center on the emergence of knowledge and playing with data to tell the best story to answer proposed research questions (Braun & Clarke, 2012; Terry & Hayfield, 2021).

After actively generating a list of prototype themes, development and review of themes occurred. In this phase, prototypes were reviewed and considered for their value within the context of the larger data set and for the story they collectively tell towards answering the research questions (Terry & Hayfield, 2021). Braun and Clarke (2012) offered questions to ask to guide the development and reviewing of prototypes: Is this a theme or a code? What are the qualities and boundaries of this theme? Is there data to support it? In asking and answering these questions, the researcher can begin to appreciate the relationship between themes and determining themes from subthemes (Terry & Hayfield, 2021). Reviewing the themes involved appreciating the themes within the context of the data set, which can be supported through thematic mapping to determine which themes best capture the elements most relevant to the research questions (Braun & Clarke, 2012).

Next, the researcher worked towards naming and defining themes. Thematic definitions were written expansions and interpretations of the organizing concepts that provide theme

refinement, advocate for the necessity of the theme, and describe the relational story (Terry & Hayfield, 2021). In writing these interpretations, the researcher examined the quality, focus, and connection of the theme to the research question (Braun & Clarke, 2012). In grounding the central organizing concept further, official naming of themes occurred, which sometimes resulted in changing prototype names to more creative and content-focused names (Terry & Hayfield, 2021). At times, participant words were used to arrive at theme names, further grounding the concept (Braun & Clarke, 2012; Terry & Hayfield, 2021). Most importantly, the names and definitions indicated content/interpretation and bridged the connection between themes and research questions.

Finally, writing the report took place as the researcher moved towards sharing the story of the data. In writing the final report, themes presented in a logical and meaningful manner to support the analysis and answer the proposed research questions (Braun & Clarke, 2012). Terry and Heyfield (2021) provided considerations when writing your report, including providing researcher reflexivity, considering how to integrate themes with discussion, and supporting ideas with data extracts, to name a few. Writing the final report also offered the researcher a final chance to review themes, finalize the analysis, and ensure ideas fit contextually within the manuscript (Braun & Clarke, 2012).

Mixed Analysis

Being that the data within this research study are nested within levels, a multilevel mixed data analysis was the best approach. Multilevel mixed data analysis involves a process of aggregating qualitative and quantitative states and levels to answer interrelated questions (Tashakkori et al., 2021). This mixing process aimed to integrate inferences by comparing

conclusions to create an expanded explanation, absorb data within each other, delineate data, or create higher order (Headley & Plano Clark, 2020; Tashakkori et al., 2021). In borrowing from Onwuegbuzie and Teddlie (2003) mixed methods framework for mixed analysis, the following strategies were utilized within this study: data reduction, data display, data transformation, data consolidation, data comparison, and data integration. Data reduction involves reducing the dimensions of the qualitative data through thematic analysis and quantitative data through descriptive statistics. Data display involves creating visual representations of data. Joint displays were utilized across this research to help identify patterns within and between the qualitative and quantitative data, which can help generate meta-inferences (McCrudden et al., 2021). Joint displays can take many innovative forms, including figures, matrices, table graphs, Venn diagrams, or social network analysis, to name a few (McCrudden et al., 2021). Guetterman et al. (2021) offered four exemplars of joint displays that highlight innovation and crucial features of success: a side-by-side joint display with a box plot, a side-by-side joint display that depicts a figure, a joint display for model development, and a joint display with unique visualization of quantitative and qualitative data plotted on axes. Joint displays can be helpful in exploring and communicating the triangulation of data sets (McCrudden et al., 2021). Data correlation involved the qualitzing of quantitative data (Tashakkori et al., 2021). Data consolidation resulted in the merging of data sets to create new codes or sets (Onwuegbuzie & Teddlie, 2003). Followed by data comparison and integration, where data was considered as a coherent whole. Finally, warranted assertion analysis occurred where all data was reviewed to yield meta-inferences (Onwuegbuzie & Combs, 2015; Tashakkori et al., 2021). Joint displays were also useful in

demonstrating data integration, as it helps more clearly communicate new insights (Guetterman et al., 2015).

Moreover, when conducting mixed analysis, researchers must consider the justification and approach to integrating the qualitative and quantitative data to answer the research question (Tashakkori et al., 2021). Brannen and O'Connell (2015) proposed a guiding framework for integration, advising researchers to approach this framework with flexibility rather than rigidity. In their writing, they synthesized the following approaches: corroboration, elaboration, initiation, complementarity, and contradiction. Corroboration assumes that one set of results from one method confirms the results of another set. Elaboration assumes that one type of data can expand the ideas from another set of data. Initiation assumes that one method inspires a new research question that can be examined using a different method. Complementarity assumes that juxtaposing the two data sets alongside each other mutually enhances the data to appreciate the bigger picture. Contradiction assumes that the two data sets conflict with each other (Brannen & O'Connell, 2015). In mixed analysis, researchers call upon a variety of these approaches to make meaning and deeper understanding of their data to arrive at answers to their research questions. Given the multilevel design of this research project, a number of these data analysis strategies were utilized to appreciate the phenomenon at hand.

Ethical Considerations

This research study abided by the ethical guidelines articulated by the American Counseling Association Code of Ethics (2014). It was the responsibility of the principal investigator to uphold research ethics. In terms of researcher responsibilities, informed consent was captured prior to data collection, and confidentiality was maintained across the duration of

the study through implementation, analysis, and dissemination of findings (ACA, 2014; G.1.). Rights of participants were upheld through accurate explanation of the research study, voluntary participation, ongoing consent at each phase of the study, and opportunities to discontinue participation at any time (ACA, 2014; G.2.a). Given the unique nature of this educational research study, the management of boundaries was crucial to upholding research ethics by creating safeguards where all parties involved have clear expectations, autonomy in decision making, and protection of participant welfare (ACA, 2014; G.3.).

Beyond ethical practice in research and publication, this study also aims to develop education innovations to promote ethical practice in a few areas. Given the focus on self-evaluation, interventions utilized within this study promote monitoring effectiveness of professional practice and taking necessary steps for ongoing professional development (ACA, 2014; C.2.d.). Self-evaluation creates capacity for monitoring professional impairment as well as offers a framework for counselor educators to monitor impairment and practice for students, supervisees, and themselves (ACA, 2014; C.2.g). In doing so, this study promotes ongoing feedback and accurate evaluation of student performance across stages of professional development (ACA, 2014; F.9.a.). To maintain counselor educator competence, educators benefit from developing their own self-evaluation process to fully appreciate the boundaries of their own knowledge and practice (ACA, 2014; F.7.b.). Lastly, ethical decision making is not possible without accurate and honest self-evaluation (ACA, 2014; I.1.b.). Ethical decision making through self-evaluation and consultation with a research committee has been applied across the entire design and execution of this research study.

CHAPTER IV: RESULTS

Demographic Information

Fellow Participants

A total of 12 fellows participated in the study. Of the 12 fellow participants, nine identified as women, two identified as men, and one participant preferred not to answer. In terms of race/ethnicity, four identified as African American or Black, two identified as South Asian, two identified as white, one identified as African, one identified as Latinx, Hispanic, or Spanish Origin, one identified as Middle Eastern, and one participant preferred not to answer. In terms of age, one participant was 21-29 years old, seven participants were 30-39 years, two participants were 40-49 years, one participant was 50-59 years, and one participant was 60-69 years.

Fellow participants either held a master's degree (67%) or a doctorate degree (MD, PhD; 33%). In terms of current profession, three work as medical doctors, two work as midwives, three work as registered nurses, and the remaining worked as an infection preventionist (n = 1), social worker (n = 1), respiratory therapist (n = 1), and licensed creative arts therapist (n = 1). They have worked in their current profession from between 4-48 years, with a mean of 14 years (*SD* = 13.3). Fellow participants specialized in the following areas: emergency medicine (n = 3), emergency management (n = 1), behavioral health (n = 1), maternal health (n = 4), nursing education (n = 2), and administration (n = 1). They have worked in their current specialty between 2-20 years, with a mean of 7.1 (*SD* = 5.4).

Fellow participants were asked to share how much of their 40-hour work week was spent teaching. Each week fellow participants spend anywhere between 0-40 hours per week teaching, with a mean of 14.3 hours (*SD* = 11.8). More than half of the fellow participants spend at least

25% of their work week teaching. When asked to identify the frequency of interprofessional collaboration, on a Likert scale of 1-5, with 1 meaning never and 5 meaning always, 50% of fellow participants reported always, and 41.66% reported usually engaging in interprofessional collaboration, with one fellow reporting only sometimes (8.33%) engaging in interprofessional collaboration.

All fellow participants were enrolled in a yearlong Fellowship receiving formal training as simulation educators. As it relates to their role in simulation and debriefing, most of the fellows self-identified as being both an educator and learner (67%), whereas a smaller number identified as only being educators (25%) or only being learners (8%). When asked about their training in debriefing, most fellows reported minimal experience facilitating debriefing prior to the fellowship. At the point of this study, fellows had been enrolled in the fellowship program for 6-months and completed at least four full-day courses, specifically on debriefing. In the past month, all fellow participants have facilitated anywhere between 1-8 debriefing sessions, with a mean of 3.6 (SD = 2.4).

Faculty Participants

A total of four faculty participated in the study. Of the four faculty participants, one identified as a woman, and three identified as men. In terms of race/ethnicity, three identified as white, and one identified as Latinx, Hispanic, or Spanish Origin. In terms of age, one participant reported age between 30-39 years, two participants were 40-49 years, and one participant was 50-59 years.

Faculty participants either held a doctorate degree (MD, DO; 50%), a master's degree (25%), or some college (25%). In terms of current profession, two worked as medical doctors,

one worked as an EMT/Paramedic, and one worked in healthcare simulation administration. Additionally, all four faculty participants worked as simulation educators. They have worked in their current profession between 8-18 years, with a mean of 13.8 years (*SD* = 5.1). Faculty participants specialized in the following areas: emergency medicine (n = 2), pre-hospital (n = 1), and healthcare simulation (n = 4). They have worked in their current specialty between 1-13 years, with an average of 8.5 years (*SD* = 5.3).

Faculty participants were asked to share how much of their 40-hour work week was spent teaching. Each week, three of the faculty participants spent anywhere between 20-28 hours per week teaching, with a mean of 22.7 hours (*SD* = 4.6). Seventy-five percent of the faculty participants spent at least half of their work week teaching (*M* = 22.7). One of the faculty participants currently worked 100% of their time in administration and took on the role of educator on an as-needed basis. When asked to identify the frequency of interprofessional collaboration, on a Likert scale of 1-5, with 1 meaning never and 5 meaning always, 75% of faculty participants reported always and 25% reported sometimes engaging in interprofessional collaboration.

All faculty participants currently teach in a yearlong Fellowship in Healthcare Simulation and are employed as staff within the Simulation Center that houses the Fellowship Program. As it relates to their role in simulation and debriefing, all faculty self-identified as being simulation educators. In addition to their roles as educators, 75% also identified as Directors of Simulation, and 75% identified as being learners in simulation as well. When it comes to their own formal training as simulation educators, 50% received informal (on-the-job, self-study) training, and 50% received formal (fellowship, graduate school) training. All faculty participants reported

having significant, structured training in debriefing and were trained on the Debriefing Assessment in Healthcare Simulation (DASH) tool by the principal investigator for this study, who was a formally trained DASH rater. In the past month, all faculty participants had facilitated anywhere between 0-8 debriefing sessions (M = 3.75, SD = 3.5).

Factual Reporting of the Project Results

For this multilevel mixed methods research project, the overarching research question was, what are the experiences of developing self-evaluation skills for simulation fellows in an interprofessional simulation fellowship program? To answer this overall question, findings are appreciated across each phase of the study to answer quantitative, qualitative, and mixed methods research questions.

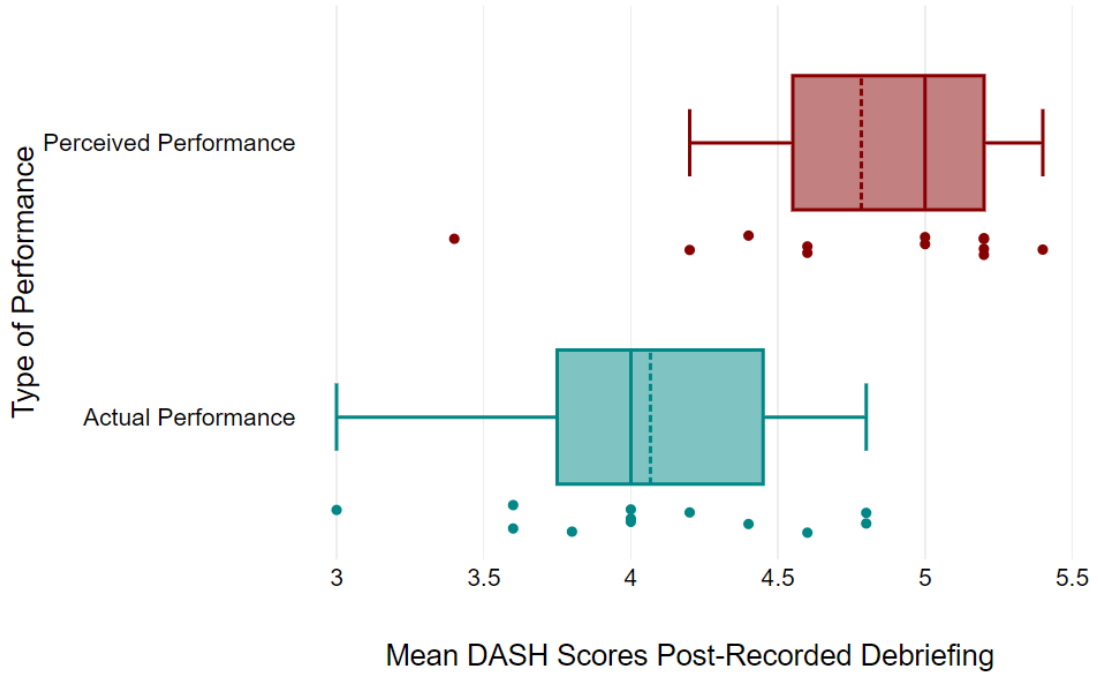
Phase A: Differences between Faculty and Fellow DASH Scores

Phase A of this research project was guided by one quantitative research question: SUBQUAN A1: Is there a difference in evaluation of debriefing skills and practice between fellow self-evaluation (perceived performance) and faculty evaluation (actual performance)? The Debriefing Assessment for Simulation in Healthcare (DASH) was utilized to evaluate the quality and practice of debriefing across three moments of measurement: post-recorded debriefing, post-video-assisted think-aloud, post-video-assisted debriefing the debriefer. While the DASH has a total of six elements for rating, only elements 2-6 will be presented as element 1 “establishes an engaging learning environment,” is only to be rated if the introduction of the course or prebrief of the simulation was observed by the rater. Fellows did not always facilitate these activities and faculty only reviewed the debriefing itself.

After the initial debriefing, the total cohort of fellows scored an average of 4.8 (*SD* = 0.6, Min = 3.4, Max = 5.4) on the DASH-IV, compared to the cohort of faculty assessment on the DASH-RV with an average of 4.1 (*SD* = 0.5, Min = 3.0, Max =4.8). Figure 4 offers a visual display of the comparison between actual and perceived performance after the initial debriefing.

Figure 4

Comparison of Mean DASH Scores for Actual and Perceived Performance Post-Recorded Debriefing



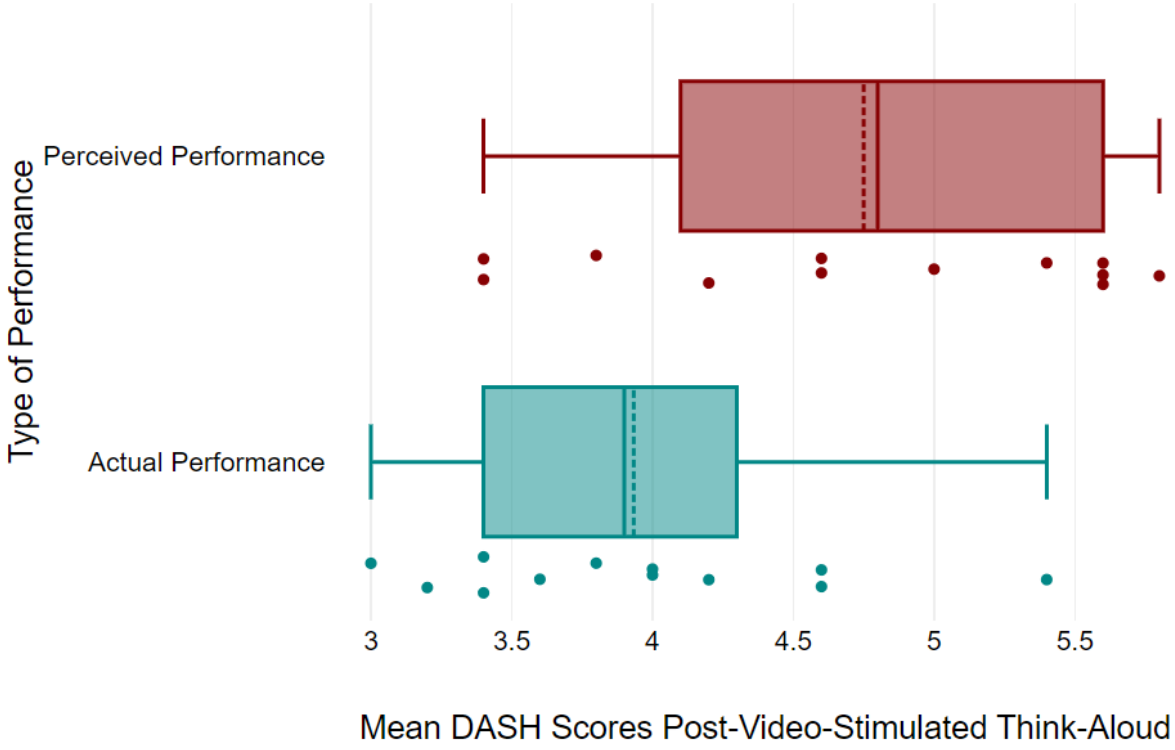
Note. This figure compares mean DASH scores to demonstrate the differences between actual performance (faculty evaluation of fellow) and perceived performance (fellow self-evaluation).

After participating in the video-stimulated think-aloud, the total cohort of fellows scored an average of 4.8 (*SD* = 0.9, Min = 3.4, Max = 5.8), compared to faculty assessment with an

average of 3.9 (*SD* = 0.7, Min = 3.0, Max = 5.4). Figure 5 offers a visual display of the comparison between actual and perceived performance after the video-stimulated think-aloud.

Figure 5

Comparison of Mean DASH Scores for Actual and Perceived Performance Post-Video-Stimulated Think-Aloud



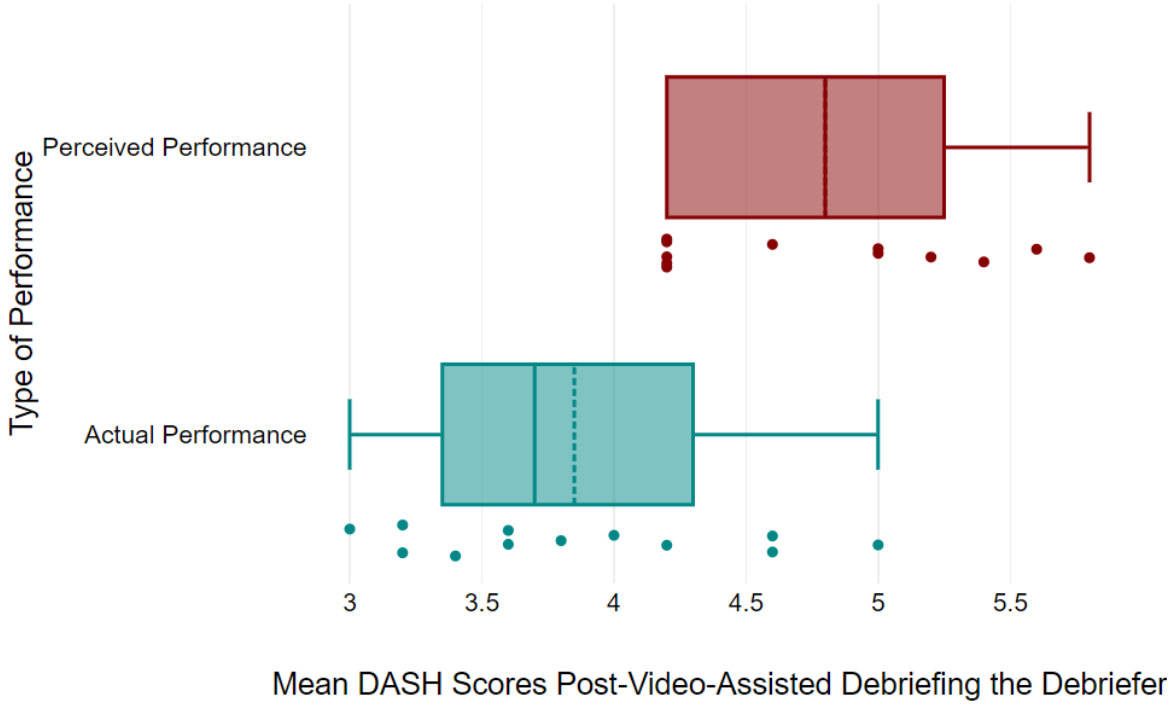
Note. This figure compares mean DASH scores to demonstrate the differences between actual performance (faculty evaluation of fellow) and perceived performance (fellow self-evaluation).

After participating in the video-assisted evaluation intervention, the total cohort of fellows scored an average of 4.8 (*SD* = 0.6, Min = 4.2, Max = 5.8), compared to faculty assessment with an average score of 3.9 (*SD* = 0.6, Min = 3.0, Max = 5.0). Figure 6 offers a visual display of the

comparison between actual and perceived performance after the video-assisted debriefing the debriefer. The cohort means as evaluated by faculty and fellows remained consistent across the three measurements. Overall, the fellow cohort overestimated their performance as their cohort mean scores were higher when compared to faculty evaluation.

Figure 6

Comparison of Mean DASH Scores for Actual and Perceived Performance Post-Video-Assisted Debriefing the Debriefer with Faculty Coaching and Feedback



Note. This figure compares mean DASH scores to demonstrate the differences between actual performance (faculty evaluation of fellow) and perceived performance (fellow self-evaluation).

Table 1

Differences in Mean Scores for Perceived and Actual Debriefing Performance Post-Initial Debriefing

	Perceived	Actual	Difference
Fellow 1	5.4	4.6	0.8
Fellow 2	4.4	4	0.4
Fellow 3	4.6	3.6	1
Fellow 4	5.2	3.8	1.4
Fellow 5	3.4	3	0.4
Fellow 6	5.2	4.8	0.4
Fellow 7	5	4	1
Fellow 8	5.2	3.6	1.6
Fellow 9	4.6	4.8	-0.2
Fellow 10	5	4.4	0.6
Fellow 11	4.2	4	0.2
Fellow 12	5.2	4.2	1

Note. This table displays differences in mean scores for perceived performance (fellow self-evaluation) and actual performance (faculty evaluation) post-recorded debriefing.

Table 2

Differences in Mean Scores for Perceived and Actual Debriefing Performance Post-Video-Stimulated Think-Aloud

	Perceived	Actual	Difference
Fellow 1	5.6	4.6	1
Fellow 2	3.4	3.4	0
Fellow 3	4.2	3.4	0.8
Fellow 4	4.6	3.2	1.4
Fellow 5	3.8	3	0.8
Fellow 6	5.6	5.4	0.2
Fellow 7	5.8	4.2	1.6
Fellow 8	5.6	3.8	1.8
Fellow 9	5	4.6	0.4
Fellow 10	3.4	4	-0.6
Fellow 11	4.6	3.6	1
Fellow 12	5.4	4	1.4

Note. This table displays differences in mean scores for perceived performance (fellow self-evaluation) and actual performance (faculty evaluation) post-video-stimulated think-aloud.

Table 3

Differences in Mean Scores for Perceived and Actual Debriefing Performance Post-Video-Assisted Debriefing the Debriefer

	Perceived	Actual	Difference
Fellow 1	5	4.6	0.4
Fellow 2	4.2	3.2	1
Fellow 3	4.2	3.6	0.6
Fellow 4	4.6	3.2	1.4
Fellow 5	4.2	3	1.2
Fellow 6	5.6	5	0.6
Fellow 7	4.2	4.2	0
Fellow 8	5.4	3.8	1.6
Fellow 9	5.2	4.6	0.6
Fellow 10	4.2	3.6	0.6
Fellow 11	5	3.4	1.6
Fellow 12	5.8	4	1.8

Note. This table displays differences in mean scores for perceived performance (fellow self-evaluation) and actual performance (faculty evaluation) post-video-assisted debriefing the debriefer.

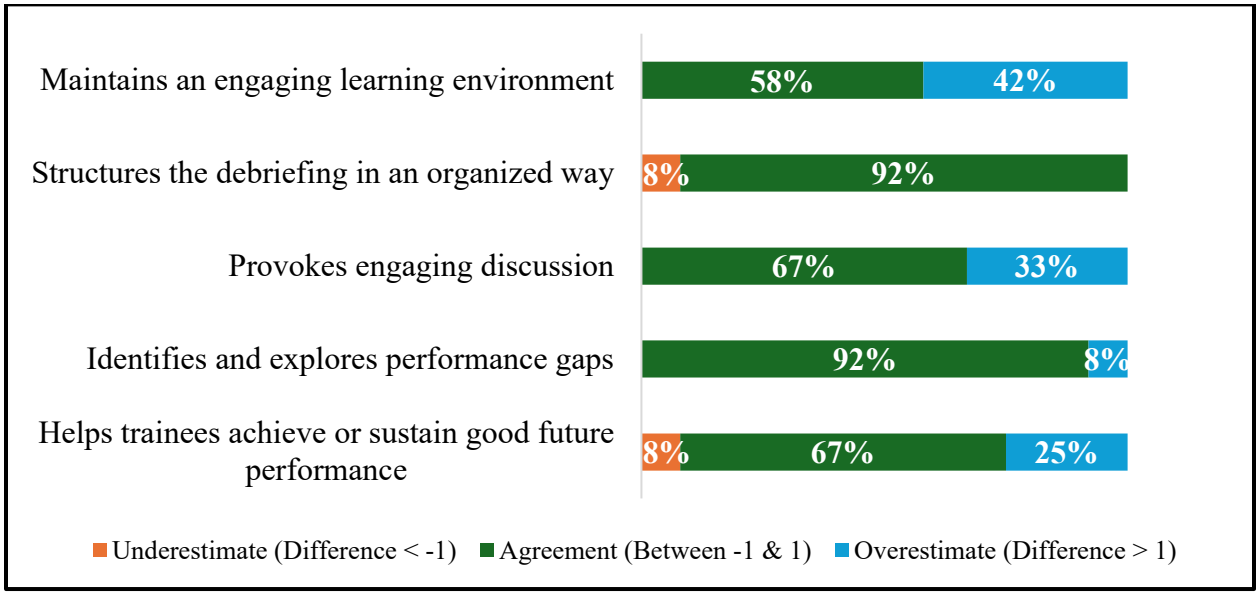
Differences between perceived and actual performance were also explored at each element level (Appendix A). Stacked bar graphs were utilized to display the overall percentage differences in scoring. Underestimation was defined as a difference of less than -1 point between faculty and fellow mean overall DASH score. Overestimation was defined as a difference of greater than 1 point between faculty and fellow mean overall DASH score. Agreement was defined as a difference between -1 and 1 point between faculty and fellow DASH scores, with scores closer to 0 indicating more accuracy between scores.

Post-Recorded Debriefing

Figure 7 displays differences between faculty and fellow initial DASH scores. The highest percentage of rater agreement between perceived and actual performance was achieved in the elements of ‘structures a debriefing in an organized way” (92%) and “identifies and explores performance gaps” (92%). Lowest percentage of rater agreement occurred in the element “maintains an engaging learning environment” (58%), which is the same element to have the highest percentage of fellow overestimation (42%). While two-thirds of fellows scored themselves like faculty on “provokes engaging discussion,” the remaining one-third of fellows overestimated their performance. The most discrepancy in rating occurred for the element “helps trainees achieve or sustain good future performance,” where 8% of fellows underestimated their performance, 25% of fellows over-estimated performance, and 67% of fellows agreed with faculty rating.

Figure 7

Differences between Fellows and Faculty DASH Scores Post-Debriefing



Note. This figure demonstrates the differences between fellow self-evaluation (perceived performance) and faculty evaluation (actual performance) after the fellow facilitated and video recorded a debriefing session.

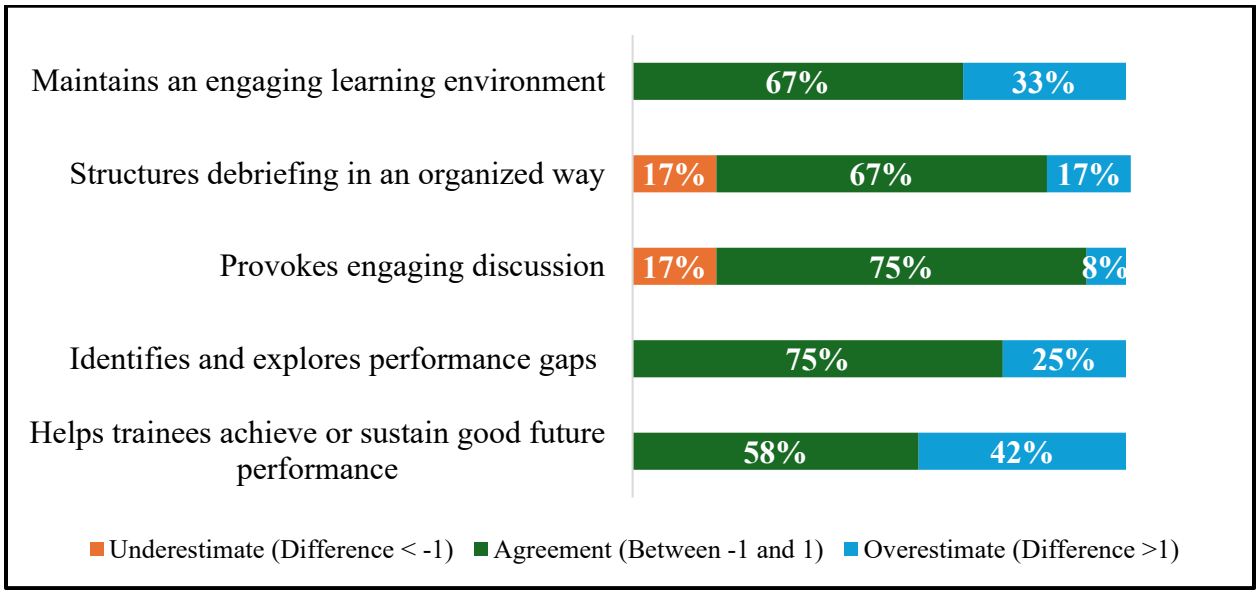
Post-Video-Stimulated Think-Aloud

Differences between perceived performance and actual performance were also recorded after the video-stimulated think-aloud session. Figure 8 displays these differences. Overall, DASH scores shifted for faculty and fellows across all categories, suggesting that the vide-stimulated think-aloud session had some influence on the evaluative process. There was less agreement between perceived and actual performance after the video-stimulated think-aloud session. After the video-stimulated think-aloud session, fellows underestimated their performance as compared to faculty evaluation on the elements of "structures debriefing in an

organized way" and "provokes engaging discussion." Overestimation decreased in the element of "provokes an engaging discussion" from 33% to 8%, suggesting that video-stimulated think-aloud may have led the fellow to become more aware and critical of their actual performance. In terms of "structures debriefing in an organized way," agreement between fellow and faculty soring experienced the greatest shift after the think-aloud. Where previously 92% agreement occurred, after the think-aloud session, agreement decreased to 67%, with an even split of 17% overestimating or underestimating their performance. Where previously, faculty and fellows had a 92% agreement in "identifies and explores performance gaps," after engaging in the think-aloud, fellows were more likely to overestimate their performance in this same area.

Figure 8

Differences between Fellow and Faculty DASH Scores Post-Video-Stimulated Think-Aloud



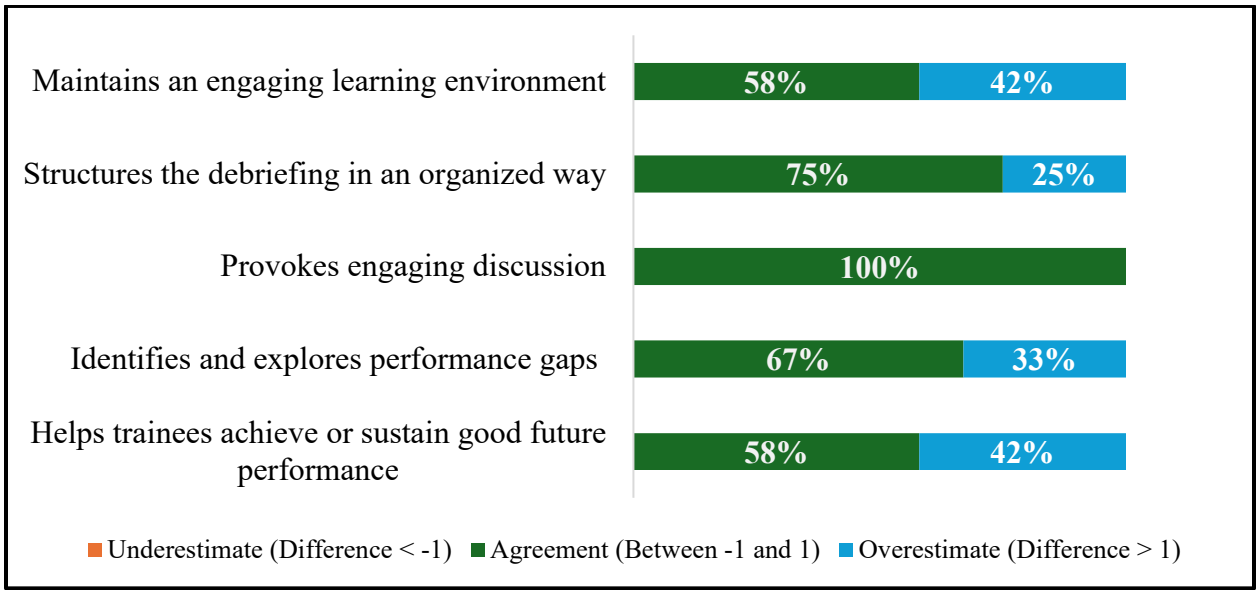
Note. This figure demonstrates the differences between fellow self-evaluation (perceived performance) and faculty evaluation (actual performance) after the fellow engaged in the video-stimulated think-aloud session with faculty observation.

Post-Video-Assisted Debriefing the Debriefer

Differences between faculty and fellow DASH scores were also calculated after the video-assisted debriefing the debriefer (VAD the D). Figure 9 displays the differences between perceived and actual performance. After engaging in the VAD the D, no fellows underestimated their performance. There was 100% agreement in perceived and actual performance on the element "provokes engaging discussion." In all other categories, there was an increase or maintenance of overestimation of performance. In terms of "maintains an engaging learning environment," percent differences returned to the same percentages as the initial assessment post-debriefing, with 58% agreement and 42% overestimating debriefing performance. Overall, fellows were more likely to overestimate performance after engaging in the video-assisted debriefing the debriefer, suggesting that faculty coaching and feedback may have some type of influence on self-assessment.

Figure 9

Differences between Faculty and Fellow DASH Scores Post-Video-Assisted Debriefing the Debriefer



Note. This figure demonstrates the differences between fellow self-evaluation (perceived performance) and faculty evaluation (actual performance) after the fellow and faculty engaged in a video-assisted debriefing the debriefer with faculty coaching and feedback session.

To further appreciate the difference in evaluation between perceived performance and actual performance, the following visual displays show the difference between fellow self-evaluation and faculty evaluation for each individual DASH element across all three moments of measurement.

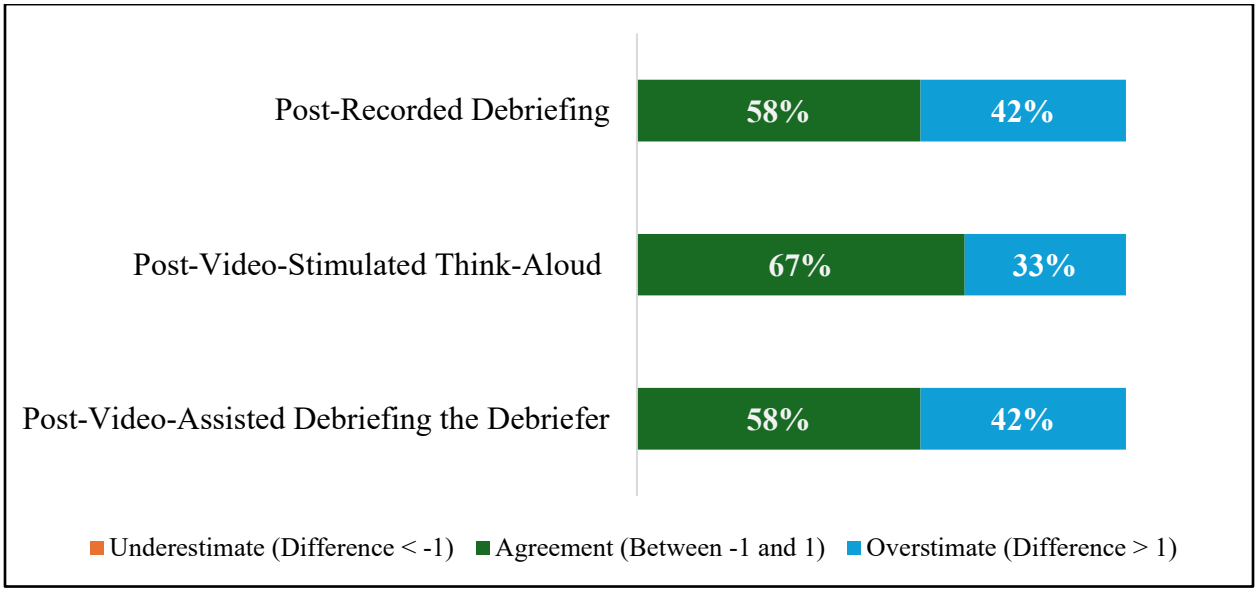
Q2 Maintains an Engaging Learning Environment

Through the eyes of the DASH, debriefers maintain an engaging learning environment by setting clear expectations, maintaining psychological safety, and focusing the conversation on

learning (Simon et al., 2010a). Over the course of three measurements, rater agreement between faculty and fellows remained relatively unchanged for the element "maintains an engaging learning environment." After initial debriefing and after video-assisted debriefing the debriefer rater agreements were the same, with 58% of agreement between perceived and actual performance and 42% overestimation of perceived performance (Figure 10). After the video-stimulated think-aloud, agreement was 67%, and overestimation was 33%. Fellows never underestimated their performance as it relates to maintaining an engaging learning environment.

Figure 10

Differences between Fellow Self-Evaluation and Faculty Evaluation: Maintains an Engaging Learning Environment



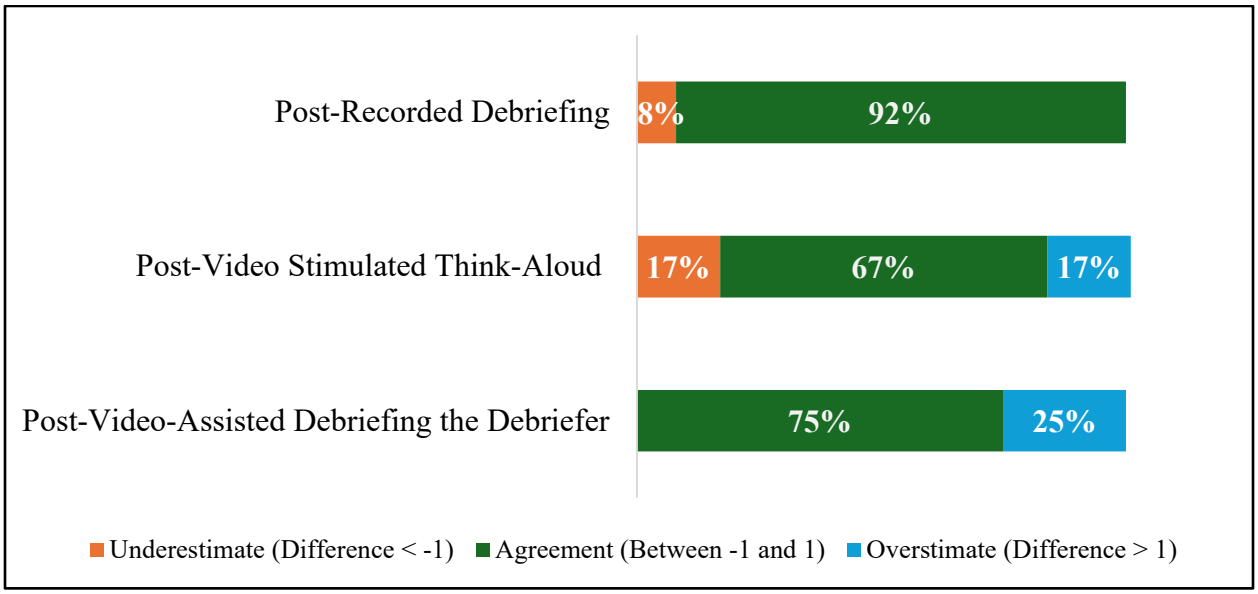
Note. This figure demonstrates the differences in scores between fellow self-evaluation (perceived performance in debriefing) and faculty evaluation (actual performance in debriefing) in the DASH element of "maintains an engaging learning environment" compared across three discrete moments of measurement.

Q3 Structures the Debriefing in an Organized Way

In terms of structuring debriefing in an organized way, debriefers create a learning environment that supports learners in sharing reactions, analyzing performance, and summarizing their overall learning (Simon et al., 2010a). As it relates to assessing the structure of the debriefing, fellows and faculty demonstrated relative agreement across the three moments of measurement (Figure 11). Agreement decreased when compared to the first DASH assessment after the recorded debriefing, with highest recorded agreement at 92% and lowest recorded agreement at 67%. The greatest variation in scoring occurred immediately after the video-stimulated think-aloud session, where two fellows underestimated their performance, and two fellows overestimated their performance. After engaging in the video-assisted debriefing the debriefer, fellows no longer underestimated performance. Rather, they either achieved agreement (75%) or overestimated performance (25%).

Figure 11

Differences between Fellow Self-Evaluation and Faculty Evaluation: Structures Debriefing in an Organized Way



Note. This figure demonstrates the differences in scores between fellow self-evaluation (perceived performance in debriefing) and faculty evaluation (actual performance in debriefing) in the DASH element of "structures debriefing in an organized way" compared across three discrete moments of measurement.

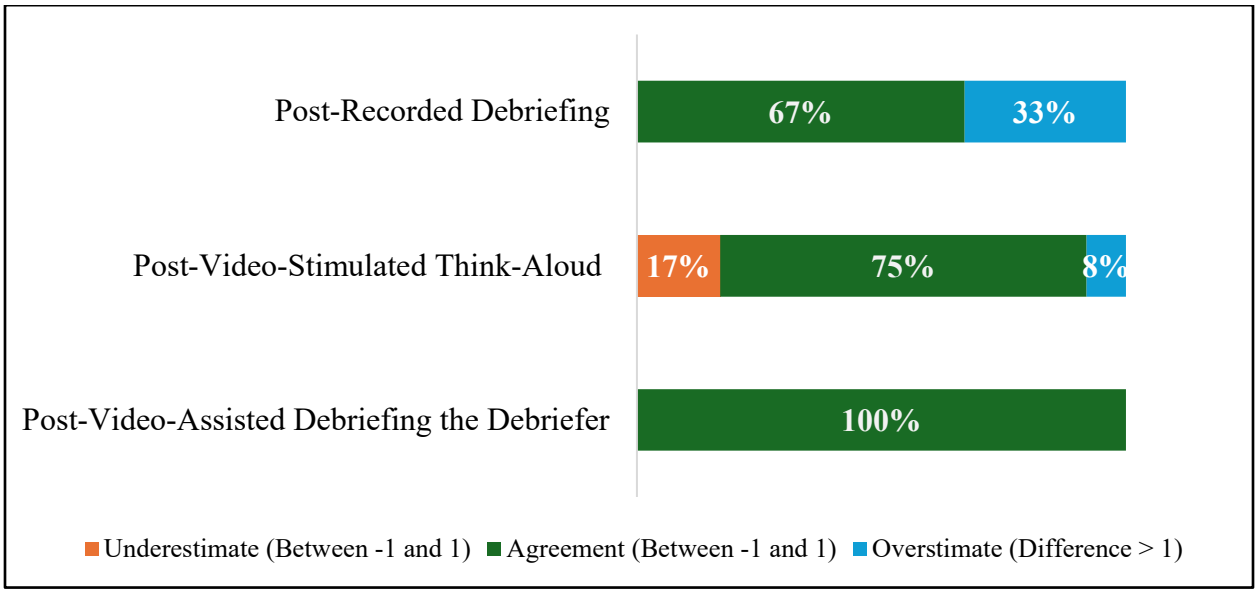
Q4 Provokes Engaging Discussion

As it relates to provoking an engaging discussion, this element focuses on the debriefer's ability to facilitate an interesting learning conversation, actively listen to the learner, and support the learner's reflective practice (Simon et al., 2010a). Figure 12 displays differences in evaluation scores for provokes engaging discussion. Initially, fellows overestimated their performance (33%) after facilitating their debriefing session with learners. After the think-aloud session, fellows became more critical of their performance, as evidenced by an increase in

underestimation from 0% after debriefing to 17% after think-aloud. Fellow self-evaluation and faculty evaluation aligned 100% after the video-assisted debriefing the debriefer.

Figure 12

Differences between Fellow Self-Evaluation and Faculty Evaluation: Provokes Engaging Discussion



Note. This figure demonstrates the differences in scores between fellow self-evaluation (perceived performance in debriefing) and faculty evaluation (actual performance in debriefing) in the DASH element of "provokes engaging discussion" compared across three discrete moments of measurement.

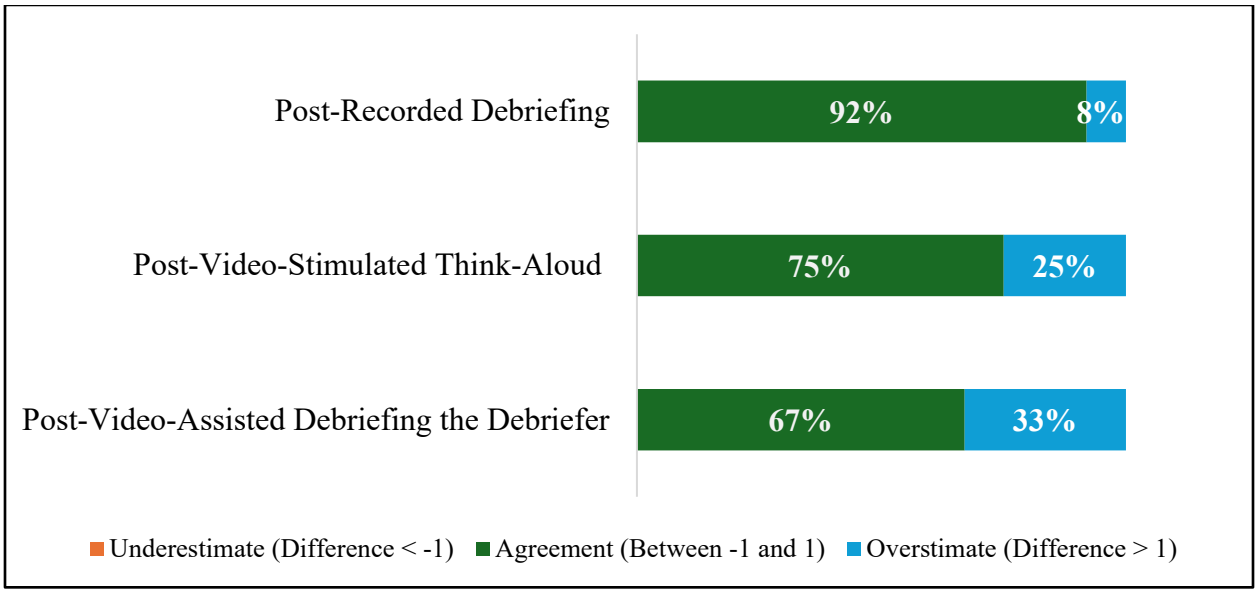
Q5 Identifies and Explores Performance Gaps

This element focused on describing and investigating knowledge and performance gaps, analyzing frames of reference and skills utilization, and sharing direct feedback about performance (Simon et al., 2010a). In terms of identifying and exploring performance gaps,

fellows never underestimated their performance. Across three moments of measurement, rater agreement slowly decreased from 92% after initial debriefing to 67% after debriefing the debriefer (Figure 13). As a result, the highest prevalence of overestimation (33%) occurred after the debriefing the debriefer, suggesting that the largest gap between perceived and actual performance occurred after engaging in faculty coaching and feedback.

Figure 13

Differences between Fellow Self-Evaluation and Faculty Evaluation: Identifies and Explores Performance Gaps



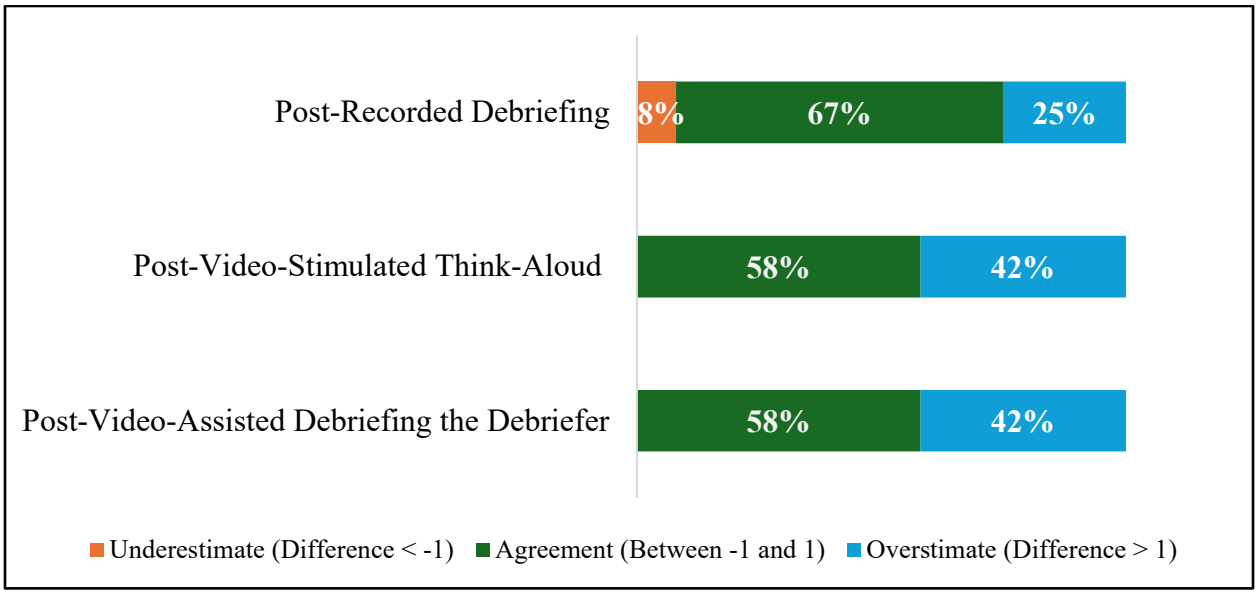
Note. This figure demonstrates the differences in scores between fellow self-evaluation (perceived performance in debriefing) and faculty evaluation (actual performance in debriefing) in the DASH element of "identifies and explores performance gaps" compared across three discrete moments of measurement.

Q6 Helps Trainees Achieve or Sustain Good Future Performance

This element evaluated the debriefers' ability to effectively help learners' close performance gaps to achieve educational objectives and consider application for future practice (Simon et al., 2010a). While there was initial variability in score agreement, this element ended up stabilizing after the video-stimulated think-aloud session. At first, fellows either underestimated (8%), overestimated (25%) or achieved agreement (67%) with faculty evaluation (Figure 14). It seems that video-assisted debriefing the debriefer did not influence or make a difference in scoring. This element matches most closely with the takeaways phase of PEARLS debriefing. Given that no change occurred between these two stages, it may suggest that this was not a prioritized topic for the VAD the D as very few video clips for review were selected from the takeaways phase of PEARLS debriefing.

Figure 14

Differences between Fellow Self-Evaluation and Faculty Evaluation: Helps Trainees Achieve or Sustain Good Future Performance



Note. This figure demonstrates the differences in scores between fellow self-evaluation (perceived performance in debriefing) and faculty evaluation (actual performance in debriefing) in the DASH element of "help trainees achieve or sustain good future performance" compared across three discrete moments of measurement.

Phase B: Video-Assisted Evaluation Learning Tools

Phase B of this research project was guided by the mixed methods research questions: SUBMM B1: How do video-assisted learning tools contribute to the development of self-evaluation skills for interprofessional fellows? To answer the research question, a mixed analysis was conducted to appreciate both quantitative and qualitative branches of the learning dyad between fellow and faculty participants. Data is presented in sequential order of how the

study was conducted, starting first with the factual reporting of results from Stage 1 and then Stage 2.

Stage 1: Video-Stimulated Think-Aloud

Stage 1 involved fellows watching their video-recorded debriefing and engaging in a video-stimulated think-aloud process facilitated by a faculty mentor. Fellows were asked to pause and reflect on moments of strength (plus) and areas of improvement/change (delta). All the while, faculty observed the fellow's self-reflection and only spoke with the fellow to remind them to think-aloud. At the end of the video-stimulated think-aloud, fellows and faculty completed quantitative assessment tools as well as qualitative questionnaires about the experience.

Quantitative Findings

Findings for this stage were guided by the quantitative research question: SUBQUAN B1: Is there a difference in pretest-posttest scores on the ability of self-reflection after engaging in video-stimulated think-aloud sessions? All fellows completed the Groningen Reflective Ability Scale (GRAS) before and after engaging in the video-stimulated think-aloud session. A paired samples t-test was performed to compare the difference in fellow self-reflection. Findings indicated that there was not a statistically significant difference in self-reflection before and after the think-aloud session, $t(11) = 0.26$, $p = .8$, Cohen's $d = .08$. Self-reflection did not significantly improve from pretest ($M = 92.2$, $SD = 4.4$) to posttest ($M = 91.8$, $SD = 6.2$). Given that the highest possible score on the GRAS is 115, the mean scores for the fellows would suggest a high ability for self-reflection prior to engaging in the intervention.

To make deeper meaning of the quantitative data, faculty were asked to qualitatively reflect upon the fellows' initial GRAS score as it related to how they witnessed the fellow self-reflect during the think-aloud session. Overwhelmingly, faculty reported feeling as if fellow GRAS scores were reflective of the fellow's ability to engage in self-reflection. Most faculty reported seeing the score matching the way the fellows engaged with the think-aloud session. Any mention of contradictory evaluation was in reference to fellows recording "neutral" scores for certain items. In moments where neutrality was selected, faculty reported that those fellows had some challenges in objectively evaluating their performance during the think-aloud session. One faculty noted a discrepancy, suggesting that the "neutral" scores for one fellow were more indicative of their capacity for self-evaluation than the verbal reflections they shared during the think-aloud. Overall, faculty found the fellow cohort to be self-aware, open to feedback, and able to self-reflect, even before engaging in the research project. Given the self-reflective capacity of the fellow cohort, the GRAS may not have been an accurate tool to capture differences in self-reflection for this fellow cohort.

Dreyfus and Dreyfus Model of Skills Acquisition. To further appreciate fellow development of self-evaluation skills, fellows and faculty were both asked to evaluate the fellow's level of skills acquisition. After participating in the video-stimulated think-aloud session, both faculty and fellow participants were asked to identify which stage of development the fellow was in based on the Dreyfus and Dreyfus Model of Skills Acquisition. In terms of fellow self-assessment, 58.33% assessed themselves as Advanced Beginners (7), 8.33% as Competent (1), and 33.33 % as Proficient (4). In terms of faculty assessment, 25% of fellows were assessed as being Novice (3) and 75% as being Advanced Beginner (9; Table 4). At this

point in the research study, 42% of faculty and fellows (5 pairs) matched in their assessment of skills acquisition level, whereas the remaining 58% of fellows (7) self-assessed their skills level as higher than faculty evaluation. In terms of stage difference between the seven mismatched faculty and fellow assessments, three fellows rated themselves as one stage higher than faculty (advanced beginner to competent), three fellows rated themselves as two stages higher than faculty (advanced beginner to proficient), and one fellow rated themselves three stages higher than faculty (novice to proficient).

Areas of Plus/Delta. At the end of the video-assisted think-aloud session, each faculty and fellow were asked to select one phase of PEARLS where the fellow demonstrated skills strength (plus) and one phase of PEARLS where the fellow demonstrated a need for skills improvement or change (delta). Fellows identified strength in the following phases: Setting the Scene (16.67%), Reactions (33.33%), Analysis (41.67%), and Takeaways (8.33%). Faculty identified strengths in the following phases: Setting the Scene (33.33%), Reactions (8.33%), Description (25%), Analysis (8.33%), and Takeaways (25%). In terms of identified strengths matches, only two dyads (16.67%) selected the same areas of strengths. Fellows identified the need for skills improvement in the following phases: Setting the Scene (25%), Description (16.67%), Analysis (41.67%), and Takeaways (16.67%). Faculty identified the need for skills improvement in the following phases: Setting the Scene (8.33%) and Analysis (91.67%). In terms of identified needs matches, five dyads (41.67%) selected the same area of improvement.

Table 4

Comparison of Evaluation of Plus/Delta and Skills Acquisition between Fellows and Faculty for Stage B Phase One

	Fellow Self-Evaluation			Faculty Evaluation		
	Plus	Delta	Skills Acquisition	Plus	Delta	Skills Acquisition
Fellow 1	Analysis	Description	Competent	Setting the Scene	Analysis	Advanced Beginner
Fellow 2	Analysis	Takeaways	Advanced Beginner	Description	Analysis	Novice
Fellow 3	Reactions	Takeaways	Advanced Beginner	Description	Setting the Scene	Advanced Beginner
Fellow 4	Analysis	Setting the Scene	Proficient	Takeaways	Analysis	Novice
Fellow 5	Reactions	Setting the Scene	Advanced Beginner	Analysis	Analysis	Novice
Fellow 6	Analysis	Description	Proficient	Setting the Scene	Analysis	Advanced Beginner
Fellow 7	Takeaways	Setting the Scene	Advanced Beginner	Takeaways	Analysis	Advanced Beginner
Fellow 8	Takeaways	Analysis	Proficient	Reactions	Analysis	Advanced Beginner
Fellow 9	Setting the Scene	Analysis	Advanced Beginner	Takeaways	Analysis	Advanced Beginner
Fellow 10	Reactions	Analysis	Advanced Beginner	Setting the Scene	Analysis	Advanced Beginner
Fellow 11	Analysis	Analysis	Advanced Beginner	Description	Analysis	Advanced Beginner
Fellow 12	Setting the Scene	Analysis	Proficient	Setting the Scene	Analysis	Advanced Beginner

Note. The category of Plus is a suggested area of strength for the fellow, whereas the category of Delta is a suggested area of change or improvement for the fellow. The phases of the PEARLS debriefing model occur in the following order: Setting the Scene, Reactions, Description, Analysis, and Reflection. The level of skills acquisition comes from the Dreyfus and Dreyfus

Model, which proposes that individuals progressively develop skills in the following order: Novice, Advanced Beginner, Competent, Proficient, and Expert.

Fellow Perspective-Qualitative Findings

Themes of experience and influence were derived from the content of the qualitative survey questions completed by fellows after engaging in the video-stimulated think-aloud session. To understand the experience of the fellows, the reflective thematic analysis aimed to answer the research question SUBQUAL B1, how does video-stimulated think-aloud sessions influence self-evaluation skills for simulation fellows? The five themes included (1) multiple perspectives, (2) knowledge transformation and mobilization (self-resourcing, self-coaching for reflective practice, managing cognitive dissonance, self-reaction), (3) growth mindset and willingness to improve (self-directed corrective actions, diagnosis knowledge and performance gaps, liminal space of becoming an educator), (4) witnessing self in performance (confidence balanced with humility, externalization of an internal process, impact on personal frames/bias awareness, self-observation of professional risk-taking), and (5) value of video review.

Multiple Perspectives. Video-stimulated think aloud offered fellows the opportunity to review and reflect on their performance with an appreciation for multiple perspectives. It illuminates self-perception and image, like when one fellow offered, “I'm not used to seeing myself in a clinical context. I felt like I was over-validating to the learners.” Video offers the perspective of the learning through the lens of the camera, which can be used to imagine the perspective of the learners. One fellow offered, “Is the video of me the same perspective [the learners] were seeing me from? You see things different from different angles. If they were

seeing me from this [camera] lens, I was uncomfortable…" By appreciating the perspective of the learner, fellows can consider their own performance through the lens of the learner and expand their self-reflection.

Knowledge Transformation and Mobilization. Video-stimulated think-aloud offered a reflective platform to transform procedural knowledge into conditional knowledge. This theme is best understood through four subthemes: (1) self-resourcing, (2) self-coaching for reflective practice, (3) managing cognitive dissonance, and (4) self-reaction.

Self-Resourcing. Video-stimulated think-aloud offered an opportunity for fellows to be able to review and identify their strengths—both those that are historical and those that are newly forming. Self-resourcing their strengths supported the development of new skills and self-assessment of performance. A fellow who has experience in group work reflected on their debriefing skills competence as they shared, "I feel like I'm competent in a group dynamics way." Reflecting on how they rely on their strengths, another fellow shared, "I lean heavily in my other roles and ability to attune to people's affect and that's where I am the most comfortable." A third fellow applied their self-resourcing directly to debriefing skills performance: "I think that I did well with setting the scene because I naturally know how to welcome people into a space." Self-resourcing offers fellows a self-comparison between their current strengths and their past naïve self. Fellows engaged themselves in positive self-talk as they considered resourcing their past strengths to their current development, reminding themselves that, "your nerves don't control you, be the beginner and most curious one."

Self-Coaching for Reflective Practice. As video-stimulated think-aloud is an externalization of an internal process, fellows ended up engaging in a form of self-coaching to build their skills.

The capacity for reflective practice was evidenced in a common sentiment expressed by many fellows around the idea of skills practice. It is highlighted in the quote, “I feel like I knew what I was supposed to do with PEARLS, but I was not prepared enough to deliver it. I did not practice.” To counter-narrate these moments, several fellows identified ways to psych themselves up, sharing messages to their past, present, and future selves. One fellow shared, “[s]low down and be more methodical in my approach and tie it all back into the learning objectives. Connect it to something so that I'm not floating all over the place.” In offering themselves advice, fellows utilized the think-aloud to identify specific areas for improvement and self-coach for future development. Another fellow identified improving their time management skills and self-coached the takeaways phase as an area to improve this skill: “It'll probably be at the end where I could've summarized the key takeaways that I heard previously mentioned in order to be respectful of time, as time had already expired.” Through self-coaching for reflective practice, fellows reflected both on their contributions to the debriefing as well as the learners, while posing questions to fuel continuous learning:

> I feel like I'm missing concrete learning points and being able to grab onto them and explore those with the [learners]. It tends to be an acknowledgment or an agreement from me (in this video it was me repeating: ‘I love that’) and then I move on...so what's the next step beyond that to deepen and move beyond the general agreement?

Engaging in self-coaching offered fellows a pathway to reflective practice for continuous, mastery learning.

Managing Cognitive Dissonance. In developing and self-evaluating skill development, fellows experienced cognitive dissonance as they reconciled their perceived performance with

actual performance. Video-stimulated think aloud illuminated as well as mitigated cognitive dissonance. This often resulted in fellows asking themselves questions like, “I don't think I did any part particularly well. But I did get them to name some good learning points during this phase, so I guess that is a good thing?” These contradictory ideas often resulted in using language that suggested poor performance juxtaposed with areas of effective performance that could only be appreciated by watching the complete recording. One fellow demonstrated this dissonance when they reflected, “In watching the video, I saw that I did well with the PEARLS framework. I initially thought that I didn't do so well, but watching the video showed me otherwise.” Cognitive dissonance can influence self-evaluation and video-stimulated think-aloud may offer one way to manage experienced dissonance to evaluate performance more accurately.

Self-reaction. Fellows reported initial self-judgments that were more focused on self-image or critique of dispositions rather than skill performance. When they first started their think-aloud session, many fellows commented on their hair, outfits, and how they were seated. These fellows reported feeling “shy and insecure watching [themselves] debrief.” These immediate judgments created affective self-reactions, which distracted fellows from appreciating their actual performance. This theme was best captured by one fellow who tracked their own self-reactions:

> I found myself wanting to critique me as a person as well. Instead of just focusing on the performance and my skills as a debriefer. This prevented me sometimes from thinking aloud because I was aware of another person in the room and conscious of what they might be thinking if I voice that aloud or what they might be thinking of me in a non-learner/debriefer way.

Affective self-reactions resulted in an emotional framework that influence self-monitoring of thoughts and actions, which can be difficult to counter-narrate in the context of self-regulated learning.

Growth Mindset and Willingness to Improve. Fellows approached the video-stimulated think-aloud with a growth mindset as they used the session to understand how to improve their skills as debriefers. This theme was best understood through three subthemes: (1) self-directed corrective actions, (2) diagnosis knowledge and performance gaps, and (3) liminal space of becoming an educator.

Self-Directed Corrective Actions. Fellows utilized the video-stimulated think-aloud to identify areas of growth and consider corrective actions that can improve their performance. Reflecting on performance, one fellow shared:

> I believe that with ongoing practice, I will be able to improve in areas such as clearly know my objectives as the debriefer, utilizing different strategies to ensure that we stick as close to the agreed on time, and utilizing various techniques to support and encourage continued growth.

Through the initial think-aloud, fellows considered their own ideas for corrective actions before hearing feedback from a faculty, creating an opportunity for self-directed learning. Fellows shared many similar ideas around corrective actions, including organization of debriefings, tone of voice, increased comfort with advocacy/inquiry, and increasing comfort with silence. In identifying areas for corrective action, fellows identified enrichment activities to meet their practice needs.

Diagnosing Knowledge and Performance Gaps. As a formative assessment, fellows reviewed the video and considered areas of strength and areas of improvement or change (delta). In their review, fellows were guided to explore their plus/deltas, which created an opportunity to identify very specific areas of growth. After the video-stimulated think-aloud, one fellow diagnosed a performance gap: "Setting the scene is where I saw myself stumble. I know I don't have to use the same words, but I do need to have a better understanding of the framework and the components. I was timid." Fellows diagnosed knowledge and performance gaps, offering themselves a deeper understanding of why the gap exists and how to close the identified gap. Several fellows recognized the surface level of their debriefing, naming their own performance gap around being able to deepen the learning process for the learners. One fellow nicely summarized this when they wrote:

> In particular with debriefing—and if we're analyzing this debriefing video and the skill utilized within it—I would say that I haven't quite managed to explore how to deepen the process/learning...I'm missing a couple of sections that I would like to enhance.

Using video-stimulated think-aloud, fellows were able to witness and diagnose their own knowledge and performance gaps. Supported by maintaining a growth mindset and willingness to improve, this skill was important to enhancing capacity for self-evaluation.

Liminal Space of Becoming an Educator. Video-stimulated think-aloud created a liminal space for reviewing skill performance. The relationship between the fellow, the recording, and the faculty observer seemed to create an imagined as-if. Fellows reflected on how their behavior as debriefers influenced the learners and how the learners' behavior influenced the debriefer, recalling the experience with increased precision, having just paused the recording.

One fellow described it like an emotional contagion when she wrote, “I noticed the way I was engaging with the learners as I was anxious. I realized it looked contagious, like the learners were also not too open. They were not expressing themselves.” Many fellows discussed wanting to ensure their behavior was maintaining psychological safety. Another fellow recounted using their phone to review the debriefing script and sitting in the liminal space between current self and video self. The fellow “painfully” reflected on this choice:

> Watching myself reading from the script I had to put my password back in my phone and I was worried the learners thought I was texting. I did not want them to think I was texting and ignoring them. I know not to use my phone in the future.”

Sitting in the liminality and reflecting on this liminality allowed fellows to more deeply appreciate the core concepts and skills that encompass an effective debriefing. A third fellow offered:

> I struggle with knowing what approach to take and when to take it. Sometimes I feel as though time plays a role with approach and I feel that I at times I lose track, especially without a co-facilitator. I want to improve in this area because this is the meat and potatoes of the learning experience.

Exploration in the liminality helps advance fellows to a higher level of understanding.

Video-stimulated think-aloud offered a creative opportunity for fellows to give voice to their experiences and transform old ways of being into new ways of being as they further transition from learning how to debriefer to becoming debriefers. A common coding around this topic involved the notion of confidence:

> I want to improve and be able to deliver and connect with the learners from the beginning, building quick rapport and psychological safety to make the learners and myself feel relaxed across the entire debriefing. It is interesting how confidence in yourself can change your perspective.

Occupying the liminal space afforded fellows the opportunity to self-reflect on where their skill performance has reached where they would like their skills performance to be.

Witnessing Self in Performance. Video-stimulated think-aloud offered a direct window for fellows to witness themselves in the role of debriefer, allowing an opportunity to self-evaluate the ways they show up within the context of a debriefing. This theme is best understood through four sub-themes: (1) confidence balanced with humility, (2) externalization of an internal process, (3) impact on personal frames/bias awareness, and (4) self-observation of professional risk taking.

Confidence Balanced with Humility. Several fellows reported increased confidence, with ongoing recognition of needs for skills improvement. Humility was expressed in common sentiments like, "[o]verall, I am at a proficient level in debriefing however not an expert which will take time and experience." In speaking about confidence, another fellow shared that, "I do not want to second guess myself." Confidence balanced with humility was best captured in the self-reflection of a third fellow when they shared, "I'm pretty confident but know there's always room for improvement. Maybe 8/10. I know I will get to all of the aspects of the PEARLs debriefing tool in order and that I can validate everyone's reactions and analysis." Exposure to video review for self-assessment allowed fellows to soften their initial self-criticism, which often

resulted in a balance between confidence and humility to reflect on their skill development more accurately.

Rehearsal for Self-Monitoring (Externalization of an Internal Process). Video-stimulated think-aloud offered fellows the opportunity to reflect aloud on their performance during the debriefing. Reflection on practice promoted reflection in practice, as fellows narrate their actions and attitudes aloud:

> By the takeaways, I was less anxious, and the learners were more interactive. I even forgot about the camera. I saw my body language change from being closed off in the fetal position to sitting up more straight in the chair.

Several fellows verbalized effective performance monitoring during the think-aloud session: "I was able to ask open-ended questions, which allowed learners open up and share their experiences." Another fellow reflected on a variety of different areas of performance, monitoring the impacts their choices had on learners:

> I tried a lot of different ways of rephrasing PEARLS tool to try to fit the themes of the learners. I have a uhuhuh stutter. I shake my leg a lot. I allowed for a broader discussion than just the lesson objectives.

In essence, video-stimulated think-aloud offered a rehearsal or self-monitoring, as the video externalized of an often internal thought process.

Impact on Personal Frames/Bias Awareness. Video stimulated think-aloud offered a window into the way behavior and actions can influence learners. Fellows witnessed their own assumptions and biases and the impact these biases had on their learners. For one fellow, video illuminated their bias of "accidently anchoring on more talkative participants," suggesting they

may favor those who verbalize their perspectives more than those who passively participate. For other fellows, video displayed assumptive behavior like using language and acronyms that the learners may not have understood. It was discussed how language use can create distance between debriefer and learners. These assumptions led fellows to engage in bias-based behavior, like when one fellow shared a frame of reference about a group of novice nurses: "The learners were new nurses who are transitioning from classroom to clinical setting, so I wanted to hear if they feel ready to work in stressful situations that might arise in the clinical settings." Being led by bias, the fellow engaged learners in a game of "guess" what I am thinking, rather than offering up transparent communication around their opinion. Increasing self-awareness around their personal frames and assumptions offered an opportunity for fellows to interrupt their biases and assumptions to reduce the potential for repeated patterns of behavior.

Self-Observation of Professional Risk Taking. Through video review, fellows observed their own professional risk-taking. In doing so, fellows witnessed both success and failures as it relates to advanced skill practice or skill practice beyond the current level of development. Many fellows reported taking risks in trying to blend approaches in the analysis phase. In selecting video clips for future review, many fellows selected areas that showed them trying to apply an advanced debriefing skill. One fellow chose a clip that demonstrated "plus/delta adjustments for the group to be a bit more talkative." Another fellow selected a video clip "that showed a lot of different tools used during the analysis phase." It was also common for fellows to highlight the use of the PEARLS framework as a guide, but wanting to discuss their own personal style they used in the video as it relates to the framework: "I try to follow the PEARLS framework, but I also want it to be my own style…I tried to pivot the flow of the conversation." By appreciating

their risk-taking, fellows can see that they can maintain their performance while taking risks. By taking big risks, the fellow can appraise the impact of the risk based on the outcomes on the learners and consider if repeating the risk will be of service to their skill development.

Value of Video Review. Fellows reported the value of video review in their skill development. While the sentiment was echoed among most participants, one fellow summed it up by saying, “I found it to be very useful to be able to see my performance and reflect on areas of strength and areas for improvement.” Initially, the mirror views the video offered was difficult to take in as fellows reported their initial reactions as “uncomfortable,” “painful,” “nervous,” “difficult,” and “a little insecure.” Despite the initial reactions, as fellows continued through the process, they better understood the potential benefits of the video review, which mitigated and alleviated the initial reactions. The essence of this theme was best captured when another fellow connected their initial reactions to their outcomes knowledge: “Initially, I thought that I wouldn't like this. Therefore, I was nervous to voice aloud my thoughts because they're typically quite harsh…At the end, it helped me tie my observations together.” One fellow explored how to make themselves more comfortable with video, as they asked a direct question to the investigator, “how [do I] overcome 'camera' stage fright or camera shyness? It may have caused forgetfulness, stuttering and vocalized pauses by using filler words such as 'uh'.” In reflecting on their think-aloud, many fellows reported the outcome outweighed the initial reactions. It left many fellows “…wondering how I can utilize the recording to benefit my skills in the future.” While fellows found first moments of review difficult or challenging, they reported being curious about how to utilize video-stimulated think-aloud to benefit skill development now and in the future.

Faculty Perspective-Qualitative Findings

Themes of experience and influence were derived from the content of the qualitative survey questions completed by faculty after facilitating the video-stimulated think-aloud session. To understand the experience of the faculty, the reflective thematic analysis aimed to answer the research question SUBQUAL B2, how does facilitating a video-stimulated think-aloud session impact faculty's impression of the self-evaluation skills and adaptive expertise of a simulation fellow? The four themes included (1) perception versus execution (improved perception, limited procedural knowledge, and fixation error), (2) strengths recognition, (3) skills development goal/recommendation, and (4) influential factors (emotional influence, contextual influence, and cognitive load).

Perception Versus Execution. This theme was best understood through three sub-themes: (1) improved perception, (2) limited procedural knowledge, and (3) fixation error.

Improved Perception. Faculty noticed that both their perception/evaluation of the fellow and the fellow's self-perception improved over time. Fellow perception improved between the facilitation of the debriefing and the end of the video-stimulated think-aloud. Reflecting on the improved perception of the fellow, one faculty member offered, "Once we got going, she was able to openly share her reflections on her performance and is aware of the effect her words have on others." Faculty perception improved between initial viewing and the end of the video-stimulated think-aloud. In speaking about their change in perception, one faculty shared, "I think after this experience watching it twice was helpful and hearing the speak aloud helped me see it with keener eyes." Faculty and fellow perception and evaluation of execution improve as they spend more time with the recorded debriefing.

Limited Procedural Knowledge. Faculty became aware of the limited procedural knowledge the fellows have as it relates to skills development and moving into conditional knowledge necessary for adaptive expertise. One fellow captured the essence of this theme when they shared, "I think [Fellow] has the basics of debriefing down, in terms of structure, however she doesn't yet know how to adapt to learners' stated or unstated needs." Another faculty shared how a fellow's limited procedural knowledge resulted in productive failure rather than productive struggle:

> She was unaware of where the conversation should go and as a result started meandering into different areas that were more informational. The Socratic Method was used repeatedly in the form of 'Think what I am thinking' and the questions were rarely linked to actual performance.

When a fellow failed to execute setting the scene stage of the debriefing, another faculty highlighted the key elements necessary for an effective debriefing: "Establishing the safe container, basic assumption, and setting a time frame are important aspects of debriefing that I think can make the rest of the debriefing more productive." In offering more specific reflection, a fourth faculty identified specific areas in which procedural knowledge could be improved: "Specifically, how to link actions with the lesson objectives and explore understanding and then explore future state and potential actions." Video-stimulated think-aloud illuminated the limited procedural knowledge of the fellows, suggesting areas of improvement to facilitate a debriefing with adaptive expertise.

Fixation Error. In facilitating video-stimulated think-aloud, faculty identified moments of fixation error bias where fellows became more fixated on getting the debriefing structure

correct, rather than centering the needs of the learners. One faculty member noted this fixation when they shared, “I think [Fellow] is mainly focused on completing each phase of PEARLS, and not always at the point where she is thinking about HOW she is completing each phase.” In this case, fixation drove the completion of each phase of debriefing rather than focusing on the learning conversation within each phase. Due to fixation bias, another faculty highlight the lack of debriefing strategies utilized by fellows, acknowledging that “[the Fellow] is able to follow the rules and structure but isn't applying the tools to explore effectively and create conversations that will lend to meaningful takeaways.” In one debriefing, the fellow’s fixation bias led the learners to overpower the debriefing, which double the duration of the debriefing session. A third faculty member captured this, when they wrote: “I think she may have let the learners grab the wheel too hard which might be reflected in the time taken to debrief as well as not talking more about some of the medical concepts.” In these moments of fixation, fellows may have inadvertently neglected the learners and their learning needs. Fixation bias made it difficult to be flexible and adaptable in the debriefing session, suggesting it directly influence the fellow’s capacity for adaptive expertise.

Strengths Recognition. Recognizing strengths within each fellow’s skills performance offered a sense of pride from the faculty. Strengths recognition was best captured by the faculty celebrating the fellow’s performance. One faculty highlighted that “[Fellow] nearly hit every element of the safe container and embodied it as well…” Another faculty spoke about curiosity as a strength when they shared, “[Fellow] explored one of the pluses a learners gave. Her question demonstrated true curiosity and provoked a discussed from the other learners.” These strengths can be used as a source of motivation to promote adaptive expertise. Through

facilitating and observing the video-stimulated think-aloud session, a third faculty member was able to connect the fellow's strength to learner outcomes:

> [Fellow] was able to elicit a response that clarified a learner's frame of thoughts about what they thought went well and why? The learner shared finding great value in the hands-on stations because in the critical care environment, the equipment was turned on and set by others limiting the learner's chance of gaining deeper insights into the advanced functions of the defibrillator.

Strengths recognition served to reinforce good behavior within the context of debriefing, like when a faculty member offered, "the debriefer was able to have a reflective discussion with learners and even used the subject matter expert for teaching." Faculty being able to recognize strengths within a fellow helped to counter-narrate the discrepant components within the previous themes.

Skills Development Goal/Recommendation. Video-assisted think-aloud created an opportunity for faculty to become aware of the skills acquisition still needed for fellow adaptive expertise. These goal recommendations often occur through the role of coaching, which is crucial to developing adaptive expertise. One faculty shared:

> One piece of coaching I would offer is being above the table with thoughts and observations. On one occasion, there was a mention of an action that [Fellow] did not hear anyone verbalize, but she did not offer why it was important to her or her opinion on its impact on the simulation. I would also encourage her to continue to use her verbal and non-verbal cues to encourage learners and their contributions."

Every faculty member was able to recognize and prepare goal recommendations. One faculty suggested that the fellow "[w]ork more quickly to identify and keep difficult learners in check, re-direct conversation and flow when you realize that you have a learner who monopolizes the conversation." A second reflected that the fellow struggled with transitions and encouraged the fellow to "[p]review each phase of the debriefing process with learners so that you not only transition them into the next phase but also help them focus their contributions to this particular phase of the debriefing. " A third faculty member utilized a metaphor to capture the needs of the fellow: "Walk in with your objectives and your ideal map. Then take that map and marry it with where the learners want to go. You are shepherding the conversation, and it can still be learner-centered." Lastly, a fourth faculty aimed to calm the fear of the fellow as it relates to not being a subjective matter expert—a level of humility necessary for adaptive expertise. This faculty member wrote, "[d]on't be afraid of the knowledge gap between yourself and the learners. Invite others in the conversation to help fill these gaps, or give more direct feedback as needed." Marrying the fellows' think-aloud reflections with their own appraisal of the debriefing primed the faculty for a more accurate, holistic evaluation packaged as a goal recommendation for behavior change, rather than on the disposition of the fellow.

Influential Factors. Considering the multilevel relationship between faculty and fellows, thematic analysis revealed a few influential factors that may impact feedback and self-evaluation. This theme was best understood through three sub-themes: (1) emotional influence, (2) contextual influence, and (3) cognitive load.

Emotional Influence. Emotions influenced the system. One faculty discussed how empathy influenced their observation of the fellow: "My empathic brain was turned on... feeling

bad for [Fellow] recognizing where she was frustrated with herself." Pride in performance also influenced faculty perception of fellow, like when one faculty reflected. "I was so proud of [Fellow's] performance. She has definitely moved far forward in her development." Fellow's emotions influenced how they self-assess as well as assess their learners. Another faculty considered how the imposter phenomenon may serve as an emotional cloud over fellow performance and ways to overcome:

> I think there is a degree of imposter syndrome that overshadows [Fellow] and as a result, she finds herself paralyzed in participating in the conversation and having opinions on the actions and behaviors. I think if we focus on freeing her of that anxiety, emotion, which she also scored herself neutral, it would allow for more robust conversations.

Faculty may use emotional influence to drive their feedback interventions with fellows. One faculty imagined what it would be like to pose a challenge to a fellow they felt was emotionally disconnected from the content of the debriefing. "I'm curious when I push back on some of his evaluations how he responds and if he can appreciate an alternative view." Emotional influence can shift the system of learning between faculty, fellows, and learners.

Contextual Influence. Context influenced the way a fellow performs within a debriefing, which influenced how they self-reflected. Faculty noted, "[the Fellow] was clearly nervous with the additional layer of video recording," suggesting that video recording is a contextual influence. Difficult learners also influenced debriefer performance when one faculty shared that a fellow "…managed the debriefing fairly well despite 2 difficult learners and an interrupting [subject matter expert]." Additionally, the fellow's level of interest in the reflective practice of the learners influenced the debriefing, which was illuminated through the video-stimulated think-

aloud. One faculty reflected on the need for a fellow to have a vested interest in their learners and their learning: “I think having a vested interest in the learning and problems that the learners are facing would lend to deep curiosity and a willingness to chase some of the responses with follow up questions.” In speaking about a fellow leveling up from novice to advanced beginner, another faculty member discussed the influence of contextual interest:

> I think [novice Fellow] has the ability to be an Advanced Beginner, but I think it is contextual. In this instance, the debriefing wasn't particularly interesting to him based on my observation of him and his response to some very interesting offerings by the learners.

The camera, difficult learners, challenging subject matter experts, faculty evaluation, and interest in topic of discussion are all contextual influences that impacted self-evaluation and adaptive expertise within the debriefing as well as within the think-aloud session.

Cognitive Load. Debriefing is a heavy cognitive load for the debriefer, as the fellow balanced foundational elements, facilitator behaviors, debriefing strategies, and learning outcomes. As faculty reflected on the video-assisted think-aloud, they held in mind how cognitive load influenced performance and evaluation. One faculty discussed how the cognitive load overwhelmed the fellow when they shared, “[Fellow] was lost and not exploring well with the learners.” Another faculty member spoke about “the extra cognitive load of debriefing a [virtual reality (VR] experience that she was not a content expert in.” Balancing their developing skills as a debriefer with the newness of VR influenced the fellow’s performance as well as the way they reflected on their skills. Finally, a third faculty member discussed how cognitive load can overload the fellow and influence the learning conversation. They evaluated that “[the

Fellow] had command and execution of phases of debriefing, but additional cognitive load allowed for initial minutes of debriefing to feel a little more disjointed until she was able to regain composure." Being able to maintain composure while facing the cognitive load required for debriefing was a growing edge for most fellows as they worked towards adaptive expertise.

Stage 2: Video-Assisted Debriefing the Debriefer with Faculty Coaching/Feedback

After engaging in the video-stimulated think-aloud session, faculty and fellow shared in a Video-Assisted Debriefing the Debriefer with Faculty Coaching and Feedback (VAD the D) session. Faculty and fellows were both responsible for identifying and sharing two video clips that displayed one area of strength and one area of improvement for fellow skill development. At the end of the VAD of the D, fellows and faculty completed quantitative assessment tools as well as qualitative questionnaires about the experience and critical incidents that occurred during Stage 2.

Quantitative Findings

Fellows and faculty were both asked to evaluate the fellow's level of skills acquisition after the think-aloud session and then again after the VAD the D. After participating in the video-stimulated think-aloud session both faculty and fellow participants were asked to identify which stage of development the fellow was in based on the Dreyfus and Dreyfus Model of Skills Acquisition. In terms of fellow self-assessment, 33.33% assessed themselves as Advanced Beginners (7), 41.67% as Competent, and 25% as Proficient. In terms of faculty assessment, 25% of fellows were assessed as being Novice (3) and 75% as being Advanced Beginner (9) (Table 5). At this point in the research study, only 25% of faculty and fellows (3 pairs) matched in their re-assessment of skills acquisition level, whereas the remaining 75% of fellows (9) self-

assessed their skills level as higher than faculty evaluation. In terms of stage difference between the nine mismatched faculty and fellow assessment, four fellows rated themselves one stage higher than faculty (33.33%), and five fellows rated themselves as two stages higher than faculty (41.67%). Unlike the think-aloud session, no fellows rated themselves more than two stages higher than faculty.

Table 5

Differences in Evaluation of Skills Acquisition between Fellows and Faculty for Each Stage

	Stage 1: Video-Stimulated Think-Aloud		Stage 2: Video-Assisted Debriefing the Debriefer	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Fellow 1	Advanced Beginner	Competent	Advanced Beginner	Competent
Fellow 2	Novice	Advanced Beginner	Novice	Competent
Fellow 3	Advanced Beginner	Advanced Beginner	Advanced Beginner	Advanced Beginner
Fellow 4	Novice	Proficient	Novice	Competent
Fellow 5	Novice	Advanced Beginner	Novice	Advanced Beginner
Fellow 6	Advanced Beginner	Proficient	Advanced Beginner	Proficient
Fellow 7	Advanced Beginner	Advanced Beginner	Advanced Beginner	Competent
Fellow 8	Advanced Beginner	Proficient	Advanced Beginner	Proficient
Fellow 9	Advanced Beginner	Advanced Beginner	Advanced Beginner	Advanced Beginner
Fellow 10	Advanced Beginner	Advanced Beginner	Advanced Beginner	Advanced Beginner
Fellow 11	Advanced Beginner	Advanced Beginner	Advanced Beginner	Competent
Fellow 12	Advanced Beginner	Proficient	Advanced Beginner	Proficient

Note. This table highlights the difference between faculty evaluation and fellow self-evaluation of skills acquisition for each stage of Phase B. Comparisons can be drawn between dyadic score sets to appreciate the multilevel system: faculty with fellow, fellow with fellow, and faculty with faculty.

As part of the video-assisted debriefing the debriefer session, faculty and fellows were each asked to select two video clips for coaching and feedback. Each person identified one video clip that displayed a strength (plus) in debriefing performance and one video clip that showed an area needing improvement or change (delta) in debriefing performance (Table 6). More than half of the fellows identified plus clips from the analysis phase (66.67%), with other plus clips selected from reactions (16.67%), takeaways (8.33%), and descriptions (8.33%). The same number of faculty identified plus video clips in the analysis phase (66.67%), followed by setting the scene (16.67%), reactions (8.33%), and takeaways (8.33%).

Table 6

Comparison of Fellow Self-Evaluation and Faculty Evaluation for Plus/Delta and Skills Acquisition for Phase B Stage Two

	Fellow Self-Evaluation			Faculty Evaluation		
	Plus	Delta	Skills Acquisition	Plus	Delta	Skills Acquisition
Fellow 1	Analysis	Description	Competent	Setting the Scene	Analysis	Advanced Beginner
Fellow 2	Analysis	Reactions	Competent	Analysis	Analysis	Novice
Fellow 3	Analysis	Analysis	Advanced Beginner	Analysis	Analysis	Advanced Beginner
Fellow 4	Analysis	Takeaways	Competent	Analysis	Analysis	Novice
Fellow 5	Reactions	Setting the Scene	Advanced Beginner	Analysis	Analysis	Novice
Fellow 6	Analysis	Description	Proficient	Reactions	Analysis	Advanced Beginner
Fellow 7	Takeaways	Reactions	Competent	Takeaways	Setting the Scene	Advanced Beginner
Fellow 8	Reactions	Analysis	Proficient	Analysis	Setting the Scene	Advanced Beginner
Fellow 9	Analysis	Takeaways	Advanced Beginner	Analysis	Analysis	Advanced Beginner
Fellow 10	Analysis	Analysis	Advanced Beginner	Setting the Scene	Reactions	Advanced Beginner
Fellow 11	Analysis	Analysis	Competent	Analysis	Takeaways	Advanced Beginner
Fellow 12	Description	Analysis	Proficient	Analysis	Description	Advanced Beginner

Note. This table displays side-by-side comparison of faculty and fellow evaluations. It demonstrates the phase of debriefing fellows and faculty selected video clips from for the video-assisted debriefing the debriefer. The category of Plus is a suggested area of strength for the fellow, whereas the category of Delta is a suggested area of change or improvement for the

fellow. The phases of the PEARLS debriefing model occur in the following order: Setting the Scene, Reactions, Description, Analysis, and Reflection. It also demonstrates fellow self-assessment and faculty assessment of skills acquisition after engaging in Stage 2. The level of skills acquisition comes from the Dreyfus and Dreyfus Model, which proposes that individuals progressively develop skills in the following order: Novice, Advanced Beginner, Competent, Proficient, and Expert.

Delta video clips were selected from each phase of PEARLS debriefing. Almost half of the fellows (41.67%) selected video clips from the analysis phase for feedback and coaching. Equal number of fellows selected reactions (16.67%), description (16.67%), and takeaways (16.67%), with only one fellow selecting setting the scene (8.33%). Over half of the faculty selected delta video clips that occurred during the analysis phase (58.33%). While the majority selected analysis phase video clips, areas for improvement were also identified in setting the scene (16.67%), reactions (8.33%), descriptions (8.33%), and takeaways (8.33%). Fellows and faculty selected video clips in the same phases, suggesting shared attention for these specific phases for recognition of progress and ongoing skills acquisition. In terms of strengths, half of the faculty and fellow dyads selected video clips from the same phase. While these findings account for survey responses, additional or different video clips may have been selected and reviewed over the course of the VAD the D session.

After the video-assisted debriefing the debriefer, fellows and faculty were asked to rate which aspects of the process promoted self-evaluation. Overwhelmingly, 91.67% of fellows and faculty identified watching the video recording as the most influential component of promoting

self-evaluation. Additionally, fellows found facilitative benefit in faculty support (83.33%), capacity for self-reflection (75%), and debriefing (50%). Whereas only a quarter of the fellows (25%) found a challenge offered by the faculty mentor contributive, more than half (58.33%) of the faculty rated the same category as influential to the fellow's self-evaluation. Finally, faculty found faculty support (66.67%), debriefing (58.33%), and capacity for self-reflection (58.33%) as supportive of the self-evaluation process. Overall, several factors helped facilitate the self-evaluation process for simulation fellows.

Fellow Perspective-Qualitative Findings

Themes of experience and critical incidents were derived from the content of the qualitative survey questions completed by fellows after engaging in the VAD of the D. To understand the experience of the fellows, the reflective thematic analysis aimed to answer the research question SUBQUAL B3, what are the experiences (critical incidents) of faculty using video-assisted debriefing with coaching and feedback to support simulation fellows in developing self-evaluation skills as a debriefer? The six themes included (1) video as anchor, (2) discrepancy and alignment, (3) moments of realization (keeping power in check, questioning purpose alignment, interleaving ideas for deliberate practice), (4) feedback seeking and growth mindset, (5) realistic self-perception, and (6) faculty actions (challenge acceptance, shared language, detailed intimate knowledge).

Video as Anchor. Video review shifted subjective feedback to objective feedback as video serves as a shared anchor for faculty and fellows to rely on during feedback and evaluation. One fellow reflected on how the anchoring with the video increased their psychological safety:

> I think having the video for review increased my psychological safety. Traditionally, when I receive feedback it is often from the memory of the faculty, which can create distrust and defensiveness in me. Having the video was a shared anchor, that allowed us both to reflect from a more objective standpoint.

In this context, the video served as an externalization of current performance upon which to comparatively reflect the ideal performance. Anchoring the conversation to specific video clips promoted reflective practice for the fellow, drawing a comparison between watching the video to learners engaging in a simulation:

> The important part of this exercise was having the video available to prompt conversation about my debriefing skills and also have the video available to remind both of us how to launch forward. In many ways, it's like using the [simulation] to drill a learning objective. You can teach this stuff without [simulation]. But using video gave us a "sim" to refer back to and explore in more detail.

Another fellow shared how the video offered a showing down and expansion of time upon which to compare current and ideal skill performance:

> So, there's this inherent respect of the psychological safety. I see it as this beautiful opportunity and moment to continue to work on: how do I slow down, not think so far in the future, be present and ask the thing that I'm the most curious about, which—hopefully—will allow me to really begin to close knowledge/learning gaps.

Video served as an anchor when exploring and self-evaluating skills performance.

Faculty intentional approach to utilizing video review fostered psychological safety, creating a safe container for co-exploration. By having both faculty and fellow select video clips, both

parties shared in the dialogue with the shared goal of improving the skills development of the fellow.

Discrepancy and Alignment. Fellows experienced both discrepancy and alignment in the process of developing self-evaluation skills. Within the context of the VAD of the D, fellows often discussed the unique experience of discrepancy and alignment in selecting video clips for skills for review. When video clips aligned, fellows reported feeling as if their self-evaluation was more accurate. Discrepancy and alignment are often experienced as validating, surprising, and approached with curiosity. One fellow shared that, "[b]oth the faculty and I selecting the same clip for strength makes me happy that I may be doing well in that area of debriefing." This alignment created a semblance of pride in performance and capacity for self-evaluation. Another fellow discussed when there was discrepancy, as they shared, "I think I was surprised that [Faculty] and I—essentially—had the reverse of noted moments from the video notating." Alignment and discrepancy occurred as a critical moment in each VAD of the D. When the tension between alignment and discrepancy was experienced with compassion from faculty, it resulted in deep learning and increased awareness around future steps for skills development. One fellow discussed this tension in the following way:

> It was interesting in the way that both the growing edges were related, in the sense that I was getting to the point I should have made in the analysis phase by the time I was in the takeaway phase. I also found it interesting because there was a component of what [Faculty] was using as a delta that I outlined as a plus.

Another fellow used the tension to reflect on the influence of their skills performance more deeply:

> When [Faculty] and I picked the same clip but I picked it as a plus and he picked it as a delta. I thought using what the learner said as a segue into analysis phase was more organic but [Faculty] helped me to see that by doing that, I may have inadvertently cut off what the learner was about to say and they may not have been able to voice it after that.

A third fellow discussed their surprise and how the tension of alignment and discrepancy can lead to self-directed learning to promote adaptive expertise:

> I'm also super surprised that we both identified the same thing as what we wanted to work on...we utilized different language (I said connecting the debriefing to the learning objectives and using those as my guides within the debriefing and he reported really focusing on closing those knowledge/learning gaps for/with the learners). I think this'll come with being more intentional, slowing down, focusing on the simulation and identifying a piece to focus on and recognizing where my own emotional states are at during the course to ensure they aren't leading the debriefing."

At the intersection of alignment and discrepancy was a critical moment for self-evaluation skill development, as the fellow aimed to integrate or balance the experience of both.

Moments of Realization. Moments of realization are those aha moments that lead to deeper understanding of current skills, motivate future skill development, and increase educator self-awareness. Several fellows reflected on moments of realization that contributed to their skill acquisition. One fellow spoke about their increased competence when they shared, "I feel like I gained such clarity in terms of how to improve my skills that I jumped up a whole level." For another fellow, moments of realization resulted in a more humbling experience when they

reflected, “I think I am able to apply the tenets of debriefing using the PEARLS script, but I still need practice using the tool.” Through this process of self-evaluation, fellows moved external learning to internal schema, allowing for concretization and embodiment of knowledge. It became apparent that for all fellows moments of realization offered a profound effect.

Keeping Power in Check. Moments of realization that significantly impacted fellow development was grappling with the presence of power in the learning conversation. VAD of the D offered fellows the opportunity to witness their own struggle with keeping their power in check keeping the power of other educators in check to maintain the psychological safety and quality of the debriefing. One fellow shared about how the VAD of the D opened their eyes to the power they yield as an educator. They acknowledged their potential abuse of power using the third person perspective, “[t]he anxiety of the fellow harms the way she was engaging with the learners at the beginning of the debriefing.” Power also performed in the fellow’s attempts to overly control and manage the debriefing. In sharing about two video clips they review with faculty, one fellow reflected, “These two were connected in the video because of my internal conflict that was going on at the moment. I became very overwhelmed and started to over control the debriefing in efforts to gain my own cognitive control.” Three fellows discussed the abuse of power yielded by challenging subject matter experts, who attempted to overtake the debriefing session from the fellow. In viewing the recording, one fellow reflected on their desire to reclaim power as they “tried to express my feelings about the nurse instructor jumping into the conversation. Thinking about how differently I could've managed that situation.” Keeping power in check served as a critical moment for developing self-evaluation skills for simulation educators.

Questioning Purpose Alignment. In developing self-evaluation skills, fellows needed the opportunity for questioning purpose alignment. Questioning purpose alignment allows the fellow the space to ask why questions and better understand the reasoning/motivation behind choice making. In questioning the purpose of their actions, fellows better appreciated the nuances of debriefing skills and more deeply understood how the phases connect. In reflecting on their VAD of the D, one fellow considered this moment of realization when they shared, "also, when we really broke down the 'feeling' question from PEARLS, I was able to express why I am struggling with that question and [Faculty] really clarified the goal of that question serving as a needs assessment." Questioning purpose alignment promoted clarity and concretization of knowledge for developing simulation educators. It was common for fellows to have this moment of realization around their skills performance in the analysis phase of the recorded debriefing. Another fellow described questioning purpose alignment that occurred because of engaging in feedback with faculty around their performance in the analysis phase:

> I feel a certain lack or something missing within my analysis phase, I can feel a pull to expand and deepen but don't know how. There isn't a lot of play in the section because I feel like I'm still trying to follow a script because I feel anxious/lost/nervous...it's the area I feel the least secure in because I'm still trying to figure out what it means to close those learning gaps and tie everything back into the learning objectives. So, the section does make me nervous and then my emotions take over.

During VAD of the D, questioning purpose alignment supported fellows in more deeply understanding the motivations behind their behaviors as they developed the necessary self-evaluation skills to question their purpose independently in practice.

Interleaving Ideas for Deliberate Practice. Through productive struggle, fellows began to interleave ideas to promote deliberate practice in skills development as a simulation educator and debriefer. By interleaving ideas, fellows move towards improving the skills they currently have while extending the range of their skills. Every fellow was able to recognize a moment during the VAD of the D where they straddle for range. On fellow discussed their judgmental tone and approach during their recorded debriefing:

> During the debriefing, I pointed out a skill that was performed wrongly, and I sounded judgmental. Next time, I will state my observation, state the fact and add my curiosity why the action was performed to spark learning rather than blocking the learning due to the fear of being judged.

To manage their own judgments moving forward, the fellow identified how to interleave their current skills in learner-centered debriefing while expanding their range by blending advocacy/inquiry. From this perspective, these moments of realization led to self-directed learning to develop range. Another fellow discussed a similar moment of realization when learners asked the fellow for direct feedback:

> When I was not able to provide feedback when the learners asked me for it, instead I let the [subject matter expert] talk and take the lead and cut the conversation. I could've gone back to that question and give feedback. Next time I will try to not be afraid of being judgmental, and talk with kindness and curiosity.

Reviewing the video recording, this fellow was able to interleave their current skills of advocacy/inquiry and co-facilitation to address a new skill of integrating a subject matter expert into the analysis phase. Integrating feedback from the faculty supported by video evidence, one

fellow was able to interleave their own reflection and the faculty's reflection to identify future target areas for deliberate practice. They wrote:

> I think I realized I was not actually interested in the content, more excited about an opportunity to debrief and now I am more excited to try and do it again… Prebrief my debriefs with an eye towards what I find most interesting to help energize my analysis phases.

Through VAD of the D, fellows can interleave various ideas from the session to develop self-evaluation skills necessary for ongoing deliberate practice and facilitating quality debriefings.

Feedback-Seeking and Growth Mindset. Feedback-seeking behavior served as a motivator for fellows to engage in feedback conversations and build skills for accurate self-reflection. Being motivated to receive constructive feedback during formative assessment allowed fellows to identify future directions for continuous improvement and promoted a growth mindset for future evaluative processes. One fellow shared their motivation for feedback, when they shared, "The polish! I like to get feedback so I can have a target for improvement… Would be good to know how the learners also felt about my debriefing and their recommendations for polish." In appreciation of exploring their growing edges, one fellow explained, "I appreciated both of these growing edges because they both encouraged me to learn how to navigate between learner and facilitator focused learning, in addition to ensuring that I capture and explore strengths to encourage the learning process." A third fellow discussed how feedback was validating, as they reported that, "[Faculty] encouraged me to stay true to what is comfortable when in the analysis phase of the debriefing, which I appreciated." A fourth fellow expanded on

their growth mindset in how they thought through and received specific feedback from their faculty coach. The fellow shared how they transformed the constructive feedback into a more digestible curiosity, which promoted deeper reflection and self-evaluation:

> The growing edge for [faculty] was less of a growing edge and more of a curiosity about my choice. (He spoke about the moment in the reactions phase when I ask people how they're feeling and I state my background is in mental health and so when I ask about how we're feeling: I really want to know, so I ask that we stay away from: good, fine, tired that what we use to describe a pizza). However, it did make me think a little more deeply about how to phrase that for non-mental health professionals. He stated that he was afraid it might turn people off and lock them up (it didn't) but it was a strategic move on my end to really help explore what emotions and even conflicting emotions might be in the space.

A growth mindset was also evident for fellows when many discussed connecting feedback to future skills performance. It often sounded like: "[Faculty] gave me plentiful opportunities to practice and think about how I can work on my deltas/growing edges in real life." Psychological safety and rapport with faculty were foundational to creating a culture of growth mindset and feedback seeking behavior, as fellows aimed to build capacity for self-evaluation.

Realistic Self-Perception. By using the VAD of the D, fellows were able to engage in feedback with a faculty which helped them move from an overestimated or oversimplified perspective of self as debriefer to a more realistic self-perception. One fellow elaborated on this transformation in self-perception by sharing:

> I thought watching myself on video was primarily going to be reveal all the problems with my nonverbal cues. I did not anticipate this being the most incredible opportunity to hone in on the biggest growth areas for me as a debriefer (feelings question, using [advocacy/inquiry], using the learning objectives as an anchor to reel me back in, sticking to the time) and then practice those growth areas in real time. It turns out that my nonverbal cues aren't even that bad, or were viewed as largely positive by [Faculty]. The thing I thought I was going to learn the most about was actually the least important thing we talked about.

In counter narrating initial perceptions, video review supported fellows in overcoming self-assessment bias as they view their productive struggle with compassion and receive relief from self-criticism to develop a more accurate capacity for self-reflection on performance. One fellow connected this relief to having the video for reflection:

> I appreciated the opportunity to see the video because it provided me with what I felt was positive feedback about my debriefing skills. After completing the debrief, I was beating myself up about what I could've and should've done differently. But watching the video helped me to see that I didn't do as bad as I thought I did. In fact, I thought that I did well for a beginner.

This fellow was able to use the video review to embrace an accurate self-evaluation of their skills acquisition. Another fellow articulated their surprise around softening their own self-criticism building realistic self-perception by comparing past behavior to current performance:

> I reported feeling ambivalent and as I began to speak more the ambivalence actually became something quite different: surprise. I was surprised as my own reactions,

> surprised by the way in which I was thinking about myself, and surprised at the way in which I could metabolize and receive the constructive criticism. I reported to him that had this been 6-ish years ago this would've been an entirely different experience because I would've berated myself and critique TOO harshly.

Engaging in VAD of the D helped bridge the gap between perceived performance and actual performance promoting realistic self-perception in self-evaluation.

Faculty Actions. Intentional actions by the faculty members promoted self-evaluation skills and served as a role modeling of ideal behavior for debriefing. One fellow offered, "I think the experience offers an excellent way to self-reflect and identify areas for improvement. I believe this is a great tool for teaching and engaging the learners." As a result of faculty actions and role modeling, another fellow discussed moving through productive struggle:

> I still believe that my skills are at a stage where I'm exploring and existing in a productive struggle but now I'm having language and support on what strategies to utilize or focus on to help improve those areas.

While general faculty actions were identified by many fellows as "contributing to a robust conversation," faculty actions are more specifically understood through three additional sub-themes: (1) manageable doses of challenge, (2) shared language, and (3) detailed intimate knowledge.

Manageable Doses of Challenge/Challenge Acceptance. Embracing productive struggle in skills development moved the fellow from being resistant to feedback and ongoing practice to accepting the challenge of skill development. Being able to reflect post-struggle created distance for the fellow to appreciate challenges offered by faculty in a way that can be generative to

learning rather than stifling the learning process. In responding to a faculty challenges one fellow reflected on how their naïve understanding could contribute to an effective debriefing:

> I think that when we discussed that it is not a detriment to ask the learners or a subject matter expert in the room to explain something to me. It could actually help the debriefing and open up the conversation by being curious.

A similar sentiment was shared about a faculty challenge when a second fellow offered, "[Faculty] asked me why I did or didn't do certain things and being asked that helped me to understand my thinking behind it. Like why didn't I ask the learners what a term I was unfamiliar with was?" Creating space for fellows to challenge faculty back to ensure receipt of feedback message allowed for digestibility of the constructive message for future growth. When faculty offered a workable challenge, faculty and fellow created space to move through the productive struggle and arrive on the other side with increased insight. A third fellow embraced a manageable challenge offered by a faculty when they shared, "I was presented with a challenge that I was not finding the content interesting in the debrief, and after working through that thought [with Faculty] I highlighted for myself approaching the debrief with curiosity." After a faculty reflected to a fellow that they needed to consider the learner outcomes in the debriefing, a fellow accepted this challenge and arrived at a new insight: "Additionally, identifying learning gaps that need to close within the debriefing space as opposed to just creating a lovely open space to discuss what happened." By accepting this challenge, this fellow was able to move their practice from just facilitating a dialogue to facilitating a learning conversation through debriefing. Faculty actions in the form of manageable doses of challenge create an experience of productive struggle that is workable to increase insight and build self-evaluation skills.

Shared Language. The use of shared language modeled the faculty meeting the fellow where they are in their stage of development. By engaging in a shared language, the fellow reported feeling validated in their developmental process and pulls the fellow out of their self-critical lens and into a lens of accurate self-appraisal. One fellow shared what contributed to them feeling understood by faculty: "The faculty wrote down the comments that I made, read them back to me to make sure they were correct before saving them." In meeting the fellow in their communication style, the faculty modeled for the fellow how to accommodate the communication styles of future learners. For two fellows, the faculty joining in on the metaphors offered by the fellow contributed to their self-evaluation. One fellow shared, "I was engaged because the faculty was able to take my analogy and feed it back to me and then that formed the foundation of the conversation for us to roam around on." A second fellow elaborated further on this discussing more deeply the impact of the faculty using creativity to connect ideas:

> I work in analogies or metaphors and for someone to be able to lean into it and then identify the learning/knowledge gap from it and feed it back to me it's amazing. So, [Faculty] was able to take the analogy of the driver missing their turn on the highway and take the blame out of it, highlight the positive, turn it into a growing edge and reflect all of that back to me. It removes the sting of my own thinking around thinking in analogy/metaphor and really aligned me with [Faculty] that someone can speak in my language as opposed to me always have to speak in others' language.

It resulted in a spirit of collaboration and open dialogue, like when another fellow discussed how given the space to meander in their thoughts affirmed their learning:

> Sometimes it takes me a while to fumble around in my head and aloud to really hit upon the 'thing' that I'm trying to say...and it's really affirming when the faculty member allows it to happen and listens intently and then reflects it back to see if they have their own understanding correct.

Faculty who join fellows in their unique ways of communicating validated the self-evaluative efforts of the fellow.

Detailed Intimate Knowledge. Faculty entered the feedback and coaching conversation with detailed intimate knowledge of what transpired during the recorded debriefing. Detailed intimate knowledge was an accumulation of faculty expertise in simulation and debriefing, their independent review of the video recording, and their observations during the video-stimulated think-aloud. One fellow captured this sentiment when they shared:

> [Faculty] stated the description phase and really had a detailed intimate knowledge of the debriefing and pointed out several things that he saw and lifted those moments of 'good'—which felt really nice. Detailing out moments that felt like they're automatic to me but important to others—the setting the scene and creation of psychological safety (using peoples names and body language).

Detailed intimate knowledge prepared faculty to navigate the coaching and feedback session with increased awareness and understanding of the fellow's performance. In turn, faculty facilitated feedback that guided fellows towards making deeper connections with their own performance. Another fellow shared their experience of linking feedback to performance when they reflected:

> We discussed that what he views as the setting the scene as well done allowed the analysis to exist and then my comfort level in illuminating my frame within the analysis to try and deepen the concretization of knowledge only happened because of the strength of the setting the scene. So, I think that the connection between these two are directly linked. Now the work begins on how to bring the level of analysis up to the level of the setting the scene.

As a result, fellows reported increased confidence and trust in feedback as they found faculty commentary more credible and trustworthy. A third fellow summarized this trust when they shared:

> Plus I think some of the things I thought were "bad" or deltas, [Faculty] thought were fine, like my nodding and paraphrasing was largely ok. So I think hearing from a trusted faculty member/mentor that there were some things I did right made me feel more confident in selecting one level higher on the model.

Through video-assisted debriefing, faculty can leverage their detailed intimate knowledge to support fellows in further developing their debriefing and self-evaluation skills.

Faculty Perspective-Qualitative Findings

Themes of experience and critical incidents were derived from the content of the qualitative survey questions completed by faculty after engaging in the VAD of the D. To understand the experience of the faculty, the reflective thematic analysis aimed to answer the research question SUBQUAL B3, what are the experiences (critical incidents) of faculty using video-assisted debriefing with coaching and feedback to support simulation fellows in developing self-evaluation skills as a debriefer? The five themes included (1) subjectivity in

feedback/learning (cognitive bias, imposter phenomenon, bidirectional relationships, self-monitoring tensions and vulnerability), (2) familiarity/structure and framework, (3) role of video clips (mutual understanding/exchange of ideas, alignment of selected feedback, varying perspectives deepen understanding of concepts), and (4) targeted learning for stage progression (pre-debrief, difficult dynamics, blending strategies, and prioritizing content).

Subjectivity in Feedback/Learning. Feedback and learning were both influenced by individual and social subjectivities. Faculty and fellow's individual experiences, opinions, and feelings inevitably showed up in co-creation of feedback and learning. Appreciating the influence of these subjectivities on the system of learning and evaluation was crucial to promoting more accurate self-evaluation. When moments of subjectivity can be recognized, the easier it is to navigate their influence. Common subjective experiences that occurred within the VAD of the D phase of this study were best understood through four sub-themes: (1) cognitive bias, (2) imposter phenomenon, (3) bidirectional relationship, and (4) self-monitoring tensions and vulnerability.

Cognitive Bias. Cognitive biases distorted or colored the way a faculty member reviewed performance and shares in feedback with fellows. One faculty shared "I was not fully committed to what he was deeming as a strength and so I had to be very intentional in how I approached feedback. In this case, faculty bias created doubt in the fellow's capacity to identify their own strengths. A second faculty reflected around reminding themselves to keep an open perspective about their assigned fellow:

> I had already found myself fixating on the missed opportunities and [Fellow] chose a clip I thought was a missed opportunity, but he pointed out what he had allowed to happen

> which precipitated a learner centered discussion. I missed that and appreciated being reoriented to that.

It may take the collaborative exchange between faculty and fellow to keep bias in check. Relatedly, fellows were also influenced by cognitive bias in their on self-assessment as well as in the receipt of feedback. Video-assisted debriefing led fellows and faculty to seek confirmation to support their own subjective appraisal:

> I thought the video will allow [Fellow] to better appreciate his performance, but I do still think confirmation bias played a role in how he watched the video impacting his willingness for feedback. I wonder if given a chance in the near future if he would take the time to apply the skills or has he plateaued.

In recognizing the presence of confirmation bias, the faculty's perception of fellow's capacity to improve waned, which can influence the feedback relationship. Cognitive bias reduced cognitive flexibility, which is crucial to debriefing and self-evaluation. A third faculty reported the need to remain open to being influenced by cognitive bias when they offered, "I am reminded to keep an open perspective." Faculty benefit from increasing awareness of their own biases, engaging in structured processes to mitigate and interrupt their presence, and reflecting on how the presence of bias may be influencing their capacity to evaluate.

Imposter Phenomenon. Self-confidence of faculty and fellows waivered during feedback and development of self-evaluation. Imposter phenomenon, in the form of self-doubt of skills and ability, influenced learning and feedback. In interprofessional education, imposter phenomenon may show up between different disciplines sharing learning with each other. One faculty member discussed the influence of imposter phenomenon for a fellow whose professional

background was different than the learners who participated in the debriefing. The faculty shared, “I was happy she had insight about her own assumptions, but I was hoping that she might touch on what I see as an overarching imposter syndrome when it comes to debriefing medical situations.” Influenced by the nonverbal communication of the fellow, another faculty doubted their abilities, when they reflected, “[Fellow] had some confused body language/facial expression when watching the delta clip I had selected which made me feel defensive or unsure whether I was correct in selecting that clip.” Imposter phenomenon led faculty to second guess their feedback. In a session with a different fellow, the same faculty member reflected on how affirming nonverbal communication alleviated their self-double: “[Fellow] made eye contact and nodded as I was speaking, which helped me feel we were on the same page.” Imposter phenomenon may be a shared occurrence of social subjectivities that occur for both faculty and fellows.

Bidirectional Relationships. Giving and receiving feedback was a bidirectional relationship requiring both parties to be open to sharing and receiving. Faculty reflected on falling into patterns of giving feedback rather than engaging in feedback. One faculty highlighted this experience when they wrote:

> When we were offering feedback, I think I went into direct feedback mode, and I wasn't thinking about how to have [Fellow] come up with the solutions. I wish I had used the video better in this circumstance, but I worry that I may have just bulldozed with it to prove my point. I felt disconnected because I was talking wayyyyy too much.

This faculty member reflected on how video supported them in maintaining the bidirectional relationship necessary for effective feedback and self-evaluation development. A second faculty discussed the influence of video in supporting bidirectionality through collaborative feedback:

> I think using the video to consider word choice and how the words landed on me and getting to hear them after my reaction was really powerful. I think it created an opportunity to be open to feedback. Had I not had the video I don't think I could have approached the delta as effectively.

In terms of self-evaluation, fellows benefit from being open to honestly reflect on their performance, taking in the pieces that connect to performance, and identifying a path for future improvement/growth. Many faculty shared a sentiment of surprise in fellow receptivity, which was captured in the common sentiment: “I was most surprised by how positive the overall experience was and how genuinely receptive [Fellow] seemed to be to the experience.” In discussing how timeliness of feedback influences the bidirectional relationship, a third faculty reflected, “I am appreciating that the temporal proximity from witnessing the event, may lessen the impact of the conversation in both how topics are raised and responded to.” To optimize self-evaluation skill development, faculty and fellows benefited from engaging in the VAD of the D within the same meeting time as the video-stimulated think-aloud session.

Self-Monitoring Tensions and Vulnerability. Faculty experienced tensions while facilitating VAD of the D as they balanced their own judgements and appraisals with sharing digestible feedback to the fellow. One faculty shared the tension that occurred when trying to engage the fellow in an exploration of their strengths:

> I think when I am trying to address a positive and frame it in a way with intentionality to make the behavior be repeated. I'm wondering if praise is enough or do we use that opportunity to practice again, or create an assignment for the next debrief to intentionally put that good behavior in as if it were scripted. I get kind of lost because sometimes I'm not sure where to go and then I think it falls flatter than its potential.

In self-monitoring their own performance, a second faculty discussed how their behavior may have influenced the fellow's development of self-evaluation skills:

> I think I disrupted our own flow when I realized I was talking too much with direct feedback and didn't give [Fellow] the opportunity to speak. I'm sure it created some confusion for [Fellow] even subconsciously when we want to exemplify our willingness to engage in conversation and I'm offering a one-sided approach.

Self-monitoring of feedback offered faculty the opportunity to pause and frame their offerings in a way that is learner-centered and aligned with skills improvement. It further highlights the need for faculty to release control and find a balance when following the fellow's lead for self-evaluation. In self-monitoring their experience with a fellow, one faculty shared about the tension and vulnerability they experienced at first not understanding the self-assessment of their assigned fellow. In reviewing video clips of strength, the faculty did not understand why the fellow was placing so much emphasis on the selected video clip, which influenced the faculty's engagement:

> They were definitely both strengths, but I hadn't recognized her strength upon the first 2 reviews. When she pointed it out and explained she was struggling with silence, I better understood why we were celebrating it so highly. I think I chose my strength because it

> was learner-centered but I am bias to how it was done. There was a lot of opportunity to discuss body language and eye contact that I should have seized upon as she mentioned them as both strengths and weaknesses and it may have helped her better appreciate it in her own self-assessment. Both gave opportunity for practice in the [debriefing of the debriefer].

Tension may be released when fellow self-evaluation aligned with faculty evaluation. One faculty shared relief when they wrote:

> I felt [the Fellow's] insights were correct and allowed me to feel a great sense of relief. I was concerned I might not be able to target the gaps in his performance, but he seemed very self-aware of many of the very points I wanted to raise.

Self-monitoring tensions and vulnerability helped faculty and fellows navigate their subjectivity while learning how to improve accurate self-evaluation.

Familiarity/Structure and Framework. As faculty increased the frequency with which they conducted VAD the D, their comfort and confidence in being able to share in the learning conversation with Fellows. One faculty reflected, "I was surprised at how comfortable I felt with the whole process, even though this was only the second session I've done, and the first was two weeks ago. The whole thing felt much more natural." The structure and framing of the video-assisted learning tools offered faculty guidance in giving feedback. A second faculty offered, "I enjoyed how structured and intentionally this experience has guided me in giving feedback." In sharing about the structure, a second faculty member discussed how the frequency of review solidified their appraisal of the fellow:

> My ranking hasn't changed from watching the video repeatedly. I look forward to see if she applies some of the concepts. If she can address some of the specifics around prioritizing, I see no reason why she can't ascend to competence.

Finally, a third faculty reflected when engaged in the structure of the exercise, they were more organized than when trying to share comments that were not guided by the structure:

> There were some other comments/ideas I wanted to address and oddly enough, I felt less organized in approaching those ideas and was a bit scattered at the end. The video actually anchored the beginning of the debriefing and then I got sloppy.

Familiarity with the structure and framework of the evaluation tools created a coaching environment to promote self-evaluation.

Role of Video Clips. Video clips served a multitude of roles as they relate to feedback and the development of self-evaluation skills. One faculty member highlighted the overall importance of the video clips, when they reflected, “I was most surprised at how this process has changed my perspective on how I should be giving effective feedback and the power of having the video for the learner to self-reflect.” In considering the future use of video, another faculty shared, “I really enjoy this and wish we had this type of time for most of our learning experiences. I am excited to explore how others are using it, weaponizing it and optimizing our use of video.” The role of video clips is best understood through three sub-themes: (1) mutual understanding/exchange of ideas, (2) alignment of selected feedback, and (3) varying perspectives deepen understanding of concepts.

Mutual Understanding/Exchange of Ideas. Given that both faculty and fellows were instructed to select respective video clips, each participant’s video offered the other an

opportunity to see what each participant privileged in the conversation. In doing so, the video clips offered a launching point for exchanging ideas for mutual understanding. One faculty reflected that they felt most engaged, "[i]mmediately following the playing of the video clips. The video clips provided grounding content that spurred a wealth of conversation." A second faculty echoed these ideas, sharing that [w]atching the videos allowed for the most engaging conversation as it provided a mutual understanding of the action in the moment." In particular, faculty shared that the use of video improved exchange of ideas around strengths. One faculty wrote, "I actually felt very engaged talking about the pluses because I had the video to support the conversation. Normally the conversation tends to be so short around positive behaviors and the video necessitates more time." A second faculty elaborated on this idea by sharing:

> In what normally could be a short discussion, the video offered an expansion of time to luxuriated in the skill development process. While it may not be possible after each debriefing, at crucial moments in development video review can contribute to the development of accurate self-evaluation skills to engage in self-reflection in the future.

In this sense, video generated ideas for sustainable exploration to promote mutual understanding. A third faculty shared how the video review supported an exchange of ideas:

> My choice highlighted my appreciation for [Fellow]'s ability to establish trust and psychological safety through his words and body language. [Fellow] highlighted a moment where he illuminated his frame and shared that he did not have a clinical background, which prompted more details and open sharing from the learners.

Similarly, faculty felt having the video clips to discussed areas of improvement or change (delta clips) also promoted effective reflection. One faculty shared, "I think it created an opportunity to

be open to feedback. Had I not had the video I don't think I could have approached the delta as effectively." Video clips facilitated an exchange of ideas to promote mutual understanding.

Alignment of Selected Feedback. When faculty and fellow selected the same video clips, it deepened the conversation and exploration of skills. One faculty reflected how, "It was easier to focus thoughts on a particular action or moment, with clear focus and no disagreement on what had occurred. The frame of reference was fresh and accurate for both parties." Whether the selected clip was a strength or growing edge, it helped foster a robust conversation as the video served as an anchor to launch discussion as well as return at moments of impasse. In reflecting on aligned strengths, one faculty shared, "I think when we both landed on the same plus really made that plus moment glow. I think because of it, our conversation was more robust." Similarly, a second faculty discussed the experience around moments of improvement:

> We identified the same clip, which was a moment where the debriefing felt somewhat derailed by the presence of an instructor, and where we both felt she could have done a better job managing the room and providing feedback that was requested.

These alignments served as a shared anchor to rehearse the skills performed in the recording. One faculty shared that they were "[u]sing the video as a request for a delta or a plus and then allowing trying again." Alignment of selected feedback created robust conversation for skills development and modeled the alignment of self-perception and faculty perception of performance.

Varying Perspectives Deepen Understanding of Concepts. By having both faculty and fellow prepared with selected clips, the inherent design structure offered an opportunity for expanding perspectives. One faculty shared, "I'm most surprised about how much deeper the

conversations go when you have the video anchor." A second faculty discussed how the video offered a perspective as well, when the faculty shared about witnessing the fellow reviewing a video clip:

> Yes, she identified herself as a novice debriefer, and clearly recognized that she is most comfortable in a debriefing that goes smooth. She realized the look on her face and her body language as she tried to recover from conducting the phases out of order.

Faculty and fellows were both responsible for selecting clips, which may cover areas of content that could be forgotten otherwise. This was highlighted by one faculty, who reflected, "I think they were both good choices and highlighted moments the other viewer may not have considered." Additionally, video served as an anchor to display the juxtaposition of actual performance and ideal performance. Most faculty agreed that sharing, "some insights from different perspectives lead to deeper understanding of the others choice." Another faculty shared that they appreciated, "…that what was shown in the video matched the opportunity for improvement. When the fellow recognized that opportunity, as it was juxtaposed to the actual performance, I think the learner more effectively was able to explore ways to improve." Bringing the conversation to light allowed the fellow and faculty to practice skills in the moment as well as identify skills for future development. One faculty explored this in reference to delta video clips, by sharing, "when we discussed the delta clip I chose, [Fellow] verbalized an understanding of the need to elucidate WHY a plus is a plus and why a delta is a delta for the learners." Different perspectives and incongruence in categorizing behavior promoted deeper learning for both fellow and faculty. Another faculty offered a change in their own perspective after hearing the fellow's perspective:

> I think her selection of a delta clip showed great insight on her part into how she plans on conducting future debriefings. The clip I selected did not register as a delta for her until I explained it, which I think shows she could be a little more critical of her performance in each phase in the future."

Video clips expanded perspectives and deepened understanding of concepts to reinforce accurate self-evaluation. Preparing to reflect on video clips generates a self-reflective mindset.

Targeted Learning for Stage Progression. Video-assisted debriefing facilitated a dialogue around targeted learning for stage progression. By reviewing areas for improvement, faculty and fellow identified specific areas for development that promote advanced skill acquisition. The common areas for targeted learning include (1) pre-debrief, (2) difficult dynamics, (3) prioritizing content, and (4) blending strategies.

Pre-Debrief Huddle. Through video-assisted debriefing, at least three faculty identified pre-debrief as a strategy to promote skill development as a debriefer. One faculty offered that, "[Fellow] should prebrief with herself or co-debriefer on her specific plan for the debrief, including identifying learning objectives and opportunities for growth that she will impart to the learners." A second faculty expanded this idea, by adding "[a] pre debriefing huddle with self or a subject matter expert may help clarify questions and objectives of the simulation or for the debriefing. I suggested more exploration of knowledge gaps which she was already aware of." A third faculty spoke about the direct feedback they offered their assigned fellow:

> I offered that [Fellow] uses a pre-debriefing huddle with the subject matter expert to ensure that her debriefing explores any key learning objectives of the simulation. I also suggested she choose one or two specific skills or techniques to practice for each

> debriefing, such as exploring good actions and asking follow-up questions to prompt deeper discussion and understanding of learner actions.

In doing so, fellows will be able to identify key learning objectives, prepare for specific skills use, and explore learner knowledge gaps.

Difficult Dynamics. Being that debriefing is a learning conversation, difficult dynamics are bound to arise within the group discussion. To progress in skills acquisition, fellows would benefit from learning techniques to manage difficult dynamics like integrating subject matter expertise and navigate difficult learners. Several faculty offered targeted learning around different dynamics that played out across recordings. In thinking about the fellow's stage of development, one faculty shared about how their assigned fellow needed to focus on procedural knowledge to then be able to navigate difficult dynamics:

> [Fellow] is still very rules based as she followed the script for the debriefing. She didn't link the actions effectively to decision making and knowledge application. She admits and recognizes that approaches like Advocacy and Inquiry are very challenging and that she needs to be intentional to the extent of writing it down. These basic steps were so overwhelming that I don't think managing a challenging learner is within her ability as of yet and she needs help when she gets lost.

A second faculty offered the following justification for the skill level they selected, "I think she still has to successfully navigate multiple competing priorities in a debriefing and has some growth opportunities in re-directing a difficult learner." A third faculty offered practical tips for management:

> Work on writing notes out in the various phases to keep her flow on track, which would prevent the split attention and need to recover the debriefing. Actively engage some of the strategies we talked about to re-direct attention from a difficult participant.

In engaging in targeted learning, fellows understand how to best recognize their own learning needs as debriefers.

Blending Strategies. Video offered both faculty and fellow a platform to visually review the strategies utilized to facilitate the debriefing session. A common occurrence identified by faculty was the challenges around blending communication strategies to promote effective performance review within debriefing. One faculty shared, "I feel that [Fellow] illustrated a need to rehearse the use of the PEARLS debriefing outline. We discussed several ways he could engage faculty to support him in this endeavor." Specifically targeting blending strategies, fellows may progress in the stage of skill development, especially considering the number of advanced strategies identified for targeted learning. One faculty discussed the use of silence, when they "…suggested using silence as a tool to allow [Fellow] to assess the situation as it develops and allow him time to decide what he is truly curious about. Then he could formulate more targeted questions." A second faculty spoke about a fellow being stuck in the advanced beginner stage of development as they do not understand the communication strategies for an effective blended approach:

> I think [Fellow] has the foundation skills to follow the PEARLS template, but I don't think he is effectively using all the tools that he has available. Also recognized that he didn't understand some key concepts like what a circular question is that could help him move to advanced beginner.

A third faculty member used a strengths video clip to help a fellow see their potential to blend approaches using curiosity:

> These positive reflection points double click on her ability to follow the PEARLS algorithm. Where she flexed a bit was in the clip I chose where she became curious about a learner comment and wanted to explore deeper. If she had done that more intentionally throughout, she would very quickly progress in her development.

Using video to review foundational and advanced skills supported the process of blending approaches to achieve higher stage of skill acquisition.

Prioritizing Content. Faculty identified a need for fellows to be able to prioritize content to improve their debriefing and self-evaluation skills. Prioritizing content can be appreciated in two contexts: prioritizing self-learning objectives in feedback and prioritizing learner objectives in debriefings. At times, faculty felt that the areas of improvement fellows wanted to discuss with video did not necessarily warrant the use of video with reflection. One faculty discussed how their assigned fellow could have discussed their area of improvement without using video, suggesting a limitation to their self-learning. This faculty reflected, "I think [Fellow] could have acknowledged the use of acronyms without the support of video and maybe focused her attention on something bigger." This inability to prioritize content in their own feedback was present in their difficulty prioritizing content as a debriefer for their learners. One faculty capture this sub-theme, when they spoke about how the fellow can improve:

> I think if she streamlines her debriefing, fully clarifying learning objectives to the learners in the process. I think it would also help her to lean into prompting discussions about clinical aspects of medical simulations she might be less comfortable with. I think

her capacity to self-evaluate is high and that with more practice in debriefing she will move from ‘advanced beginner’ to ‘competent’.

In learning to prioritize content in debriefing, fellows may be able to improve their own prioritizing in feedback and self-evaluation. Repeating these video-assisted evaluation learning tools may lend to more alignment with chose video clips and prioritized growth opportunities.

Phase C: Combined Focus Group

Phase C of this research project was guided by the qualitative research questions: SUBQUAL C1: How do themes from a combined simulation fellow and faculty focus group help to understand the facilitators and barriers of self-evaluation in the development of debriefing skills and practice for simulation educators? To answer the research question, a collaborative focus group with faculty and fellows took place to make meaning of their shared experiences over the course of the research study. Themes of facilitators and barriers were derived through reflective thematic analysis. In terms of barriers, the following themes emerged: (1) imposter phenomenon, (2) overly critical self-evaluation, (3) internalized fantasy of perfection/idealization of debriefing, and (4) scope of evaluation/limited perspective. In terms of facilitators, the following themes emerged: (1) intrapersonal communication, (2) video components, (3) scaffolded feedback practices, and (4) setting standards for performance/clear evaluation criteria. A third category emerged that suggested themes that could be considered both facilitators and barriers, which are categorized in this study as dual effects. These dual effects included: (1) comparative self-evaluation, (2) influence of background and culture, and (3) observer effect. Finally, this section concludes with the theme of outcomes and quality improvement, which is

best understood by three subthemes: (1) lasting impact, (2) change of practice, and (3) process improvement.

Barriers

In the context of this study, barriers are understood as obstacles to engaging in self-evaluation and make it difficult to engage in evaluative processes. The following themes emerged: (1) imposter phenomenon, (2) overly critical self-evaluation, (3) internalized fantasy of perfection/idealization of debriefing, and (4) scope of evaluation/limited perspective.

Imposter Phenomenon

While the theme of imposter phenomenon emerged during the video-assisted debriefing the debriefer sessions, it became more apparent and prevalent during the focus group discussion. It was as if it being named by one fellow or faculty allowed others to be able to name their own experiences with imposter phenomenon. Imposter phenomenon was discussed by both fellows and faculty as a barrier that needed to be overcome to accurately self-evaluate. One fellow offered, “I think um first getting past uh imposter syndrome, I think once you break through that and then you can begin to build more on your strengths and your learning process.” A faculty participant elaborated when they focused on discussing the impact of their imposter phenomenon on their capacity to self-reflect:

> I think I, I know, I maybe I'm, I'm just really speaking for myself. I don't know if other people feel this way, but like, oftentimes, I will be more critical of myself because I feel like somebody else could have done it better…So it's just like that imposter syndrome coming into play also and then have to kick that to the curb and be like, this isn't the time for me to be critical of myself. It's the time to focus on the skills.

In casting doubt on their own capacity, participants offered that part of their feelings of imposter phenomenon came from thinking someone else more competent and capable could facilitate a debriefing better than them. For faculty, it came through the messaging that someone else more qualified should be providing coaching and feedback for the fellows. Interestingly enough, video review started to be viewed as a mitigating strategy for imposter phenomenon:

> I think going through the process is like the antidote to it. Like, the more you do this, maybe the less self-conscious you'll be like going into it. You'll be like, all right, let's see how I did. Like, let's, let's go through it instead be like, oh, I have to watch myself.

Imposter phenomenon showed up as a barrier to self-evaluation, which may make it more difficult to effectively appraise skills and performance.

Overly Critical Self-Evaluation

It was also a common experience for fellows to engage in overly critical self-evaluation as they became distracted by "…focusing far more on the critiquing of self rather than the skills…" Several fellows spoke about being distracted by their critical eye as it related to how they looked on camera and how challenging it is to overcome their own critical lens: "So like it's just like getting that ego out of the way and that self-criticism out of the way is hard." Another fellow offered, "When I look up and I was looking at myself in the video, the first thing I noticed was my hairdo. I saw that first thing." A third fellow shared that even though the faculty reminded them to think-aloud, they were keeping in check critiques that focused on their personhood, rather than sharing them aloud with their faculty mentor:

> my mentor had to continuously remind me to think-aloud and I was like, well, you don't want to know like those particular thoughts that I'm thinking like the purpose and the

> context of this study is for the debriefing skills less for the like, oh, you're not sitting up straight or while those are not the right choice of pants to wear for that day. Like, this is a really kind of fascinating interplay for me.

During the focus group discussion, a fourth fellow attempted to normalize the experience as they summarized:

> Actually, I think that's low key: everybody. Well, I, most people I talk to about like when they first see a picture of themselves or their video, first thing is, is that what I look like? Is that my outfit or is that how people see me? And that, that's interesting that that's kind of one of the first barriers.

Overly critical self-evaluation resulted in fellows focusing more on their personhood and the way they looked on camera rather than focusing on the skills they were performing in the debriefing. For some fellows, these critical moments were fleeting and for others it carried across the think-aloud session. Fellows shared that keeping this critical voice in check added another layer of cognitive load when engaging in self-evaluation.

Internalized Fantasy of Perfection/Idealization of Debriefing

In their efforts to self-evaluate, participants discussed how their own internalized fantasy of what a debriefing should look like interrupted their capacity to accurately evaluate their current performance. One fellow spoke specifically about the idealization of debriefing and how not only does this influence their capacity to evaluate their performance, it also impedes their capacity to facilitate an effective debriefing:

> I'm thinking a lot about like the internalized fantasy of what I think is the quote unquote perfect debrief. And does that enter the space while I'm debriefing and prevent me from

> being in relationship with humans in that space and understanding the complexity and the nuances of humans. Like we have a framework, we have a structure. There's lots of papers on like this is the way that a debrief should be run in here, all the complexities of the debrief and you're like, cool, got it intellectually super. And then it comes the actual practice of the work. And I'm like, well that the paper said this is not what happened here. And so like, how do we especially we don't get to talk to these people who wrote these papers, right? Um Like, like what like where is that divide? And so I think that this particular tool really begins to help kind of solidify or begins to help us identify or me, I can't speak for you. Well, like, what is the why behind there or where is that gap? And how do I begin to deconstruct that perfect, perfect idea of what a debriefing is.

If simulation educators are focused on facilitating the perfect debriefing, they may hinder their capacity to genuinely connect with learners as they do not create space for the complexities and uniqueness of human interaction and learning conversations. Internalized fantasy of perfection created a bigger gap between actual performance and ideal performance as the focus became trying to live up to an unrealistic expectation of a perfect debrief. A second fellow shared similar sentiments and offered up a softening of perfection through their dialoguing in the focus group:

> So, um so I think that there is a thing with that where we have to understand that even in the person that maybe wrote the article that we are using to study, they can do a debrief and it may not be that perfected as in what they've even recommended in your article, right?

By idealizing debriefing, it became more difficult to self-evaluate actual performance. Rather than reflecting on their performance within the criteria, fellows found themselves reflecting on

what makes an idealized perfect debriefing. In this context, fantasy was based on an idealized framework and papers on debriefing, and may not align with the realities of actual debriefing practice and skills development.

Scope of Evaluation

Another theme that was prevalent during the focus group was scope of evaluation. It became more apparent in the dialoguing between faculty and fellows. Scope of evaluation makes it difficult or challenging for fellows to evaluate advanced debriefing techniques as many of them are still early in their own developmental process as debriefers. One faculty member discussed this barrier when they shared:

> Oh, I think it's what you only know what you know, and as the scope increases with respect to how much you've learned around these particular ideas and topics, how much reading you've done uh collaboration, you've done that ability to self-assess will actually grow along with it. But if you're very, very early on in your process, I think it would be very challenging to be able to hit more so than the regular nuances of conversation that we've all been kind of trained in. So like how I hold my body, how I make eye contact, how I intimate my cadence because you have an idea of what you think is acceptable. But when we're thinking about the more advanced complex ideas like advocacy/inquiry, circular questions, um how I plan my transitions to move um a dominant, you know, uh learner and, and move away from them. Those are things that you have to actually have some grounding in and some practice with before you're gonna be able to pick them out and offer strong critique.

In other words, fellows can only self-evaluate their performance based on what they already know, as they do not currently have the lived experience or evidence to evaluate beyond their current capacity. Scope of evaluation showed up among the fellows in the content they wanted more feedback on that would suggest more of a novice stage of development. Rather than focusing on skills, they discussed sentences, viewed their assessment in the binary of good or bad, and focused on sharing that they wanted more direct feedback than learner self-assessment. One fellow who had self-assessed as proficient focused some of their narrative on wanting to hear the direct feedback of their faculty mentor, rather than self-assessing:

> I just wanna know what would you do?...For me, it would have been um really interesting and helpful for me to know. So, so [Faculty] is my mentor, right? So when he went through it before this process, um what were all of his notes? Right? Because I, I'd wanna learn from that as well. Um Instead of just one of each um that would have also helped, it would help me going forward as well.

Similarly, another fellow who self-assessed as proficient focused on their debriefing performance in terms of sentences rather than facilitative moments for learning. They offered, “I mean, I think so much is happening during a debriefing that like one sentence could be a strength and then the next sentence you could be like, oh, that could have gone better.” Another fellow, who self-assessed as proficient, echoed the same sentiments when they used the binary of good and bad, rather than plus/delta: “And, and so I found, like I was saying, good and bad things not good and bad things like strengths and, and, and, and things to work on. A few fellows became pre-occupied with self in performance, which may suggest that their scope of evaluation is

limited only to those skills of a novice or advanced beginner debriefer rather than the proficient debriefer they may have self-assessed:

> I think I used an interesting type of language, or I think my body language here was reflecting something about my inner feeling and I'm just wondering what you might have thought about it, but it wasn't bad. It didn't detract from the experience, and it wasn't good. Like in a way that I would mark it out loud. I just noticed it, and this is how to categorize it and it moved on.

In the focus group, participants acknowledged the limitations of their own perspectives in self-evaluation. Despite reviewing video recordings, fellows sometimes struggled to identify key moments of their performance that required attention. This limitation highlighted the importance of receiving external feedback to enhance self-awareness and expand their scope of evaluation.

Facilitators

In the context of this study, facilitators are understood as supports that promote self-evaluation and make it easier to implement self-evaluative processes. The following themes emerged: (1) intrapersonal communication, (2) video components, (3) scaffolded feedback practices, (4) setting standards for performance/clear evaluation criteria.

Intrapersonal Communication

Through intrapersonal communication, the fellow becomes both sender and received of their own thoughts and feelings. Intrapersonal communication served as a facilitator of self-evaluation for fellows as they engaged in self-talk and introspection. During a poll in the focus group, eight of the 12 fellows reported that they initially felt they performed poorly in the debriefing before engaging in the video-assisted evaluation tools. When the cohort was asked to

reflect on why this may have occurred, one fellow discussed their own introspection. They argued that:

> Human nature leads us to see the negatives before we see the positives … it's how our brains are wired. I made a conscious effort to apply what we have been learning in the fellowship to not only see the negative things.

Another fellow shared about engaging internal feedback processing to effectively move through the evaluation process. They spoke to interpersonal communication when they shared:

> You gotta watch yourself and you weren't perfect. But this doesn't mean that you're just supposed to say all the bad stuff about yourself. Like you can say good stuff about yourself and it's OK and be comfortable with that. So I had to mentally check myself. So that helped me to point out my positives because I know naturally I'm a confident person. So it, it's easy for me to know what I'm good at and it's also easy for me to know what I suck at. So, um I had to let myself be able to speak out what I'm good at and also a appreciate the things that I suck at without beating myself down to a pulp.

Engaging in intrapersonal communication, fellows self-regulated their own responses during the think-aloud session and co-regulated their responses with faculty in the VAD the D sessions. One faculty discussed how engaging in this process helps create heuristics, which can be used to further engage in intrapersonal communication. Faculty offered:

> I really appreciate your perspective of if we were not limiting our choices of one plus delta um to focus in on how we would likely start to see patterns, which makes me think we structure things in our heuristics. And then the plus delta would be like, do I keep this heuristic, or do I deconstruct it into something a little bit better? And then all of that just

> hang back into this whole process just making this a richer like it, it made me a much more intentional debriefer and, and, and uh I guess the facilitator.

Another faculty discussed the value of partnering with fellow and faculty to build intrapersonal communication for self-evaluation:

> And I think that's why it's pretty cool because you're partnering with a person that's actually had a lot of experience to be able to kind of get that feedback. And there's some value in that because there's learning in that too, how to look at yourself. It's pretty cool.

Overall, fellows and faculty discussed intrapersonal communication as a facilitator, highlighting the benefits of self-talk, self-awareness, mindfulness, self-regulation, and internal feedback processing to self-evaluation. This theme can also be linked to other themes, like video components, which relate to mental imagery or visualization of self in performance, as these concepts are all connected to intrapersonal communication in learning.

Video Components

Throughout the focus group, participants referenced the video components of the process as facilitators for developing self-evaluation skills and an important tool to facilitate feedback. One fellow reflected on the impact of viewing their own performance:

> I really like the video component. That was really cool. I don't like hearing myself talk, but otherwise it was like nice to have an objective point. To go back to, to be like, oh, right. I see myself doing a thing and now I can learn from or model that thing that I see.

A second fellow had similar sentiments around video to illuminate performance when they shared, “I think watching a video of myself debriefing just makes me more aware of what I inherently do or don't do.” A third fellow highlighted how the video component enhanced their

capacity to receive feedback as the video offered a shared perspective for faculty and fellow to reflect on. They shared:

> But I did also tend to notice one other thing that I think was very particular to the video experience, which was that I found that I, I feel like I'm pretty receptive to feedback in general, right? Like I like getting feedback. Um But I felt much, it was much easier to just accept the feedback because we could point at it and look at it together as opposed to like feeling like I'm getting like defensive about the feedback. You know what I mean? Because sometimes because I might, if I didn't have the video, I might be like, well, I'm not sure if, you know, I agree that it was that way, you know, there was just, there was a shared thing that we could both look at and point to and was like right in front of you.

Collectively, fellow participants also shared that the video recording was less nerve-wracking than having the fellowship director in the room watching. One fellow initiated this conversation during the focus group, when they offered, “For me though, the iPad didn't give me anxiety … I would be more anxious if [the fellowship director] were there watching me, but I, I didn't really think much about watching myself.” While the fellows needed to adapt to have the camera present, they felt the camera was less intrusive to their performance than the presence of an authority figure.

In addition to fellow participants, faculty also highlighted the video components as a facilitator. One faculty reflected on how their frequency of engagement improved their capacity to share in feedback and enhanced their skills in mentorship:

> I think there's a, a notion of like practice with using videos. Uh even with my experience, I did four of these experiences and I felt like every time I was getting something a little

> bit more out of it and I was, I was getting, I felt a little bit better with how I was thinking about offering mentorship and feedback and, and like, similarly, it's like a tool, you have to practice it. And then I think you get over those kinds of initial discomforts and uh I'll be curious when we look at our own videos for mentorship, how that's gonna be for us. And we're probably gonna go through the same thing.

Video helped to transform perspective to see a more accurate representation of skills. One fellow spoke about how video shifted their self-perception, when they said, "I was beating myself up like, oh man, I didn't do too well, but having the video to be able to reflect on it was like, oh, I didn't do so bad." A second fellow highlighted the influence of video on their perspective shift, when they reflected, "I think the video allows me to be comfortable and not still viewing myself as an underdog or as a novice because I'm not a novice." Participants utilized video components to observer behaviors, body language, and debriefing strategies, offering insights into areas of strength and improvement.

In discussing the impact of the video components on self-evaluation, fellows and faculty employed an analogy comparing video review for debriefing and video review for athletes. A fellow initiated the analogy when they shared:

> I agree with that when I was doing the briefing, the debriefing, I was really nervous and I afterward I immediately thought, uh it didn't go so well, like, um but then watching the video back, it was like very objective. It was like, oh, I did that ok. I did that too and, and it was really great doing the, um, the think loud and just, I was amazed at, like, how many times I was interrupting to, like, type something down and then also, um, uh, like what [Fellow] was saying, it really lets you see tweaks that you can do, like, athletes watch

> videos of them, of their performances all the time. And their coach is saying like, oh, you could do this or like figure skaters, you could turn your heel like a little bit more to the right and then you'll land and then this gave very concrete visuals of like body language and just like remembering what exactly transpired for those of us whose memories are like Swiss cheese. It was really helpful to be able to see.

The sports metaphor became a strong anchor for other focus group participants as fellows and faculty shared similar associations as it relates to video components. One faculty joined in the conversation by sharing about their lived experience of video review:

> I love [Fellow] um bringing sporting into it because I have firsthand experience with that. And video took me in a nine month period from like an advanced beginner in a, in a sport that I was doing to a world champion in nine months, just by constantly viewing video of performance. Even the like, oh my God, that was horrible. And, and learning from that performance.

Building on the collective sports analogy, another faculty member discussed how video review can be utilized to highlight small incremental changes and improvements.

> And I think about the sports analogy again, in terms of, uh for some reason, my mind goes to figure skating even though I don’t know how to do that. Um But, but like when you watch a really incredible performance and they give like the 9.7 and you're like, well, what's the 0.3? And then how, and then does the figure skater go back? Because I'm not a figure skater and say, well, how could I get that 0.3? You know, and like, what could I have tweaked about the way I moved my foot or how I threw my head back or whatever, uh to achieve that 0.3.

While this theme focuses on video components, an emerging theme is the role of metaphor or analogy in self-evaluation. Overall, participants appreciated the use of video recordings as they offered an objective point of reference for self-evaluation.

Scaffolded Feedback Practices

Another facilitator that emerged was that of scaffolded feedback practices. The intentional scaffolding of video-stimulated think-aloud followed by video-assisted debriefing the debriefer resulted in increased confidence in the fellows being able to self-evaluate. One fellow wrote that the scaffolding helped them to manage the emotional influence of evaluation:

> …even out of our own emotional experience that the more that we remove the emotions from what we did or did not do or what we thought we did good or didn't do great and the more that we involve others and then create distance from that emotion, the more that we can actually begin to use it as like an evaluative tool or a self kind of progression tool as well.

Scaffolding video review, self-evaluation, and faculty feedback and coaching, the process created necessary distance to be able to reflect and evaluate skills performance more accurately. Another fellow spoke to scaffolding as the layers of evaluation:

> I also think there's a really interesting aspect here that I think we're also beginning to speak about is this idea is of as we add more and more layers of looking at our performance, the emotional content of our own self critique gets more and more removed. So as opposed to it being the singular debriefing in person where we're like, I don't know or I get defensive around the decisions that we made to just being recorded. Um and then watching our recording and then uh doing a debriefing of the debriefing of

> the recording that we slowly have removed the um potency of maybe some of the like emotions or anxieties that are being able, but that are kind of surfacing here, which I think is a really kind of.

In scaffolding performance, it was identified that focusing on skills and immediate application support self-evaluation. Fellows spoke about the benefits of getting to practice or rehearse the skills performed in the video recording. One fellow also shared about getting to apply feedback from their self-evaluation and faculty coaching in the same day:

> I will say I was lucky in that I did my Phase B in the morning and then in the afternoon I did debriefing. So I found that very helpful…like directly applying things that I had just learned a few hours ago.

Scaffolding up to immediate application, fellows were able to apply their learning, which is a crucial component of self-directed learning and mastery.

Setting Standards for Performance/Clear Evaluation Criteria

A final facilitator that emerged through the focus group was the positive impact of setting standards for performance and clear evaluation criteria. One fellow discussed this as they shared about the relationship between standards of practice, such as the DASH and Dreyfus Model of Skills Acquisition, and self-established standards:

> I'm expected to have a standard that I've been taught and I've learned I've gone through processes and you should have a bit of a higher expectation of me and also get comfortable with that, that my learners or the people participating, my debrief should have a higher expectation of me than they may have of the a charge nurse who have never been to a, a [debriefing course] or a [simulation] fellowship. So I think it's helping

> me to also have a higher standard for myself and strive at becoming better and not be comfortable with being a novice.

Another fellow connected their developing capacity for self-evaluation to their own self-assessment of their fellowship-established milestones. They shared:

> It feels really connected to like the the milestones and how you're asking us to assess our milestones. But this feels like the action portion of that particular milestone. Like I can assess myself all I want to. But do I have that kind of immediate direct feedback or co created developmental plan to move through. I think having clear standards to compare performance towards helps my development.

A third fellow explored the newness of evaluation to a standard by differentiating between their past experiences in residency to their current experience in the research study and simulation fellowship:

> You know, uh this has been sitting with me a little bit. Like I just spent four years in the apprenticeship model, right? Um And so I feel like I don't self-evaluate to like some sort of ideal form I self-evaluate to like just take pieces from what I see other people do. And this was maybe the first time I had a chance to see myself on video debriefing.

Overall, setting standards for performance and clear evaluation criteria enabled fellows to self-evaluate their debriefing skills and performance more accurately.

Dual Effects

In conducting a reflective thematic analysis of the focus group, themes emerged that did not necessarily show up in the binary of barrier or facilitator. Instead, these emerging themes seemed to straddle both spaces. For this research study, these themes will be categorized as dual

effects, as they serve the function of facilitator and barrier. These dual effects were (1) comparative self-evaluation, (2) influence of background and culture, and (3) observer effect.

Comparative Self-Evaluation

Over the course of the focus group discussion, faculty and fellows mentioned that historically the self-evaluation process revolved around comparing their performance to that of their mentors or role models. Rather than assessing their own progress and skills development, they often attempted to emulate the style and techniques of others, which may be a barrier to their individual growth and self-evaluation. One fellow highlighted that:

> When I self-evaluate, it's a reactive, I'm self-evaluating what I would do when I watch other people do things… You know, and so when I think of like an ideal debrief, I guess I don't really think of an ideal use of skills or whatever I just think about like, oh, I'll take a little bit from here from this guy. I take a little bit from that guy, take a little bit from someone else and just sort of mishmash together in my head.

For this fellow, they evaluated their skills to how well they performed like someone else, rather than how well they developed their own skills set. Another participant summarized this idea by saying, “it’s like self-evaluating towards a comparison as opposed to like self-evaluating as it relates to your own skill progress. It can be helpful to a point, but those mentors are not always the best models.” In navigating comparative self-evaluation, one fellow discussed how having humility for themselves may help to balance this dual effect. They shared:

> I'm just gonna comment on the fact that knowing and watching ourselves, it also helps us to know even when we get to like the high levels of maybe confidence or understanding what we're doing. It's I feel like there's a an accepted the way it's never gonna be a perfect

> like debriefing. I don't think even, I don't know, not to speak for you, but you being our lead, I don't think you think you're like the perfect debriefer?

Another fellow spoke about idealizing their mentors and wanting to perform like them, which can be helpful to develop foundational skills, but may become less helpful for complex skills. One fellow shared:

> I can relate. My self evaluation was uh mostly, or it has been mostly guided by the role model. I have so like as a resident, I saw many of my attendings debrief and like, for example, I saw [Faculty] debrief many times and I always thought how wonderful like he does it like I wanna be like him someday and or like, you know, get close to that. And so having that reference is what I have as my goal to achieve instead of like my own skills.

Holding tightly to these mental representations of others' performance may have a dual effect of enabling the achievement of a goal and be a barrier to self-evaluation of specific skill performance as the focus becomes replicating rather than learning. Almost as if talking themselves through the dual effect of comparative self-evaluation, one fellow monologued around their own self-awareness and the need to focus within the context of the debriefing:

> So, having a sense of forgiveness for ourselves and allowing ourselves to know that we're gonna try to do our best because we have studied the craft or have some guidance. But it's never gonna be a time where you watch the video recording and the whole thing is like a mentor or perfect. I think for my self-evaluation I think I'm expecting green [plus] and red [delta] for the rest of my journey.

Comparative self-evaluation served as a dual effect as it can be a facilitator as it created comparison for learning while also serving as a barrier as it set some unrealistic or less developmentally appropriate expectations.

Influence of Background & Culture

Another dual effect was the influence of background and culture. Many participants offered up how personal experiences, backgrounds, and cultural influences can shape self-evaluation. One fellow broached the topic by offering:

> I think it's interesting uh the criteria that we're using as individuals to perform that self evaluation. There's a lot of things that can influence that is, yes, we're using the pearls debriefing tool. But what else is influencing your self-evaluation? We all have different experiences, backgrounds that comes into play where you're actually critiquing yourself. I think that's very interesting.

These notions influenced how fellows critiqued themselves, and this dual effect added complexity to the evaluation process. Even relatively mundane occurrences during the day can influence capacity for self-evaluation. One fellow discussed how their morning routine with their children influenced their performance and self-evaluation:

> Because it also matters what's happening with your kids that morning. Did they get to eat breakfast, you know, like a lot of things can happen. Or the learners in the debriefing. Did they throw you're a curveball that totally got your mind crazy?

Many fellows and faculty discussed how past training experiences influenced how they engage in self-evaluation. Individuals who are used to receiving feedback from supervisors or educators,

rather than being asked to discuss their own performance expressed how this influenced their self-evaluation:

> One of my challenging parts was offering yourself feedback. Uh I think it's easy if you offer each other feedback, but offering yourself, it was a challenge for me. Not only that you have to verbalize your own feedback. Uh I myself am a huge critic of myself. So it's challenging for me to actually say, did I do good here or would I have changed the way I deliver if my audience was different?

Professional experience can also influence, as certain professional skills may more naturally lend themselves to debriefing, like for those fellows trained in education, group dynamics, and group processing. Fellows who have been trained in group therapy and work in mental or behavioral health expressed that asking questions about feelings comes more naturally to them as a result of their profession and practice. Whereas other medicine focused disciplines may struggle with asking feelings questions. One fellow shared this by acknowledging their own growing edge in the reactions phase of PEARLS debriefing:

> I was really struggle with that part [reactions and feelings]. Like, what am I doing? What is this, why we're even asking this question, you know, like, what does this matter to the learning? It was doing it more to follow the structure, but with no really reasoning … but [Faculty] told me what the question is for, which is, it's a needs assessment for the group. So now I know why I'm asking that question and, and I know what I hope to get out of that question, which helps me listen differently.

Background and culture served as a dual effect for participants in self-evaluating performance.

Observer Effect

The role of faculty observer and self-observer had a dual effect on self-evaluation. In discussing the video-stimulated think-aloud, a few fellows expressed confusion having the faculty observe the self-reflection without interjecting, aside from reminding the fellow to think-aloud. One fellow reflected:

> I was kind of questioning the purpose of the faculty observing since they weren't able to share. Like the purpose of the individual being in the room if they're not gonna talk aloud too … I appreciated the prompt um when it was like, alright, you're taking too long. I'm wondering if for me, it would have been more impactful to come in on the back end.

Another fellow echoed, "I 100% agree… I remember sitting during the talk aloud being like, you know, why can't my mentor also talk aloud with me because I want to pick up what they're picking up and just take it." While some fellows expressed confusion around the purpose of the faculty observer, faculty expressed their witnessing as a facilitator of self-evaluation. Two faculty expressed the observing during the think-aloud promoted more reflection for the fellow. One faculty summarized:

> So I, I'll, I'll push back. I actually found that whenever I offered the whole remember to speak aloud or speak aloud, talk aloud, it prompted more reflection … The reality is like, getting to hear that and, and that actually helped my feedback too. I got to, when I was mentoring, I watched the video typically the night before and I had all these memories of what happened then. But the [think-aloud], honed it in a way that I had not really experienced as well. Um Some of the things that I was walking in with, I was like, I totally misread that and maybe because I didn't hear it correctly the first time.

Another faculty agreed as they added:

> Um I think that for me, even though I had watched the video beforehand, hearing my fellows think aloud really shed a lot of light on how I was seeing them and how they were seeing themselves and a lot of things like lined up, but a lot of things didn't. So like there were times when um they would say, you know, they would highlight something as a positive and it was like, I didn't necessarily see that as a positive, but now I hear you evaluating yourself and like, now I actually kind of do so it actually, I felt myself sort of like changing a little bit, my perception changing.

Faculty and fellows also engaged in dialogue around the influence of observer effect or Hawthrone effect in this self-evaluation process. One fellow initiated the conversation by sharing, “I do think there's something to the idea though of being like uh sort of um like the idea that if you're watched, you're a different person than if you're not watched.” A faculty participant followed by naming the phenomenon as “Hawthorne effect.” Hawthorne effect refers to the notion that individuals may change their behavior when they know they are being observed (McCambridge et al., 2014). A second fellow offered their perspective around being recorded: “That's what happened to me at the beginning. I was very anxious because I know the iPad was next to me and then um in the middle of the debriefing, I forgot about it.” While the fellow expressed initial anxiety, they shared that as time went on the anxiety dissipated as they forgot about the camera. This dual effect can be connected to the aforementioned facilitator theme of video components, where a third fellow reflected on the video being less of threatening observer than the fellowship director physically being the in room. While observation occurred in multiple ways across the study, fellows, and faculty both appreciated being able to observe the video, with

this having significant impact on the evaluation process. On faculty discussed how their engagement shifted their own capacity for observation:

> I'll put out there when I now watch debriefs. I'm gonna be much more intentional in my observation. I feel like I've gotten sloppy in terms of what I write down to be able to capture a moment because I think that there's something about the objectivity of video that can be replicated in speech…But the question is, is how is the debriefer achieving that…And so the deliberateness of being very objective and writing clearly down the data that I care about and my opinion about it by not having the crutch of video because we're not gonna have it, right? The 15 minute conversation, I think it has the potential of having more value if as mentors, we can be very focused on one idea hone in on it. Uh and make sure that it's characterized appropriately. So when the person is receiving that feedback is able to understand the context of it and to be able to take that information more effectively.

Overall, observer effect has a dual effect on self-evaluation and building capacity for self-monitoring of skill development, performance, and feedback.

Outcomes and Quality Improvement

Finally, the focus group data yielded some additional themes that focus on the outcomes of participating in the experience and recommendations for quality improvement. This theme is best understood by three subthemes: (1) lasting impact, (2) change of practice, and (3) process improvement.

Lasting Impact

In the focus group, participants spoke about the lasting impact of using video recording for self-evaluation. One fellow shared that "…going forward that video of myself is still playing in the background, right? So I can act differently or act the same, you know, taking those tidbits here and there." A second fellow mused around the difference between verbal debriefing and video debriefing:

> I'm just thinking a lot about like, I wonder how it would be different if we just like had a conversation about our debriefing, you know, or, or if we were observed doing one and then had a conversation about it afterwards, you know…I mean, I feel like I got much more out of this experience than I have gotten before, you know.

A third fellow shared about being a visual learning and video leaving an enduring impression on their development and evaluative capacity:

> It's more so the experience being lasting. Because when it's just um us speaking, it's like, all right, we get the feedback and then we move on. Um But with the video, I'm, I'm a visual person, so it's sticking with me more.

Video-assisted evaluation had a lasting impact on participants in terms of their ongoing self-evaluation.

Change of Practice

Many participants reflected on the self-evaluation intervention as supporting a change in their practice. Several fellows shared about a change in perspective supporting a new way of reviewing their performance:

> For me it was surprising to kind of look me, look what I did from like another perspective. Kind, like just look to myself from the outside and recognizing those things that I didn't know I was doing well and also, like, things I could have improved. So, it kind of changed completely how I felt about my debriefing.

Using video review for self-evaluation, fellows improved their own self-awareness, which allowed fellows to appreciate the various systems and factors at play during debriefing. One fellow reflected:

> I guess it's just a combination of things that it was the first time ever seeing myself debrief. So, it just made me more aware of body language and keeping eye contact and ensuring everybody has a moment to speak if they feel comfortable speaking, things like that.

Another fellow offered up their experience as it relates to their ongoing skill development:

> So, yeah, I went from the apprehension and then discovered a new growth, and I began to see the value of being able to critique myself. And I think that that will end up being a very valuable tool moving forward into the future, moving from being a novice debrief to a more um professional uh comfortable debrief within my own, right.

As it relates to the system between faculty and fellow, participants reflected on the changed perspective towards the mentor-mentee relationship:

> I always find when there is a mentor-mentee relationship, at the beginning of that relationship, like the mentor is always like, what would you like to work on and like, what are your goals? And like 9 times out of 10, I'm always like, I don't know, it's like day one so like calm down. Um And then I like get through and then I'm like, oh, where

> did like my mentor go now? I know like this is the things and some of them are like superficial things like, oh, can I dress better? Um Not that particularly but like somewhat superficially…But I found that what this allowed us to do was core a solid progressive learning goal for us to work on. Um And that when I go to do another debrief, I can say before I do the debrief with my mentor: this is the thing that we talked about. I will be looking for you to give me feedback on this after the debriefing that allows us to have a co-creator and an active participation on both ends. That feels like an actual kind of walking with me mentorship as opposed to like come to me when you have an idea, right?

Another faculty connected the fellow experience to their own experience at being able to provide coaching and feedback on debriefing:

> But the talk aloud, honed it in a way that I had not really experienced as well. Um Some of the things that I was walking in with, I was like, I totally misread that and maybe because I didn't hear it correctly the first time, which makes me really worried about my mentorship and feedback that I've given in the past to other people without having the opportunity to look at it with such granularity and, and the speak aloud itself added that granular element to me or talk aloud, sorry. Um that I really felt like I gave better feedback. Um But it also took more practice too to get there too. And I, I still like, I'm excited to explore it more to, to see what else I could uh that we can think of in its impact. How does that land on you and in thinking about like, what's, what's this dude sitting in the room with me here for?

Over the course of the focus group, participants discussed a variety of ways the self-evaluation process changed their practice.

Process Improvement

Participants could share feedback on the evaluation intervention to improve the process. Several fellows suggested that earmarking video clips as plus/delta was limiting for areas that did not neatly fit into one category or the other. One fellow suggested developing a category called "work in progress" to capture moments that are not as easily classified. Others suggested labeling the category "direct teaching or feedback," to capture the skills fellows want direct coaching from faculty on. It was also suggested that reviewing two clips from both faculty and fellow may be limiting to appreciating the overall learning experience. It was suggested that each party could share why they are prioritizing reviewing the clips selected to model prioritizing content during a debriefing. In doing so, both parties understand each other's frame of reference. Finally, it may be useful to share all of the moments selected for feedback after the video-assisted debriefing the debriefer to have a more holistic understanding of how the faculty is reviewing their skills and performance.

CHAPTER V: CONCLUSIONS

Interpretation of Data

This multilevel mixed methods research project was guided by the overarching mixed-methods research question: what are the experiences of developing self-evaluation skills for simulation fellows in an interprofessional simulation fellowship program? To answer this question, key points are examined through the proposed integrative conceptual framework. Integrative case examples of the multilevel phenomenon of developing self-evaluation skills are restoried for mixed analysis and data integration. Through which meta-inferences are drawn out to understand the experiences, interactions, and mechanisms that occur during self-evaluation skills development for interprofessional simulation educators. Then, implications for counselor education, healthcare simulation, and health professions education are discussed. Finally, relevant limitations and recommendations of this project are offered in consideration of future research.

Both fellow and faculty scoring shifted over the course of this study, suggesting that the video-assisted evaluation learning tools influenced the entire learning system created by faculty and fellows. To varying degrees, fellows overestimated across all three evaluation points. This finding is supported by previous research that deviation between scores usually leans towards overestimation (León et al., 2023). The highest prevalence of underestimation occurred after engaging in the video-stimulated think-aloud, suggesting that emotional influences of video review may result in overly critical self-evaluation. The highest prevalence of fellow overestimation occurred after engaging in the video-assisted debriefing the debriefer (VAD the D) with faculty coaching and feedback, suggesting that engaging in direct feedback with faculty

mentors had an influence on the fellow's self-evaluation process. This finding is different than previous research that found that overestimation decreased after feedback (León et al., 2023). Moreover, after faculty feedback and coaching, no fellows underestimated their performance, suggesting that feedback may help shift fellows to more realistic self-perception, when they previously overestimated or underestimated. Previous research found that video feedback offered the largest improvement in skills performance and that expert feedback with video review promotes deeper reflective practice (Halim et al., 2021). Faculty coaching and feedback eliminated underestimation in this study, suggesting that video-assisted debriefing the debriefer led to either more accurate self-evaluation or overestimation of performance. In fact, following video-assisted debriefing, there was 100% agreement between perceived and actual performance on the debriefing element "provokes engaging discussion," suggesting that video-assisted evaluation learning tools enhance self-evaluative capacity of certain debriefing skills for simulation educators.

Fellow and faculty perspectives during the video-stimulated think-aloud helped paint a deeper understanding of the mechanisms that influence and impact the development of self-evaluation of debriefing skills. Key themes and sub-themes from fellow perspectives include: (1) multiple perspectives, (2) knowledge transformation and mobilization (self-resourcing, self-coaching for reflective practice, managing cognitive dissonance, self-reaction), (3) growth mindset and willingness to improve (self-directed corrective actions, diagnosis knowledge and performance gaps, liminal space of becoming an educator), (4) witnessing self in performance (confidence balanced with humility, externalization of an internal process, impact on personal frames/bias awareness, self-observation of professional risk-taking), and (5) value of video

review. Key themes and subthemes from the faculty perspective from the video-stimulated think-aloud included: (1) perception versus execution (improved perception, limited procedural knowledge, and fixation error), (2) strengths recognition, (3) skills development goal/recommendation, and (4) influential factors (emotional influence, contextual influence, and cognitive load).

Faculty and fellow perspectives during the video-assisted debriefing the debriefer illuminate the experiences and critical incidents that contribute to developing self-evaluation skills. Key themes and sub-themes from the fellow's perspectives after the video-assisted debriefing the debriefer included: (1) video as anchor, (2) discrepancy and alignment, (3) moments of realization (keeping power in check, questioning purpose alignment, interleaving ideas for deliberate practice), (4) feedback seeking and growth mindset, (5) realistic self-perception, and (6) faculty actions (challenge acceptance, shared language, detailed intimate knowledge). Key themes and sub-themes from the faculty perspective after the video-assisted debriefing the debriefer included: (1) subjectivity in feedback/learning (cognitive bias, imposter phenomenon, bidirectional relationships, self-monitoring tensions and vulnerability), (2) familiarity/structure and framework, (3) role of video clips (mutual understanding/exchange of ideas, alignment of selected feedback, varying perspectives deepen understanding of concepts), and (4) targeted learning for stage progression (pre-debrief, difficult dynamics, blending strategies, and prioritizing content).

Through a combined focus group, faculty and fellows were able to reflect with each other on the experiences of across the study. Their collaborative dialoguing offered perspective as to the facilitators, barriers, and dual effects that promote self-evaluation. Facilitators of self-

evaluation included: (1) intrapersonal communication, (2) video components, (3) scaffolded feedback practices, (4) setting standards for performance/clear evaluation criteria. Barriers to self-evaluation included: (1) imposter phenomenon, (2) overly critical self-evaluation, (3) internalized fantasy of perfection/idealization of debriefing, and (4) scope of evaluation/limited perspective. Beyond facilitators and barriers, a third category emerged of dual effects, which included: In terms of facilitators, the following themes emerged (1) intrapersonal communication, (2) video components, (3) scaffolded feedback practices, (4) setting standards for performance/clear evaluation criteria. Dual effects for self-evaluation included: (1) comparative self-evaluation, (2) influence of background and culture, and (3) observer effect.

These themes contribute to the overall conversation around self-evaluation research. Previous research demonstrated that two key aspects of learner perception of self-assessment: perceived usefulness and influential factors (Yan et al., 2023). The themes found in this study contribute to the growing understanding of self-assessment and build on this previous research. Similar to this study, Yan et al. (2023) found that external feedback, use of instruments, and self-assessment purpose were all instructional factors that contribute to self-assessment. These themes align with scaffolded feedback practices, clear evaluation criteria, and questioning purpose alignment, respectively. In terms of individual factors that influence implementation, Yan et al. (2023) found affective attitude, self-efficacy, important others, and psychological safety. These themes align with confidence balanced with humility, the subthemes of knowledge transformation and mobilization (self-resourcing, self-coaching, managing cognitive dissonance, and self-reaction), faculty actions (shared language, detailed intimate knowledge), and themes/subthemes that point to psychological safety as shared responsibility, respectively. From

an instructional perspective, Yan et al. (2023) found practice and training, external feedback, use of instruments, and environmental support. These themes align with targeted learning for stage progression, alignment of selected feedback, setting standards for performance, and familiarity/structure and framework, respectively. While many themes overlapped, several themes from this current study expanded the conversation. They deepened our understanding of facilitators and barriers to self-evaluation, adding the impact of video review on self-evaluation. By appreciating both faculty and fellow perspectives, this research gives greater insight into the process of self-evaluation to support educators in increasing learner engagement as well as create education interventions to optimize learning.

Lasting Impact of Video Review

Video review had a significant impact on fellows and faculty. 91.67% of participants identified watching the video recording as the most influential component to promoting self-evaluation. Additionally, both faculty and fellows identified video components as a facilitator of self-evaluation in the development of debriefing skills for simulation educators. Similarly, Eom et al. (2020) found that nursing students scored higher on performance and confidence to practice after engaging in video recording and self-evaluation, when compared to nursing students who engaged in training without self-evaluation and video recording. Across this study, references to the influence of video review can be connected to several themes, including value of video review, witnessing self in performance, self-observation of professional risk taking, video as anchor, and role of video clips. Moreover, most of the fellows were evaluated as being Advanced Beginners, and previous research demonstrated that video review is particularly beneficial for more novice learners or for early skill development (Tudor et al., 2019). Finally, it was found

that video review has a lasting impact on fellows and faculty, with the mental imagery of the recording developing a memory with the fellow beyond the confines of the intervention.

Scaffolded Feedback Practices & Cognitive Load

Several themes overlap and point towards the impact of video-assisted evaluation learning tools on cognitive load, including the themes of cognitive load, managing cognitive dissonance, manageable doses of challenge, and familiarity/structure and framework. These themes support previous research, which demonstrated ways to teach debriefers how to manage the mental workload to enhance the quality of their debriefing. Fraser et al. (2018) proposed that if extraneous and intrinsic load are managed, germane processing can occur about debriefing through self-reflection and expert feedback. They advocated for the use of validated assessment tools to frame self-reflection and expert debriefing the debriefer. Both strategies connect directly to two of the facilitators identified in this study: scaffolded feedback practices and setting standards for performance/clear evaluation criteria. Supportively, Krebs et al. (2022) found that using rubrics in self-assessment reduced cognitive load in self-assessing and enhance the accuracy of self-evaluation. While Zhang et al. (2020) suggested that video review during debriefing increased cognitive load, this study suggests that video components during debriefing the debriefer facilitated self-evaluation and skills development as video may actually reduce extraneous load to promote germane load (theme: lasting impact).

Additionally, barriers from this current study connect directly to faculty strategies proposed by Meguerdichian et al. (2016) to manage cognitive load and improve knowledge transfer. Overly critical self-evaluation can be managed by the extraneous load strategy of considering emotion as extraneous load, whereas the scope of evaluation can be managed by the

intrinsic load strategy of performing learner needs assessment. Findings from this current study provide evidence for these conceptual frameworks in the form of facilitators and barriers to self-evaluation. Moreover, completing the qualitative surveys after each intervention may have contributed to management of cognitive load as reflecting on critical incidents and identifying plus/delta created an opportunity for cognitive offloading. Nückles et al. (2020) found that writing for cognitive offloading optimized cognitive load by promoting germane processing and enhanced self-regulated learning. Intentional scaffolding of the video-assisted evaluation learning tools helped manage cognitive load (intrinsic and extraneous) and promote efficient diagnosis of knowledge and performance gaps for learning and skills acquisition (germane).

This study aims to give intentional time to reflect on performance to develop self-evaluation skills to apply to reflection in performance. Germane load can be mitigated using tools for assessing debriefing and providing protected time for reflection (Fraser et al., 2018). Moreover, debriefing assessment is known to improve as students engage more frequently in self-debriefing as learners become more familiar with the tools utilized, resulting in higher assessment scores (Kang & Yu, 2018). Previous research proposed that the core function of scaffolding is to help novice learners overcome the limitations of their working memory and transition learning into long-term memory (van Nooijen et al., 2024). Scaffolded feedback practices aim to create an intentional approach to developing self-evaluation that supports learners in being able to sustain the practice long-term. Through scaffolding performance, video review, self-evaluation, and faculty feedback and coaching, the process created the necessary supports to manage cognitive load and engage in skills performance evaluation more accurately. Given that cognitive load theory is connected to both instructional design and expertise

development, the education intervention housed within this research proposes an education strategy to enhance expertise development.

Accuracy and Performance

Fellows overestimated in the areas of managing learning environment and helping learners identify takeaways for future practice. These two areas are arguably easier tasks than the other areas of the debriefing. Research demonstrated that overconfidence occurs with skills that are easier and require less mental effort, than more complex skills that are effortful (Sanchez & Dunning, 2018). In their conceptual framework of debriefer development, Cheng et al. (2020) would argue that these areas of debriefing are often accomplished during the discovery phase as these are very rules-driven skills. The Discovery stage aligns most closely with Advanced Beginner and Novice on the Model of Skills Acquisition (Dreyfus & Dreyfus, 1980). Given that these fellows are trained in PEARLS debriefing, these two areas are often guided by the PEARLS structure and framework. Interestingly, after video-assisted debriefing the debriefer, 100% accurate evaluation occurred between faculty and fellows for the element "provokes engaging discussion," which is arguably the most complex aspect of debriefing. In other words, for developing debriefers initiating and sustaining an engaging discussion is a difficult skill (Cheng et al., 2020). Closing the gap in evaluation scores in this area may suggest that these fellows are transitioning into the growth stage of the debriefer development, which aligns most closely with the Competent stage in the Dreyfus and Dreyfus Model of Skills Acquisition. Given that most fellows identified as Advanced Beginners, it makes sense then that this cohort is transitioning up in their skill development.

These findings align with previous research, which demonstrated that individuals typically overestimate their ability often due to lack of skill development in accurate self-evaluation and difficult recognizing poor performance in oneself (Dunning, 2011; Kruger & Dunning, 1999). In this study, fellows may have fell victim to the cognitive bias known as the Dunning-Kruger Effect, as they had difficulty evaluating their debriefing skills. What is more, the overall gap between scores increased for the cohort across the three measurements of the study. Fellows who were more likely to overestimate their performance in debriefing were also more likely to overestimate their skills acquisition on the Dreyfus and Dreyfus Model of Skills Acquisition. Overestimation across the research study supports previous research from various health professions that indicated that learners value self-assessment, but require practice to engage and fully benefit from it (Andrade & Du, 2007; Little et al., 2005). In fact, previous research indicates that learners find self-assessment valuable, but need practice to appreciate the full benefit (Andrade & Du, 2007; Eldridge, 1983; Ambrose et al., 2010).

Theory and Research

Restoried Case Examples-Data Integration & Meta-Inferences

To appreciate the multilevel system involved in developing self-evaluation skills, two case examples will be offered to demonstrate different outcomes for fellows across the video-assisted evaluation intervention.

Fellow 10-Recalibrating Self-Evaluation through Shared Language and Interleaving

At the start of the project, Fellow 10 facilitated and recorded their initial debriefing with a group of nurse educators as learners. This debriefing would be considered cross-discipline, as Fellow 10 does not work in the nursing profession. After the debriefing, Fellow 10 self-evaluated

their debriefing skills and performance with an overall mean score of 5, which is slightly higher than the cohort average score of 4.8. Faculty, from a different field than the fellow, evaluated the fellow's performance with an overall mean score of 4.4. With only a 0.6 difference in rating, these scores would be viewed as an agreement between faculty and fellow as the difference is less than 1 point. The greatest gap between faculty and fellow evaluation was in the element helping trainees identify takeaways for future practice (Faculty = 4, Fellow= 6). After engaging in the video-stimulated think-aloud, both faculty and fellow evaluated the fellow as an Advanced Beginner. Dreyfus and Dreyfus (1980) categorized an Advanced Beginner as having the knowledge and skills to apply learning to real situations but continue to treat all problems with equal importance and perform better with feedback. In the area of debriefing expertise, Cheng et al. (2020) would categorize Fellow 10 in the Discovery stage as they have the basic knowledge of debriefing, follow the rules, and are learning to manage complexity. Agreement on level of skills acquisition between faculty and fellow suggest rater agreement and a shared understanding of the current debriefing expertise of the fellow.

Video-stimulated think-aloud resulted in an externalization of Fellow 10's internal process and provided a rehearsal for self-monitoring. In thinking aloud about their debriefing, Fellow 10 was initially overly self-critical of their performance, which they reported distracted them from remembering to pause the recording and reflect aloud. As a result, Fellow 10 relied on their faculty mentor to remind them to pause and think-aloud, which is a best practice recommendation for think-aloud protocol (Johnson et al., 2023; Noushad et al., 2023). Previous research indicated that self-doubt and high self-criticism can influence underestimation during self-assessment (McIver & Murphy, 2023). After the think-aloud session, Fellow 10 self-

evaluated their performance with an average of 3.4, suggesting a significant drop in score from their initial rating and an underestimation of performance (Table 7). At this point in the project, Fellow 10's self-evaluation of reflective ability decreased from 96 to 89, suggesting the fellow was re-evaluating their capacity for self-evaluation after engaging in the think-aloud session. Faculty score dropped insignificantly to an overall average score of 4.2. Fellow 10's underestimation of score could be explained by the themes of overly critical self-evaluation, and self-reaction. These affective self-reactions seemed to negatively influence the fellow's ability to review their skills performance as they were more focused on critiquing their dispositions and sanctioning themselves for their perceived poor performance (Usher & Schunk, 2017). In other words, self-reaction hindered the fellow's capacity for accurate self-evaluation.

These emotional responses can either positively or negatively influence capacity for self-evaluation. The principle of negative potency, an aspect of negativity bias, asserts that negative events can overpower the presences of positive events and may serve as a reinforcer of more rapid learning (Rozin & Royzman, 2001). Similarly, emotional self-reactions are known to increase motivation and renewed determination to adjust goals and improve performance (Usher & Schunk, 2017). In describing their own skills performance, Fellow 10 eventually self-identified as being "consciously incompetent" as they were able to identify areas for improvement, while being overwhelmed by the number of skills needing attention. These experiences are best captured in the themes of managing cognitive dissonance, diagnosis knowledge and performance gaps, and self-directed corrective actions.

Table 7

Comparison of Faculty Evaluation and Fellow Self-Evaluation of Debriefing for Fellow 10

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	5	6	4	5	4	5
Q3 Structure debriefing in an organized way	5	5	5	3	4	4
Q4 Provokes engaging discussion	5	4	5	3	4	4
Q5 Identifies and explores performance gaps	3	4	3	4	3	4
Q6 Helps trainees achieve or sustain good future performance	4	6	3	2	3	4
Overall Mean Score	4.4	5	4	3.4	3.6	4.2

Note. This table displays the comparison in DASH scores for faculty evaluation and Fellow 10's self-evaluation for each element on the Debriefing Assessment for Simulation in Healthcare (DASH). Debriefing assessment occurred at three points of measurement: post-initial debriefing, post-think-aloud, post- video-assisted debriefing the debriefer.

Initially struggling with self-regulated learning, Fellow 10 was having a difficult time regulating their own mental content as well as the external environment of the faculty observer and the video-review process (Winne, 2015). In the forethought phase of developing self-regulatory competence, the think-aloud process illuminated the increased effort and self-efficacy Fellow 10 needed to move forward in their skills acquisition (Zimmerman, 2015). All the while, the faculty member balanced perception versus execution as the faculty improved their perception of fellow's performance by becoming increasingly aware of the emotional influence, limited procedural knowledge, and skills development goals/recommendations, which are crucial for mastery learning. Guskey (2023) proposed that the planning stage of mastery learning is where the educator reviews pre-assessment materials to identify learning goals and need for additional knowledge and skills to move their learners closer to mastery. Fellow 10 and their faculty mentor both identified the Analysis Phase of PEARLS debriefing as the necessary area of improvement for the fellow, suggesting feedback alignment. Video-stimulated think-aloud as a formative assessment offered fellow and faculty insight around what areas required continued focus for skills acquisition.

During the video-assisted debriefing the debriefer, faculty and fellow each selected video clips for review from the Analysis Phase of PEARLS debriefing, establishing this area of skills as a priority for development and acquisition for Fellow 10. Evaluation scores essentially swapped because of the feedback and coaching session. Fellow 10 self-evaluated their debriefing with an average score of 4, whereas the faculty evaluated their performance as a 3.6. Although inversed, difference in scoring (0.6) was the same as the first paired rating. The lower scoring from faculty could be because of cognitive bias, which emerged as a theme from the faculty

perspective of the VAD the D. Previous research has found that various cognitive biases, including rater bias and confirmation bias, can show up in a variety of simulation modalities including videos (Akturan et al., 2022). Cognitive bias was present in the video-assisted debriefing process as it was a sub-theme that emerged because of the subjectivity in feedback and learning.

Faculty and fellow aligned in their scoring in the element of "provokes engaging discussion," which aligns with the Analysis Phase, suggesting that the feedback and coaching around the two delta clips contributed to the fellow achieving realistic self-perception and more accurate self-evaluation. From the faculty perspective, this gap was closed because of the structure and framework of the intervention, alignment of selected feedback (video clips), and the exchange of ideas. Faculty actions that contributed to the fellow closing the gap in this element are attributed to shared language in the use of metaphor, interleaving of ideas for deliberate practice, and the detailed intimate knowledge of the faculty. Supportively, in their research on forming adaptive expertise in health professions, Kua et al. (2022) identified knowledge as a predisposing factor, skills as an enabling factor, and mentor-guided feedback as a reinforcing factor. Additionally, expert mentorship and self-reflection are identified as key faculty development strategies to progress across the stages of debriefing expertise (Cheng et al., 2020). Given this, faculty recommended targeted learning for stage progression around blending debriefing strategies during the Analysis Phase.

While both fellow and faculty evaluated the fellow as remaining in the Advanced Beginner stage, a clear direction for future practice was identified. Previous research

demonstrated that self-evaluation interventions promote self-regulated learning and self-efficacy (Panadero et al., 2017). Fellow 10 demonstrated this same outcome when they reflected:

> I'm going to get more specific in my questions....maybe write out all of the questions I have or focuses I have so then I'm not trying to pick it out and formulate it in the moment (during the analysis phase) so this then alleviates some cognitive load for me and I have a template to use and I can adjust/change/improv in the moment.

In addition to discussing specific goals, Fellow 10 was highlighting the role formative assessment was having on their mastery learning as they discuss ways to promote adaptive expertise in their debriefing by being able to adjust and improvise more effective learning conversations. In other words, the fellow hopes to be able to apply declarative, procedural, and conditional knowledge and skills to be able to engage in more ambiguous situations (Pusic et al., 2018), like the analysis phase of debriefing and effective learning conversations. Bohle Carbonell et al (2014) found that supportive educators, developing solution strategies, and encouraging mistakes cultivate the necessary flexibility for adaptive expertise. Viewing psychological safety as a shared responsibility, the bidirectional relationship developed between faculty and fellow created a learning environment that was conducive for skill building and developing adaptive expertise. Overall, the intentional scaffolding of the video-stimulated think-aloud followed by the video-assisted debriefing the debriefer created a scaffolded feedback practice that resulted in alleviating the cognitive load for Fellow 10 and creating a clear path for future debriefing skills acquisition.

Fellow 8- Overestimation and Overconfidence to Mitigate Emotional Influences

At the start of the project, Fellow 8 facilitated a debriefing with a group of novice nurses. Fellow 8 is an allied health professional, which makes this a cross discipline debriefing. Moreover, Fellow 8 had to navigate the presence of a subject matter expert, who served as the nurse educator for the novice learners. After facilitating the debriefing, Fellow 8 self-evaluated their performance with an average score of 5.2, whereas faculty evaluated Fellow 8's performance as a 3.6 (Table 8). Given the 1.6 point difference, Fellow 8 overestimated their perceived performance, when compared to actual performance as score by faculty. Faculty is also not a nurse and works within the specialty area of emergency medicine. Overestimation of skills performance also occurred when Fellow 8 self-evaluated themselves as Proficient on the Dreyfus and Dreyfus Model of Skills Acquisition, while faculty evaluated the fellow in the Advanced Beginner stage. In other words, Fellow 8 rated their skills stage as two levels higher than faculty. As per Dreyfus and Dreyfus, Proficient learners are defined as applying their skills to a variety of situations with confidence, little focus on rules, and engage in more independent self-evaluations (Dreyfus, 2004). Often these individuals engage in ongoing deliberate practice to manage feelings of uncertainty (Ericsson, 2008). Similarly, Cheng et al. (2020) viewed the Proficient learner as being in the Maturity stage of debriefer expertise; these individuals are typically categorized as having comprehensive knowledge of all debriefing concepts, make intuitive decisions, and manage complexity with adaptive expertise. Considering the differences in scoring between faculty and fellow, Fellow 8 may have a difficult time accurately self-evaluating their own performance as it relates to skills development as a debriefer.

Video-stimulated think-aloud was “uncomfortable” for Fellow 8, while also reporting feeling “pretty confident” in their debriefing skills. In terms of self-reflection, Fellow 8 rated herself with total score of 91 (Max = 115), which is below the cohort average of 92.2 (*SD = 4.4;* Min = 87; Max = 100). When faculty reflected on Fellow 8’s GRAS score, they commented on the number of “neutral” answers Fellow 8 reported. In terms of self-reflection, Fellow 8 self-reported neutral towards others discussing their standpoints, thinking about alternative solutions, and difficulty recognizing how emotions influence their thinking. Each of these areas would be considered descriptives for a Proficient learner (Dreyfus & Dreyfus, 1989) or debriefer in the Maturity stage (Cheng et al., 2020). Whereas some fellows utilized the qualitative survey to cognitively offload, Fellow 8 left several areas incomplete or provided short phrase answers to questions. While Fellow 8 and faculty did not have rater agreement on debriefing and skills acquisition, they did both agree that the fellow needed to improve in the Analysis Phase. Strengths were identified as being Reactions and Takeaways. Both Reactions (faculty evaluation) and Takeaways (fellow self-evaluation) area a relatively rules driven phases of PEARLS debriefing, whereas the Analysis Phase is less rules driven as the debriefer blends various strategies to facilitate a learning conversation.

Table 8

Comparison of Faculty Evaluation and Fellow Self-Evaluation of Debriefing for Fellow 8

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	4	6	4	6	4	6
Q3 Structure debriefing in an organized way	5	6	5	6	5	6
Q4 Provokes engaging discussion	3	5	4	6	4	5
Q5 Identifies and explores performance gaps	3	4	3	5	3	5
Q6 Helps trainees achieve or sustain good future performance	3	5	3	5	3	5
Overall Mean Score	3.6	5.2	3.8	5.6	3.8	5.4

Note. This table displays the comparison in DASH scores for faculty evaluation and Fellow 8's self-evaluation for each element on the Debriefing Assessment for Simulation in Healthcare (DASH). Debriefing assessment occurred at three points of measurement: post-initial debriefing, post-think-aloud, post- video-assisted debriefing the debriefer.

As it relates to the Analysis Phase, faculty expressed that Fellow 8 overwhelmingly leaned into learner self-assessment, which resulted in the novice nurses overtaking the learning conversation to focus the discussion on the lack of realism of the scenario. In not directly addressing the behavior, Fellow 8 allowed the debriefing to go outside time boundary allotted for the session (almost double time). Fellow 8 identified self-directed corrective actions to help them improve their blending strategies reflecting on enhancing and including more advocacy/inquiry into their Analysis Phase. They also shared that they felt like they were following the structure of PEARLS, but seemed to be self-coaching towards moving away from the structure and adding more of their personality to the debriefing. It can be said that Fellow 8 has the motivation for skills progression but has limited procedural knowledge to move outside of the comfort zone of the PEARLS structure and adapt the debriefing to meet the needs of the learners. Previous research suggested that competent debriefers engage in the zone of proximal development (Christensen et al., 2023), which Fellow 8 may be having difficult balancing between. The greatest gap between actual and perceived performance was a 2 point gap in the elements provides engaging discussion, identifies, and explores performance gaps, and health trainees achieve or sustain good future performance. At the end of the think-aloud, Fellow 8 further overestimated their performance, self-evaluating with a 5.6, which is a 0.4 increase in scoring. Faculty increased their score 3.8 (a 0.2 increase). To manage this cognitive dissonance, Fellow 8 overestimated their performance to mitigate the influential factors of emotion, context, and cognitive load.

In looking at their scores, Fellow 8 is rating their performance as higher than the overall cohort average of 4.8. Reflecting on Fellow 8's performance in the think-aloud, faculty believed

that Fellow 8 was being influenced by imposter phenomenon, given the context of the debriefing requiring the fellow to facilitate a session with novice learners and manage a subject matter expert outside of the fellow's area of expertise. The dual effect influence of background and culture seems at play here. Facilitating a debriefing outside of their area of expertise, Fellow 8 may have allowed the new context to influence their capacity to self-evaluate, which would align their performance with the Discovery stage of developing debriefing skills (Cheng et al., 2020). Additionally, previous research indicated that simulation educators experience the highest prevalence of imposter phenomenon in the first few years of in the role of educator (Freeman et al., 2022). Given that faculty viewed the fellow as an Advanced Beginner, this implies that Fellow 8 has some experience while still developing necessary skills through practice. Their overconfidence could be described as the "beginner's bubble," which suggests that individuals initially approach learning a complex task with little to no confidence, but quickly become overconfident (beginner's bubble), before flattening their confidence as they work to correct and improve their performance (Sanchez & Dunning, 2018). In other words, because of their little experience, Fellow 8's confidence has raced ahead of their actual performance. This form of self-enhancement is used to conserve self-concept, rather than self-improvement to maintain self-evaluation (Müller-Pinzler et al., 2019). In this case, overconfidence may be counterbalancing the poor performance to reduce the cognitive dissonance that can come with acknowledging poor performance, alleviating imposter phenomenon, and reconciling the gap between perceived performance and actual performance.

Over the course of the video-assisted debriefing the debriefer, Fellow 8 and faculty engaged in feedback and coaching using plus video clips from the Reactions (fellow self-

evaluation) and Analysis phase (faculty evaluation), and delta video clips from the Analysis (fellow self-evaluation) and Setting the Scene (faculty evaluation). Selecting a delta clip from Setting the Scene demonstrates the faculty's desire to help Fellow 8 close the gap around limited procedural knowledge and remind them of the benefits of maintaining the framework of the PEARLS model. Faculty identified targeted learning for stage progression in the areas of pre-debrief, difficult dynamics, and prioritizing content. Despite the exchange of feedback and alignment in areas of focus, fellow continued to overestimate their performance, self-evaluating their performance with an average score of 5.4, while faculty maintained their score of 3.8. The small decrease in fellow rating, however, can be connected to the debriefing element of provokes an engaging discussion, as the fellow decreased their score on this element by one point. Video-assisted debriefing the debriefer helped Fellow 8 begin to bridge the gap in this area, as their self-evaluation moves closer to faculty evaluation.

From the feedback session, Fellow 8 accepted the feedback from faculty, concluding their survey by sharing they will "incorporate A/I [advocacy/inquiry] at home as practice, which can support A/I during debriefs." As a result, Fellow 8 demonstrated challenge acceptance and interleaving ideas for deliberate practice to close the gap between perceive and actual performance. Their motivation was further evidenced in their engagement during the focus group where they expressed a desire to hear more direct feedback from faculty. While this highlights Fellow 8's motivation for future skills progression, it provides further evidence for inaccurate self-evaluation of skills acquisition as this behavior is often reserved for Novice and Advanced Beginners engaging in self-regulated learning (White & DiBenedetto, 2017). During the focus group, Fellow 8 shared that the video component was a facilitator of self-evaluation and that the

video still plays in their memory, perhaps indicating that the beginners bubble is about to pop to give way for more accurate evaluation (Sanchez & Dunning, 2018). Overall, given that Fellow 8 did not waiver in their overestimation across the study, it is safe to say that this overconfidence served to mitigate the barrier of imposter phenomenon as the fellow grapples with gaps between actual and ideal performance. In the future, Fellow 8 may benefit, as suggested by Little et al. (2005), in seeing the results of faculty evaluation at earlier performance, as this has been shown to promote mastery learning and more accurate self-monitoring. It remains unclear how the fellow may move forward, but one of two way seems possible. Either overconfidence overshadows the feedback, or the feedback increases motivation towards more self-directed learning. With the goal of realistic self-perception, overconfidence may serve to counternarrate the imposter phenomenon to promote professional risk taking in future skills practice.

Limitations and Recommendations

The findings of this project can only be appreciated alongside its limitations. Limitations also serve to uphold the humility of the researcher and their approach to research, suggesting weaknesses within their research process (Patton, 2015). First, this research study is impacted by the positionality of this academic researcher. To address this, the principal investigator engaged in critical dialogues before and throughout the process to mitigate bias and ensure an accurate representation of the data. Trustworthiness of the data collection and analysis is worth reflecting on within the context of limitations and recommendations. To ensure trustworthiness, the principal investigator engaged credibility, transferability, dependability, and confirmability (Patton, 2015). Credibility was ensured through prolonged engagement across the course of the study, as well as select member checking with fellow and faculty participants. Moreover, data

was collected across the system of learning by appreciating the multiple perspectives of faculty and fellows. The strategy of thick description was employed to enhance transferability through a detailed explanation of how the study was carried out as well as capturing and presenting detailed quotes from participants. Dependability was achieved through outside review of the research committee, who reviewed and provided feedback on the rigorous research methodology, intervention description, and data collection to enhance the potential for repeatability. Finally, confirmability was ensured through weekly meetings between the principal investigator and their research director to engage in reflexivity and bracketing to mitigate the presence of personal biases. Additionally, data was checked and rechecked throughout data collect and analysis, using an audit trail and member checking was utilized to ensure accurate capture of participant experiences.

While the quantitative tools utilized in this study were all validated, they did rely on self-reporting, which may account for some of the overestimation as fellows and faculty are impacted by social desirability (Crowne & Marlowe, 1960). Although the presence of social desirability is probably inevitable in developing self-evaluation skills as it relates to the Hawthorne effect (McCambridge et al., 2014). Additionally, qualitative data was analyzed through reflective thematic analysis, which relies heavily on the subjective experience and interpretation of the researcher. While purposive sampling was utilized in this study, the sample size is relatively small, which reduces the potential for generalizability. The total fellowship cohort is 15 individuals, suggesting that 80% of fellows participated in the project. Moreover, the fellow participants predominantly identified as woman, and the faculty participants predominantly identified as man, suggesting limited gender diversity among the pool of

participants. Expanding the participant pool beyond the fellowship program may provide an opportunity to recruit a more robust and diverse sample Consideration should be given to recruiting recent fellowship graduates or consider an approach that pools participants based on current skills level.

While the fellowship program is well supported by faculty, it was challenging to recruit and onboard. Despite efforts to educate faculty on research ethics and the IRB process, select faculty elected to not engage in the research study. Several faculty who attended a training on the intervention elected to not participate, and scheduling conflicts made it challenging to navigate some of the dynamic hurdles. Additionally, some faculty struggled to see their role as a participant in the study (that opted not to participate). Some of this may also be attributed to low confidence and limited training. Faculty received 4 hours of training on the DASH training tool, 2 hours of training on the overall flow of the intervention, and 2 hours of training on the mechanisms involved in executing video-stimulated think-aloud and video-assisted debriefing the debriefer. A video recording of the trainings was also made available to faculty. While many of these tools are commonly used in the context of the fellowship program, faculty who elected to not participate still felt uncomfortable in the role of assessment and feedback. Limitations from previous research also indicate that training has been an issue when integrating self-assessment and video review (Zhang et al., 2020). Interestingly, faculty who participated in the study reported becoming better debriefers and evaluators as a result of engaging in the project. Similarly, Lyon et al. (2015) found that dental educators who engaged in teaching skills progression became more interested in the role of assessment and outcomes, which ultimately increased their interest in learner self-assessment. Navigating faculty dynamics posed a

challenge, but efforts were made to not have it influence the process and utilize those faculty who voluntarily participated to engage with the fellows across the research project. Offering a more robust orientation and training program may support faculty recruitment while also ensuring that the training does not carry over into data collection. Additionally, faculty recruitment can be supported by faculty who already participated in the study to share their experience and offer mentorship to future faculty participants.

This research project used naturally occurring resources within the fellowship program to have a true to life experience. Data collection occurred at a time where courses focused mostly around nursing. Thus, 83% of learners during the study identified as Registered Nurses, limiting the desire to have fellows facilitate interprofessional debriefing sessions. Given this, it may be useful to expand the data collection period to be able to host more interprofessional debriefings. While this may still be difficult to control for, a recommendation may be to use embedded learners or human simulation to standardize the debriefings for each participant. Previous research has demonstrated the effective use of human simulation and video review to examine self-assessment in simulation and health professions education (Sullivan et al., 2024; Sanderson et al., 2016). For this, embedded learners could also be trained on how to use the assessment tools to offer another level of measurement to capture the learner experience.

Learner experience would help to demonstrate the triadic relationship between faculty, fellows, and learners that make up debriefer development. Future research would benefit from having the fellows facilitate a second debriefing and to re-assess their performance one more time for a final score comparison between faculty and fellow. Additionally, it will be important to capture what enrichment activities the fellow and faculty engaged in between self-evaluation

and a final debriefing assessment to appreciate the learning that occurred that contributed to ongoing, accurate self-evaluation. Previous research on the current state of self-assessment research proposed that researchers focus why and how self-assessment works to begin to understand the interactions between affective, cognitive, and pedagogical mechanisms that enhance formative self-assessment (Andrade, 2019). This study made strides in the arena of illuminating the experiences of learners and faculty as well as the facilitators and barriers to developing self-evaluation skills, but more depth work can be applied to examine what occurs after a learner self-evaluates. Given that Panadero et al. (2017) found that self-assessment interventions have a positive impact on self-regulated learning, future research may consider answering the following questions: What enrichment and corrective activities support more effective self-evaluation? What frequency and quality of faculty feedback reduces skill degradation? To achieve this, future researchers may consider a longitudinal approach to expand the context of this study to examine what occurs between multiple formative self-evaluations on debriefing or some other skills. This may also help to better understand of what feedback and targeted learning offered by faculty is most effective to closing the gap in knowledge and performance. In exploring this, a framework may be created to reduce the potential for variation in feedback and recommended growth opportunities for learners.

Another limitation is the use of the Groningen Reflective Ability Scale (GRAS). Fellows demonstrated high self-reflection scores at the start of the project ($M = 92.2$, $SD = 4.4$), suggesting that the tool may not have been the best assessment to capture change in reflective ability. Scores remained relatively consistent across the three moments of measurement. Since self-reflection is a milestone area of the fellowship program, capacity for self-reflection may

already be part of the fellows' repertoire. Future research may consider exploring tools that attend to metacognition such as the Metacognitive Awareness Inventory, as it offers perspective in the self-knowledge and regulation to monitor effectiveness (Schraw & Dennison, 1994). Metacognition may be a more suitable in better understanding the inner cognitive processing of interprofessional simulation educators.

While self-evaluation of skills development was the main focus of this research, debriefing was another prevalent component within the context of the study as well as the world of interprofessional education. Research demonstrates that debriefing is a complex skill that requires progressive development across stages of debriefer expertise (Cheng et al., 2020). Many efforts have been made to demonstrate effective faculty development strategies for debriefing skills development (Kolbe et al., 2020; Cheng et al., 2016; Fraser et al., 2018; Meguerdichian et al., 2022). As a result, this study is one of the first of its kind to examine self-evaluation of debriefer skills development, suggesting an opportunity existing for additional research to expand the conversation. Future research could consider expanding on the faculty development literature by adding an evidence base to the various theoretical and conceptual frameworks proposed in healthcare simulation. This study provides evidence of the influence of Cheng et al.'s (2020) three stages of debriefing skills development. Future research would benefit from making direct connections between debriefer self-evaluation and their stages of development through intentional research design.

Implications for Interprofessional Education

The findings of the dissertation can be utilized in the fields of counselor education, healthcare simulation, and health professions education. Education interventions should be

delivered in a way that contributes to increasing the cognitive processing necessary for learning (germane load), while reducing distractions that do not contribute to learning (extraneous load). Intentional scaffolding of the video-assisted evaluation tools has shown promising in supporting learners in developing the necessary skills to engage in self-evaluation. Consistent across all health professions is the notion of developing an ethical practice that is inclusive of effective self-monitoring of performance (ACA, 2014; HPAC, 2019; WHO, 2010). The video-assisted evaluation tools explored in this study aim to train counselors, counselor educators, simulation educators, and health profession educators in how to evaluate their own skills and performance more accurately.

The video-assisted evaluation tools proposed in this project may serve as a viable education strategy to promote self-evaluation in faculty and students across health professions. For example, the video-stimulated think-aloud in tandem with video-assisted debriefing may support counselor educators in teaching counseling skills to their students. Given the similarities between the skills utilized in group counseling and debriefing, this approach may prove particularly impactful to counselor educators who teach group counseling skills. Moreover, these video reviews can be conducted using video recordings from actual sessions to be able to support counseling students in developing self-monitoring skills to be able to better appreciate the occurrences within their own counseling practice.

Moreover, the themes derived from this study help educators to understand the experiences their students may have as they engage in video-assisted evaluation. For example, the theme of imposter phenomenon and beginners bubble may show up among novice learners, and faculty can anticipate these needs to help facilitate a more impactful education intervention.

Previous research in healthcare simulation demonstrated that simulation educators experience imposter phenomenon regardless of years of experience (Freeman et al., 2023). Within healthcare simulation, fellowship directors have the insight to understand the experiences of their fellows in developing debriefing skills and being able to target these areas of concern to help mitigate the barriers that exist in developing necessary skills. The facilitators, barriers, and dual effects identified in this study provide important insight to educators about how to best approach self-evaluation with their future learners.

Video review has become commonplace in health profession education, but its use has not yet been fully optimized to create value for all learners. From this study, educators should consider the scaffolding of having learners review their video recordings through video-stimulated think-aloud to illuminate their own perspective of the recording before engaging in faculty feedback and coaching. Previous research from the field of counselor education indicated that counseling students benefit from evaluating their own experience before being able to take in the feedback of others (Cobia et al., 2011). Supportively, recent research in healthcare simulation demonstrated that self-debriefing before engaging in facilitated debriefing improved problem solving and debriefing satisfaction (Verkuyl et al., 2019) and created an opportunity to identify strengths and areas of improvement before engaging in faculty or peer feedback (Kang & Yu, 2018). Moreover, intentional viewing strategies mediate the relationship between extraneous load and germane load (Costley et al., 2021). This study shows that engaging in self-reflection first prompted a deeper and more focused exploration of skills as faculty and fellow prioritize content for feedback and coaching. Both video-stimulated think-aloud and video-assisted debriefing the debriefer are newer to health professions, and moving the intervention

into interprofessional education will create opportunities to optimize the approach to developing self-evaluation skills.

Traditional evaluation in health professions reinforces a power imbalance between faculty and learners. A prevalent theme in this research is the notion of keeping power in check. As outlined in this research study, self-assessment gives over and shares power with learners. Previous research demonstrated that self-assessment challenges the inherent power dynamic, offering a form of disruption that can be employed directly in the classroom to promote empowerment among learners. Exploring various types of power, Nieminen et al. (2022) found that self-assessment gave learners sovereignty over their learning, demystified the traditional evaluation practice, and empowered learners to find and appreciate the value in their own learning (Nieminen et al. 2022). Given the desire for all health professions to find power balance in the classroom, this research proposes one way to co-create scaffolded feedback practices and self-evaluation in the classroom to share power through self-regulated learning for mastery skills development.

Conclusions

This research confirmed findings from previous research and indicated that learners across all health professions will inevitably overestimate their performance to some extent (Kruger & Dunning, 1999; Dunning, 2011; Leon et al., 2023; McIver & Murphy, 2023; Soto et al., 2023; Little et al., 2005; Plant et al., 2013; Bradley et al., 2022). As a result, interprofessional educators benefit from shifting their focus from trying to achieve accuracy and agreement in evaluation and focus on how learners implement corrective actions and enrichment activities to close the gap between perceived performance and actual performance. To begin to address this

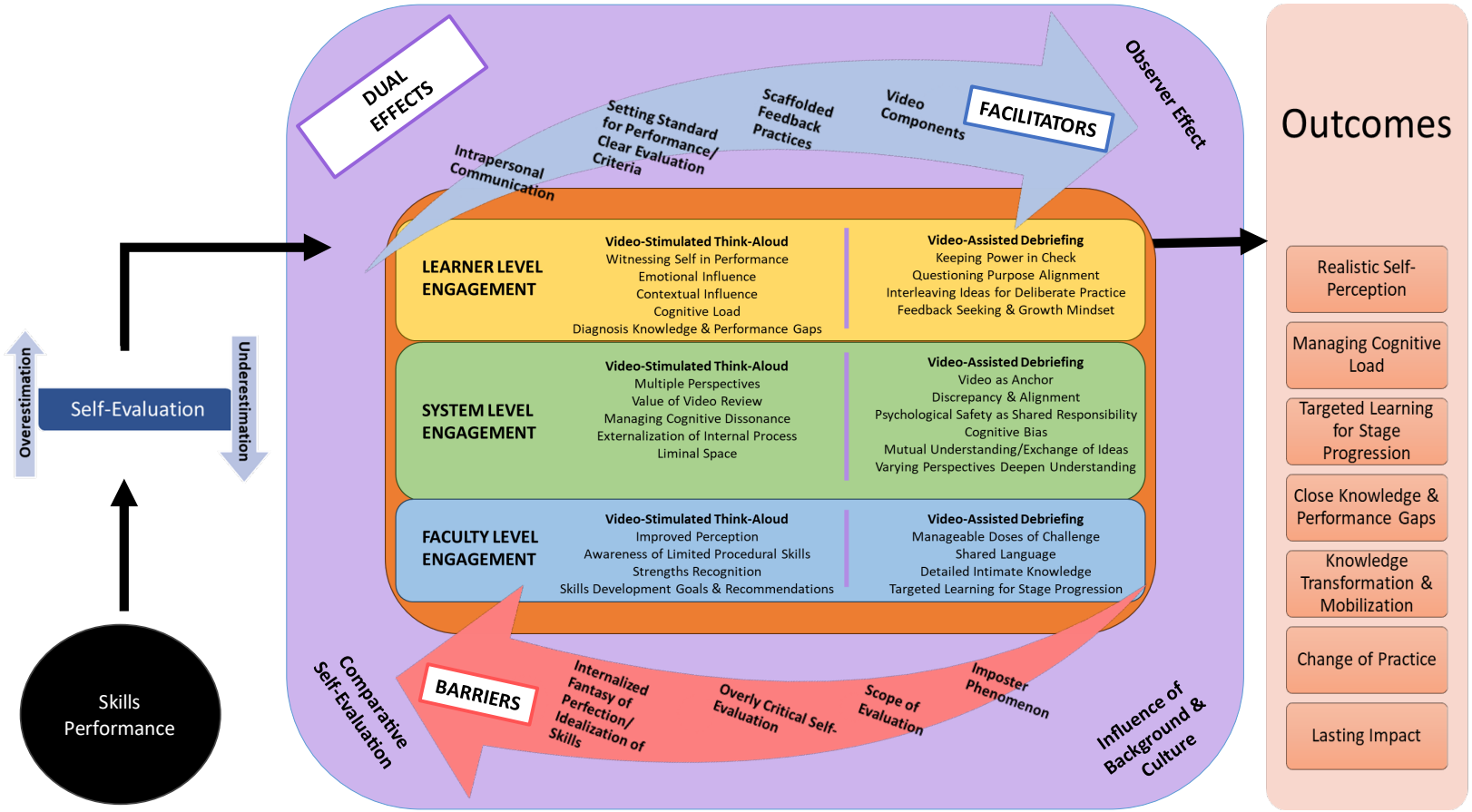
challenge, educators are encouraged to apply scaffolded feedback practices using video-assisted self-evaluation learning tools to prepare learners to become better at self-monitoring performance, engage in formative self-evaluation, and grow capacity for effective skills performance. Based on the findings of these current findings, a model (Figure 15) is proposed to support interprofessional educators in supporting learners in developing self-evaluation skills. This model summarizes the multilevel system that is necessary in co-creating scaffolded feedback practices to promote self-evaluation of skills and performance.

First, learners are encouraged to engage and record themselves in skills practice, immediately followed by a formative assessment of skills and performance based on clear evaluation criteria. In service of creating a dynamic learning environment while managing cognitive load, this model invites educators to engage their learners in the video-assisted evaluation learning processes. First learners and faculty benefit from engaging in a video-stimulated think-aloud session, where learners externalize their internal cognitive processes around their own performance. Findings indicate the engaging in plus/delta, as well as identifying areas for direct feedback and coaching, support learners in managing their cognitive load and creating necessary aesthetic distance to manage the affect and cognition that arise during self-evaluation. Advising faculty and learners to both bring video clips to debrief around, this model empowers learners and educators to engage in co-created feedback keep power in check and make shared meaning of current skills progression. PEARLS debriefing is a recommended debriefing framework as it offers a structure to guide the learning conversation, while creating spaciousness to blend various approaches necessary for titrating feedback (Eppich & Cheng, 2015; Trottier, 2024).

The inclusion of both educator and learner level engagement echoes the integration of self-regulated learning theory (forethought, performance, reflection; Zimmerman, 2015) and mastery learning theory (planning, managing, and evaluating; Guskey, 2023). In other words, self-evaluation alone is not enough, but rather requires multiple perspectives to enhance capacity and accuracy. To achieve this, educators and learners alike need to attend to the facilitators, barriers and dual effects that influence self-evaluation development. Facilitators promote self-evaluation by calling upon intrapersonal communication, engaging with video components, scaffolding feedback, and setting standards for performance/clear evaluation criteria. Barriers needing mitigation to promote self-evaluation includes imposter phenomenon, overly critical self-evaluation, the scope of the evaluation, and internalized fantasy of perfection/idealization of skills. Educators and learners will need to determine for the learning system if the dual effects of comparative self-evaluation, culture, and background, and/or observer effect serve as a facilitator or barriers to promote self-evaluation. Engaging in the model, the learning system may experience a change of practice and a lasting impact that results in a more realistic self-perception, management of cognitive load, targeted learning for skills progression, and closing knowledge and performance gaps. In attending to self-evaluation at the system level (educator, learner, classroom), this integrative model provides an approach to promoting self-evaluation that can be applied to all health professions and engaged across the classroom and the clinic.

Figure 15

Interprofessional Multilevel Model for Self-Evaluation Development for Skills Practice



Note. This visual display showcases an interprofessional model for developing self-evaluation skills.

Given that formative assessment is a crucial step for knowledge and skills development across health professions education (Bloom, 1968; Sadler, 1989; Rudolph et al., 2008; Wood et al., 2016), this model aims to promote self-evaluation among all members of the learning system. In other words, this framework can serve as a guide to train interprofessional educators on their own ability to self-evaluate while also providing guidance on how to teach and promote self-evaluation in their future learners. In moving this model into interprofessional contexts like counselor education, healthcare simulation, and health profession educations, the goal becomes training future health professionals to bridge the growing gap in the health care workforce. From the counselor education perspective, the hope is this interprofessional research and model serves as a strategy to further connect the counseling profession with other health professions through intentional interprofessional collaboration, realizing the commitment the field of counseling has made to the Health Professions Accreditors Collaborative (HPAC, 2019). Moreover, this model can be utilized to train doctoral-level students on how to train their learners in self-evaluation while reinforcing interprofessional collaboration and education from their role as counselor educators. With the goal of seeing self-evaluation and interprofessional collaboration integrated into the Best Practices in Teaching Counselor Education (Wood et al., 2016).

From the healthcare simulation perspective, this research and model expands on the current body of knowledge around debriefer expertise (Cheng et al., 2020) and faculty development (Fraser et al., 2018). This model is the first attempt at concretizing the self-evaluation experience of simulation educators and proposes a framework that can be replicated for future interprofessional faculty development around various skills. A model for

developing self-evaluation can help establish a shared mental model for simulation programs to enhance interprofessional learning through simulation and debriefing.

From the health profession education perspective, this model offers training programs an opportunity to capture novice learners and instill accurate self-evaluation earlier in the professional development. Promoting self-evaluation, especially through interprofessional collaboration, will support students from various health professions in learning with, from, and about each other before moving into clinical practice (WHO, 2010). In modeling this behavior in the academic setting, there is a greater chance that the same behavior will translate into professional performance. As a result, work culture change can start at an earlier stage of development to promote reflective practice and interprofessional collaboration across disciplines.

Overall, this study aims to have a significant impact on the fields of counselor education, healthcare simulation, interprofessional education, and integrated care. In engaging an interprofessional cohort of learners, this research offers understanding of the mechanisms at play to train learners and future educators, with a focus on self-regulated and mastery learning. By focusing on a communication skill like debriefing, this research demonstrates how to learn from different professions and promote collaborative learning and, in turn, practice. Communication-based skills are present across all health professions education. It serves as an advocacy project for the field of counselor education to focus more intentionally on building interprofessional collaboration across health professions. The ways in which interprofessional simulation educators collaborated with each other over the course of this research serve as a model of interprofessional collaboration for the field of health professions education.

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APPENDIX A: COMPARISON TABLES FOR EACH FELLOW

Table A1

Comparison of Actual and Perceived DASH Scores at Each Debriefing Element for Fellow 1

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	5	6	5	6	5	6
Q3 Structure debriefing in an organized way	5	5	5	6	5	5
Q4 Provokes engaging discussion	5	6	5	5	5	5
Q5 Identifies and explores performance gaps	4	5	4	5	4	5
Q6 Helps trainees achieve or sustain good future performance	4	5	4	6	4	4
Mean Score	4.6	5.4	4.6	5.6	4.6	5

Note. This table displays the actual and perceived DASH scores at each element on the Debriefing Assessment for Simulation in Healthcare for Fellow 1.

Table A2

Comparison of Actual and Perceived DASH Scores at Each Debriefing Element for Fellow 2

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	4	5	3	4	3	5
Q3 Structure debriefing in an organized way	5	3	4	2	4	3
Q4 Provokes engaging discussion	3	5	4	4	3	4
Q5 Identifies and explores performance gaps	4	4	3	3	3	4
Q6 Helps trainees achieve or sustain good future performance	4	5	3	4	3	5
Mean Score	4	4.4	3.4	3.4	3.2	4.2

Note. This table displays the actual and perceived DASH scores at each element on the Debriefing Assessment for Simulation in Healthcare for Fellow 2.

Table A3

Comparison of Actual and Perceived DASH Scores at Each Debriefing Element for Fellow 3

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	5	5	3	2	3	4
Q3 Structure debriefing in an organized way	5	4	4	4	4	3
Q4 Provokes engaging discussion	5	4	4	5	4	5
Q5 Identifies and explores performance gaps	3	5	3	5	3	4
Q6 Helps trainees achieve or sustain good future performance	4	5	3	5	4	5
Mean Score	4.4	4.6	3.4	4.2	3.6	4.2

Note. This table displays the actual and perceived DASH scores at each element on the Debriefing Assessment for Simulation in Healthcare for Fellow 3.

Table A4

Comparison of Actual and Perceived DASH Scores at Each Debriefing Element for Fellow 4

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	5	5	3	5	3	5
Q3 Structure debriefing in an organized way	4	6	4	5	4	6
Q4 Provokes engaging discussion	4	6	3	3	3	3
Q5 Identifies and explores performance gaps	5	3	3	5	3	5
Q6 Helps trainees achieve or sustain good future performance	5	6	3	5	3	4
Mean Score	4.6	5.2	3.2	4.6	3.2	4.6

Note. This table displays the actual and perceived DASH scores at each element on the Debriefing Assessment for Simulation in Healthcare for Fellow 4.

Table A5

Comparison of Actual and Perceived DASH Scores at Each Debriefing Element for Fellow 5

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	3	3	3	4	3	5
Q3 Structure debriefing in an organized way	3	3	3	3	3	3
Q4 Provokes engaging discussion	3	4	3	4	3	4
Q5 Identifies and explores performance gaps	3	4	3	4	3	5
Q6 Helps trainees achieve or sustain good future performance	3	3	3	4	3	4
Mean Score	3	3.4	3	3.8	3	4.2

Note. This table displays the actual and perceived DASH scores at each element on the Debriefing Assessment for Simulation in Healthcare for Fellow 5.

Table A6

Comparison of Actual and Perceived DASH Scores at Each Debriefing Element for Fellow 6

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	5	5	5	6	5	6
Q3 Structure debriefing in an organized way	5	4	5	5	5	5
Q4 Provokes engaging discussion	4	6	6	6	5	6
Q5 Identifies and explores performance gaps	5	5	5	6	5	5
Q6 Helps trainees achieve or sustain good future performance	5	6	6	5	5	6
Mean Score	4.8	5.2	5.4	5.6	5	5.6

Note. This table displays the actual and perceived DASH scores at each element on the Debriefing Assessment for Simulation in Healthcare for Fellow 6.

Table A7

Comparison of Actual and Perceived DASH Scores at Each Debriefing Element for Fellow 7

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	4	5	4	6	4	4
Q3 Structure debriefing in an organized way	4	5	4	6	4	5
Q4 Provokes engaging discussion	4	5	4	6	4	4
Q5 Identifies and explores performance gaps	4	5	4	5	4	4
Q6 Helps trainees achieve or sustain good future performance	4	5	5	6	5	4
Mean Score	4	5	4.2	5.8	4.2	4.2

Note. This table displays the actual and perceived DASH scores at each element on the Debriefing Assessment for Simulation in Healthcare for Fellow 7.

Table A8

Comparison of Actual and Perceived DASH Scores at Each Debriefing Element for Fellow 8

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	4	5	4	6	4	4
Q3 Structure debriefing in an organized way	4	5	4	6	4	5
Q4 Provokes engaging discussion	4	5	4	6	4	4
Q5 Identifies and explores performance gaps	4	5	4	5	4	4
Q6 Helps trainees achieve or sustain good future performance	4	5	5	6	5	4
Mean Score	4	5	4.2	5.8	4.2	4.2

Note. This table displays the actual and perceived DASH scores at each element on the Debriefing Assessment for Simulation in Healthcare for Fellow 8.

Table A9

Comparison of Actual and Perceived DASH Scores at Each Debriefing Element for Fellow 9

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	4	6	5	6	5	6
Q3 Structure debriefing in an organized way	6	5	5	5	5	5
Q4 Provokes engaging discussion	5	4	4	5	5	5
Q5 Identifies and explores performance gaps	4	4	5	4	4	4
Q6 Helps trainees achieve or sustain good future performance	5	4	4	5	4	6
Mean Score	4.8	4.6	4.6	5	4.6	5.2

Note. This table displays the actual and perceived DASH scores at each element on the Debriefing Assessment for Simulation in Healthcare for Fellow 9.

Table A10

Comparison of Actual and Perceived DASH Scores at Each Debriefing Element for Fellow 10

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	5	6	4	5	4	5
Q3 Structure debriefing in an organized way	5	5	5	3	4	4
Q4 Provokes engaging discussion	5	4	5	3	4	4
Q5 Identifies and explores performance gaps	3	4	3	4	3	4
Q6 Helps trainees achieve or sustain good future performance	4	6	3	2	3	4
Mean Score	4.4	5	4	3.4	3.6	4.2

Note. This table displays the actual and perceived DASH scores at each element on the Debriefing Assessment for Simulation in Healthcare for Fellow 10.

Table A11

Comparison of Actual and Perceived DASH Scores at Each Debriefing Element for Fellow 11

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	3	5	4	5	4	5
Q3 Structure debriefing in an organized way	5	5	4	5	4	6
Q4 Provokes engaging discussion	3	3	4	5	4	5
Q5 Identifies and explores performance gaps	4	5	3	4	3	4
Q6 Helps trainees achieve or sustain good future performance	5	3	3	4	2	5
Mean Score	4	4.2	3.6	4.6	3.4	5

Note. This table displays the actual and perceived DASH scores at each element on the Debriefing Assessment for Simulation in Healthcare for Fellow 11.

Table A12

Comparison of Actual and Perceived DASH Scores at Each Debriefing Element for Fellow 12

	Initial Debriefing		Think-Aloud		VAD the D	
	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation	Faculty Evaluation	Fellow Self-Evaluation
Q2 Maintains engaging learning environment	4	6	4	6	4	6
Q3 Structure debriefing in an organized way	5	5	4	6	4	6
Q4 Provokes engaging discussion	4	5	4	4	4	5
Q5 Identifies and explores performance gaps	4	5	4	5	4	6
Q6 Helps trainees achieve or sustain good future performance	4	5	4	6	4	6
Mean Score	4.2	5.2	4	5.4	4	5.8

Note. This table displays the actual and perceived DASH scores at each element on the Debriefing Assessment for Simulation in Healthcare for Fellow 12.

APPENDIX B: IRB APPROVAL- BRANY

To: Dana Trottier, MA
From: Anna Robinson, IRB Coordinator
CC: BRANY IRB File # 23-08-783-719(HHC)
Christina Pili, NYC H+H Research Administration Research Coordinator **Date:** 12/11/2023
Event ID: # 224799

Re: BRANY IRB Approval for Investigator Initiated Protocol 071221 /
Protocol Title: Developing Self-Evaluation Skills in Interprofessional Simulation Educators: A Multilevel Mixed Methods Study

BEFORE YOU START THIS STUDY
This is your determination letter from BRANY IRB. **You are required to obtain additional NYC Health + Hospitals (NYC H+H) central office approval BEFORE you conduct this study.** Please obtain this approval from your local facility review committee, or go to: https://star.nychhc.org and click on **PI and Reviewers only** to begin the process. Instructions are available for first time users.

1. **BRANY IRB Decision:**
   Your submission was **APPROVED** by the BRANY IRB via expedited review under the following category(ies): 6., 7..
   BRANY IRB approved the following site location for the above-referenced research:
   NYC H+H Central Office – Simulation Center
   1400 Pelham Parkway
   South Building 4
   2nd Floor Room 200
   Bronx, NY 10461

Important Note(s):

a. **All research must be conducted in accordance with this approved submission. Any changes to the approved study must be reviewed and approved by the BRANY IRB prior to implementation, except when necessary to eliminate an apparent immediate hazard to the subject.**
b. **All subjects are to be consented with the stamped, BRANY IRB-approved consent form(s).**

c. **Unanticipated problems (including serious adverse events, if applicable) must be reported to**
BRANY IRB within 5 days of discovery using xForm#16 (Reportable Event xForm)
d. **Any complaints or issues of non-compliance must be immediately reported to BRANY IRB.**

**This approval requires that all procedures and activities are performed in accordance with relevant state and local law (including tribal law, when applicable).*

2. **Items Reviewed/Approved:**
   - Investigator Initiated Protocol 071221 – BRANY stamp 12/11/2023
   - Subject Information and Informed Consent Form (Version A) ○ Modifications were incorporated as indicated in the enclosed redlined version. ○ NOTE: The "approved" date within BRANY IRB's consent stamp is the date of the approval letter, not the IRB approval date. When the date of the approval letter is after the IRB approval date, BRANY IRB does not "back-date" the consent stamp. Instead the "approved" date within the consent stamp reflects the date of the approval letter.
   - Other Protocol Related Documents (BRANY stamp 12/11/2023)
   - Recruitment Email (BRANY stamp 12/11/2023)
   - Debriefing Experience Scale (BRANY stamp 12/11/2023)
   - DASH IV Short Form (BRANY stamp 12/11/2023)
   - DASH IV Scoresheet (BRANY stamp 12/11/2023)
   - DASH SV Short Form (BRANY stamp 12/11/2023)

3. **Electronic Informed Consent (eIC)**
   BRANY IRB has approved your request to obtain consent using the electronic informed consent process as described in your submission. The e-consent program should always use the current BRANY IRB approved version(s) of the consent form(s).
4. **Study Personnel Approved to Participate in this Study:**
   a. Dana Trottier

5. **Clinical Trial Agreement Execution**:
   When applicable, this project may not commence without a fully executed Clinical Trial Agreement.
6. **Other Required Approvals:** Additional NYC Health + Hospitals central office approval is required for studies conducted at any NYC H+H facilities. Please obtain this approval from your local facility review committee, or go to: https://star.nychhc.org and click on **PI and Reviewers only** to begin the process. Instructions are available for first time users.

7. **Non-Expiring IRB Approval**:

This study was reviewed under the Revised Common Rule (2018 Requirements) and therefore does not require continuing review in accordance with 45 CFR 46.109(f)(1)(i). However, BRANY IRB requires you "check in" at least annually to ensure your study status is up to date and in compliance. Your **Annual Report** to BRANY IRB is due on **12/10/2024** (submit xForm: 12-ANNUAL REPORT). If the status of the research changes, or it is completed prior to this date, you must notify the IRB (submit xForm: 04-Study Status Change-Closed/Enrollment Closed

If you have any questions or require any additional information, please call me at or send an email to me at. Thank you.

APPENDIX C: IRB APPROVAL-ANTIOCH UNIVERSITY SEATTLE

To: Cc:

Dear Dana Trottier ,
As Chair of the Institutional Review Board (IRB) for 'Antioch University , I am letting you know that the committee has reviewed your Ethics Application. Based on the information presented in your Ethics Application, your study has been approved. Renewal is not required, however, any changes in the protocol(s) for this study must be formally requested by submitting a request for amendment from the IRB committee. Any adverse event, should one occur during this study, must be reported immediately to the IRB committee. Please review the IRB forms available for these exceptional circumstances.
Sincerely,
Melissa Kennedy

APPENDIX D: INFORMED CONSENT FORM

NYC HEALTH + HOSPITALS
SUBJECT INFORMATION AND INFORMED CONSENT FORM

Protocol Title: Developing Self-Evaluation Skills in Interprofessional Simulation Educators: A Multilevel Mixed Methods Study

Protocol #: 071221

Principal Investigator: Dana Trottier, MA

Institution: NYC Health + Hospitals / Simulation Center (Central Office)

Address: 1400 Pelham Parkway, Building 4, Room 200, Bronx, NY 10461

KEY INFORMATION ABOUT THIS RESEARCH STUDY

I am Dana Trottier, an employee for NYC Health + Hospitals Simulation Center and a PhD student in Counselor Education and Supervision at Antioch University Seattle. As part of my dissertation, I am completing a project to examine the self-evaluation of debriefing skills development for interprofessional healthcare simulation fellows. I am going to give you information about the study and invite you to be part of this research. You are being asked to be a subject in a research study because you are either a Simulation Faculty/Staff member, a Simulation Fellow, or learner at NYC Health + Hospitals Simulation Center.

The following table is a concise and focused presentation of key information to assist you in understanding why you might or might not want to participate in the research.

Purpose	This is a research study to examine the self-evaluation of debriefing skills development for interprofessional healthcare simulation fellows and educators.
Experimental/ Investigational	You will not receive any experimental drugs or procedures as part of this study.
Voluntary Participation	Your decision to be in this study is voluntary.
Withdrawal	If you decide to be in this study and then change your mind, you can leave the study at any time without penalty.
Length of Participation	Your participation is expected to last up to 3 months. During that time, you will have about 2-3 study visits.
Procedures	The main education interventions in the study include: • Facilitate and audio/video record debriefing sessions • Engage in a video-assisted evaluation intervention individually and with the guidance of a faculty member • Complete surveys and questionnaires about your experience with the intervention • Participate in a focus group discussion on your overall experience within the context of the study
Risks	There are not expected to be any risks to you as part of this study.

Benefit	There is no direct benefit to you from taking part in this study. However, the study results may help people in the future.
Costs	There are no costs to participating in this study.
Confidentiality	There are provisions in place by the study protocol and study site to help protect the privacy and confidentiality of your personal
	information and study information.

This overview does not include all of the information you need to know before deciding whether or not to take part. Much additional detail is given in the full consent document, which can be found on the pages that follow. Be sure to review the rest of this consent form before deciding about participation.

INFORMED CONSENT FORM

This consent form explains the research study. Before you decide to be a part of this study, you need to know why the research is being done, what it will involve and the risks and benefits. Ask the study researcher and study staff to explain anything in this form or if you want more information. Please take time to read this form carefully. Feel free to discuss it with anyone you feel comfortable talking with about the research and take time to reflect on whether you want to participate or not. If you agree to take part in this research study, you must sign this consent form.

DISCLOSURE OF FINANCIAL INTERESTS

There are not financial sponsors for this study.

PURPOSE OF THE STUDY

The purpose of this study is to examine the self-evaluation of debriefing skills development for interprofessional healthcare simulation fellows. This information may help us to better understand how to train interprofessional simulation educators and promote higher quality learning during simulation and debriefing.

NUMBER OF SUBJECTS AND LENGTH OF STUDY

About 40 subjects are expected to participate in this study at 1 research site in the United States. Your participation in this study is expected to last 3 months.

STUDY PROCEDURES

This research will involve your participation in video-assisted evaluation intervention (educational) where you will be asked to reflect upon the quality of your debriefing practice through video-assisted self-reflection and faculty guided evaluation. Additionally, you will be asked to participate in a focus group to discuss and debrief your overall experience as a participant in the research study. Each of these video-assisted sessions will be audio/video recorded solely for research purposes, but all the participants' contributions will be de-identified prior to publication or sharing of the research results. These recordings, and any other information that may be connected to the study, will be kept in a secured location.

SUBJECT RESPONSIBILITIES

Your participation in this study is completely voluntary. You may choose not to participate. You will not be penalized for your decision not to participate or for anything you contributed during the study. Your position with NYC Health + Hospitals Simulation Center will not be affected by your decision or your participation. You may withdraw from this study at any time. If any

recordings or interviews have already taken place, the information you provided will not be used in the research study.

As a subject in this study, you will have certain responsibilities, including the following:

- Attend all study visits and, if needed, reschedule appointments as soon as possible
- Follow the instructions of the study team
- Share authentically and honestly about your experiences with the interventions utilized At any time you do not wish to participate in the study, inform the staff by using the phrase "Stop Play"

RISKS AND DISCOMFORTS

No study is completely risk free. However, I do not anticipate that you will be harmed or distressed during this study. You may stop being in the study at any time if you become uncomfortable. The psychological and physical safety word for this study is "Stop Play." This word brings a stop to all activities in order to check in on the experience and re-establish safety and/or end the experience. If you experience any discomfort because of your participation, Helping Healers Heal will be available to you as a resource.

NEW INFORMATION

You will be notified in a timely way if important new findings become known that may affect your willingness to continue in the study.

BENEFITS

We cannot promise any benefit to you or others from your participation in this research. The study results may help people in the future.

REIMBURSEMENT

You will not be provided any monetary incentive to take part in this research project.

COMPENSATION FOR INJURY

Because this study involves only sharing about experiences to an educational intervention and requires no specific procedures, tests, treatments, or sharing of medical information, no research related injuries are expected. No other compensation will be offered by the sponsor or NYC Health + Hospitals or Biomedical Research Alliance of New York, including for things such as lost wages or discomfort. NYC Health + Hospitals will treat subjects regardless of their inability to pay. You are not waiving any legal right to seek additional compensation through the courts by signing this form.

CONFIDENTIALITY

To the extent allowed by law, every effort will be made to keep your personal information confidential. All information will be de-identified, so that it cannot be connected back to you. Your real name will be replaced with a pseudonym in the write-up for this project, and only the primary researcher will have access to the list connecting your name to the pseudonym. This list, along with audio/video recordings and transcripts, will be kept in a secure, locked location. Personal identifiers will be removed, and the de-identified information may be used for future research by the primary researcher without additional consent.

Limits of Privacy Confidentiality

Generally speaking, I can assure you that I will keep everything you tell me or do for the study private. Yet there are times where I cannot keep things private (confidential). The researcher cannot keep things private (confidential) when:

● The researcher finds out that a child or vulnerable adult has been abused

● The researcher finds out that that a person plans to hurt him or herself, such as commit suicide,
● The researcher finds out that a person plans to hurt someone else,

There are laws that require many professionals to take action if they think a person is at risk for self-harm or are self-harming, harming another or if a child or adult is being abused. In addition, there are guidelines that researchers must follow to make sure all people are treated with respect and kept safe. In most states, there is a government agency that must be told if someone is being abused or plans to self-harm or harm another person. Please ask any questions you may have about this issue before agreeing to be in the study. It is important that you do not feel betrayed if it turns out that the researcher cannot keep some things private.

Future Publication

The primary researcher, Dana Trottier reserves the right to include any results of this study in future scholarly presentations and/or publications. All information will be de-identified prior to publication

Collection of Identifiable Private Information:

• Identifiers might be removed from your identifiable private information. Your information collected as part of this research study, even if identifiers are removed, will not be used or distributed for future research studies.

VOLUNTARY PARTICIPATION AND WITHDRAWAL

Your participation in this study is voluntary. You may decide not to participate, or you may stop your participation at any time, without penalty or without your job being affected. If you decide to leave the study, please tell the study researcher. NYC Health + Hospitals may terminate this study or your participation in this study at any time.

CONTACTS FOR QUESTIONS, COMPLAINTS, CONCERNS

If you have any questions or requests for information relating to this research study or your participation in it, or if you want to voice a complaint or concern about this research, or if you have a study related injury, you may contact Dana Trottier.

If you have any questions about your rights as a research subject or complaints regarding this research study, or you are unable to reach the research staff, you may contact a person independent of the research team at the Biomedical Research Alliance of New York Institutional Review Board at 516-318-6877. Questions, concerns or complaints about research can also be registered with the Biomedical Research Alliance of New York Institutional Review Board at www.branyirb.com/concerns-about-research. The IRB is a committee that reviews research studies to help protect the rights and welfare of study subjects.

STATEMENT OF CONSENT - SIGNATURES

By signing this form, I confirm the following:

- I have read all of this consent form.
- All of my questions have been answered to my satisfaction.
- I can leave the study at any time without giving a reason and without penalty.
- I agree to the collection, use, sharing and analysis of my personal information and study information collected as part of this study by the sponsor and other authorized persons and regulatory agencies as described in this form.

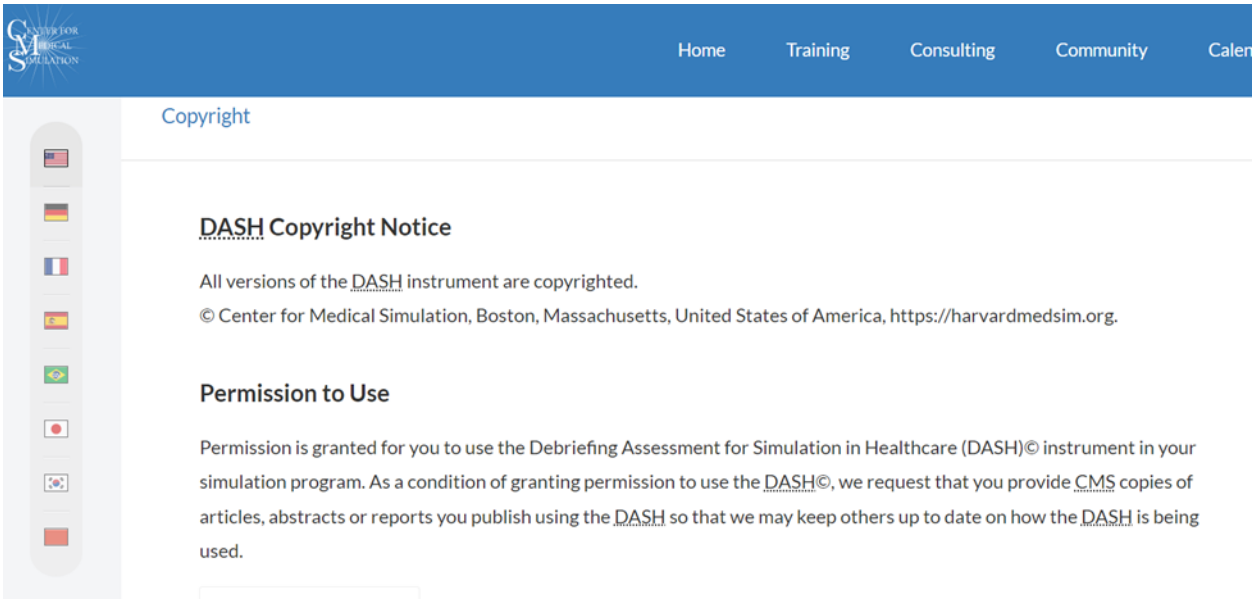
- I voluntarily agree to let the researcher audio/video record me for this study and I agree to allow the use of my recording as described in this form.
- I will be given a copy of this signed and dated consent form to keep.
- I do not give up any legal rights that I would otherwise have if I were not in this study.

I voluntarily agree to participate in this study.

Subject: Name (Print) Signature Date/Time

Person Obtaining Consent: Name (Print) Signature Date/Time

APPENDIX E: PERMISSION TO USE THE DASH© FROM CMS



APPENDIX F: RECRUITMENT EMAIL FOR PARTICIPANTS

Dear Simulation Faculty/Staff, Fellows, and Learners,

My name is Dana Trottier, and I am an employee at NYC Health + Hospitals Simulation Center and a doctoral candidate in Counselor Education and Supervision at Antioch University Seattle. In partial fulfillment of my doctoral degree, I am conducting a research study examining the self-evaluation of debriefing skills development for interprofessional healthcare simulation fellows and educators. I am working on this research under the direction of Dr. Stephanie Thorson-Olesen (AUS) and Dr. Michael Meguerdichian (H+H). This multilevel, mixed methods research has been dually approved by BRANY IRB (# 23-08-783-719(HHC)) and Antioch University Seattle IRB. If you are interested, please click the link below to receive more information, informed consent, and to enroll as a participant. Participation in this study is voluntary. Should you have any questions about this study, please feel free to contact me using the information below.