

**Why Do They Come? Exploring Rural Healthcare Workers' Engagement in Simulation-Based
Interprofessional Education: A Mixed Methods Case Study**

Thesis

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Abstract

Despite robust evidence supporting healthcare simulation as an effective continuing education strategy, a gap remains in the theoretical understanding of how simulation-based education succeeds, and whether practicing providers will choose to participate, especially in complex practice environments such as rural healthcare. This study addresses that gap by examining rural healthcare workers' engagement in simulation-based interprofessional education (Sim-IPE) through the lens of Self-Determination Theory (SDT), a comprehensive framework for understanding human motivation. This mixed-methods case study explored the situational motivation, psychological safety, and lived experiences of rural emergency physicians, nurses, licensed practical nurses, and paramedics participating in Sim-IPE sessions across four rural emergency departments in Northeastern Nova Scotia. A convergent parallel mixed methods design was employed. Quantitative situational motivation was measured using the Situational Motivation Scale (SIMS), and qualitative data were collected through semi-structured interviews employing purposive maximum-variation sampling across professions, experience levels, and gender. Quantitative findings revealed a predominantly autonomous motivational profile, characterized by high Intrinsic Motivation (IM) (M: 20.8/ 28) and Identified Regulation (IR) (M: 25.9/28), low External Regulation (ER) (M: 11.6/28) and Amotivation (AM) (5.4/ 28), and a positive Self-Determination Index (M: 45.1/72). Reflexive thematic analysis identified individual motivation, team motivation, psychological safety and the rural context as key to understanding how participants experienced the Sim-IPE and why they chose to participate. SDT provided a robust theoretical framework to explain Sim-IPE participation and its sustainability through the satisfaction of basic psychological needs and support for autonomous learning. A joint display integrating SIMS scores, SDT constructs, and qualitative themes demonstrated that

interprofessional design, embodied psychological safety, organizational supports, and expert facilitation were key conditions fostering autonomous motivation. The rural context emerged as a unique amplifier of motivational processes when paired with context-specific in-situ simulation design.

This work extends SDT and health simulation scholarship by conceptualizing rural in-situ Sim-IPE as a distinctive motivational ecology in which place-based design and psychological safety function as core mechanisms that promote internalization and sustained engagement. It also links rural Sim-IPE to broader rural system issues, including provider wellness, retention, and opportunities to integrate CPD as a core health system function.

Acknowledgements

"Tell me what is it you plan to do with your one wild and precious life?" M. Oliver (1992)

I am learning, even now, that it is never too late to answer that question with courage.

Completing a master's thesis as a later career, practicing emergency physician has been an incredible challenge. It has tested me in ways I did not anticipate, and surfaced areas for growth that have been transformative. I feel old and I feel young. This work would not have been possible without the support of those who believed in me, even when the path forward seemed impossibly steep (which it often did). To my husband, Cory—thank you for being my anchor through the long nights, the early mornings, and the countless moments when I questioned whether I could do this. Your quiet confidence in me never wavered, and your willingness to hold space for this dream alongside our very full life together has meant everything. To my children, Shea, Abbie, Liam, Reed and Ella—you are my source of purpose and my greatest teachers in this crazy life. I hope this work shows you that it is never too late to pursue something that matters to you. To my friends, the original rural Sim-IPE team, Shauna, Ivan, and Patricia- thank you for believing in simulation and in me. To my advisor, Dr. Carole Roy—your guidance, grace, and patience got us here. My path was unconventional, and my approach was often messy. Triage became part of your vocabulary. Your ability to continue to hold space for me is both humbling and inspiring. I promise to carry my gratitude forward. Finally, to everyone who participated in this study, who shared their stories, and who continue to show up for rural healthcare- thank you. This work is for you, and with you.

Table of Contents

Abstract	2
Acknowledgements	4
Table of Contents	5
List of Table	7
List of Figures	7
Chapter 1: Introduction	9
Background of the Study	13
Curricular Context	14
Case Curriculum	15
Need for the Study	17
Research Problem Statement	17
Research Questions:	18
Reflexivity/Positionality	19
Chapter 2: Literature Review	22
From Didactic to Competency-Based Learning: A Paradigm Shift	22
Theory and Health Professions Education	23
Adult Education and Adult Learning Theories	24
Experiential Learning and Reflective Practice	26
Transformative Learning	29
Simulation-Based Education	32
Interprofessional Education	34
Simulation Enhanced Interprofessional Education (Sim-IPE)	36
The Evolving Landscape of Healthcare Practice and Continuing Professional Development	38
(CPD) in the Health Professions	38
Continuing Education (CE) and CPD in the Health Professions	39
Sim-IPE as CPD, Continuing Interprofessional Education (CIPE) and Team Training.	42
Engagement in Simulation-Based Continuing Professional Development	43
Rural healthcare context	44
<i>Rural Culture and Learning</i>	45
Theoretical Framework	46
Self Determination Theory	46
<i>Self Determination Theory and CPD in the Health Professions.</i>	52
<i>SDT and Team Motivation.</i>	55
Psychological Safety	56
Chapter 3: Methodology	62
Research Methodology and Design	62
Research Participants and Selection Criteria	63
Reimbursement/ Research Budget	66
Quantitative Data Collection	66
Qualitative Data Collection	67

Data Analysis.....	69
Quantitative Data Analysis	70
Qualitative Data Analysis	71
Data Integration.....	73
Rigor/ Trustworthiness	74
Ethical Considerations.....	77
Delimitations and Limitations	79
Chapter 4: Findings.....	83
Quantitative Findings: Situational Motivation Scale (SIMS)	83
Qualitative Findings	87
Theme 1: Why I Show Up: Individual Motivation for Sim-IPE.....	87
1.1 <i>Autonomy and Autonomous Motivation</i>	88
1.2 <i>Elements of Sim-IPE That Supported Autonomy</i>	90
1.3 <i>Competence and Readiness for Rare but High-Stakes Rural Events.</i>	91
1.4 <i>Practice Without Patient Risk.</i>	92
1.5 <i>A New Health Human Resource (HHR) Reality.</i>	93
1.6 <i>Structural and Pragmatic Enablers.</i>	93
1.7: <i>Productive Tension: Voluntary vs Mandatory Participation</i>	96
Theme 2: Practicing as the Team We Really Are: Team Level Motivation and Learning Culture.....	97
2.1: <i>Team-Level Motivation: Relatedness and Collective Competence</i>	98
2.2: <i>Team-Level Autonomy</i>	99
2.3: <i>Team-Level Competence and Collective Efficacy</i>	99
2.4: <i>Team-Level Relatedness and Cohesion</i>	100
2.5: <i>Reciprocal Need Support and Motivational Climate</i>	101
Theme 3: It Has to Feel Safe to Stretch: Psychological Safety in Sim-IPE.....	102
3.1: <i>Creating a "Safe Container."</i>	104
3.2: <i>Safe is Not Stress-Free</i>	107
3.3: <i>Barriers and Threats to Psychological Safety</i>	110
3.4: <i>Sim-IPE Stimulating Reflection on Professional Identity</i>	111
3.5 <i>Sim-IPE to Model and Embed New Cultural Norms</i>	112
3.6: <i>It Cuts Deep: Influence of Prior Simulation Experience</i>	113
Theme 4: Embracing Rural Healthcare.....	115
4.1: <i>In-Situ Realism, Rural Relevance, and Systems Learning</i>	115
4.2: <i>Rural Context: Constraints, Creativity, and Organizational Responsibility</i>	117
4.3: <i>Sim-IPE as a Mirror for Roles, Identity, and System Design</i>	118
Integration Results.....	119
Integrated Finding 1: Convergence Between SIMS Self-Determination Profiles and Participants' Lived Experience Indicates Predominantly Autonomous Motivation.....	121
Integrated Finding 2: External Events and Structures Functioned as Need-Supportive Rather Than Controlling	121
Integrated Finding 3: Psychological Safety as a Mechanism Linking Motivation, Learning, and Engagement.....	122
Integrated Finding 4: Place-Based Conditions Amplified SDT Need Satisfaction	122
Chapter 5: Discussion of Findings and Implications	124
5.1 Why Do They Come? Autonomous Motivation and Psychological Need Support	125

5.1.1 Autonomous Motivation	126
5.1.2 Energy as an Outcome Worth Naming	128
5.1.3 Making Sense of “Voluntary vs Mandatory”	128
5.1.4 Why Rewards Did Not Backfire.	130
5.2 Beyond the Script: Psychological Safety as a Motivational Mechanism.	133
5.2.1 Psychological Safety and Culture: A Recursive Loop in Rural Sim-IPE	134
5.2.2 Interprofessional and Collaborative Competence as an Expression of SDT Need Satisfaction.....	136
5.3 Sustainability Through Internalization and Needs-Supportive System Integration	139
5.3.1 Individual Internalization to System Integration	140
5.3.2 Rural Sim-IPE as a Health Human Resources (HHR) Strategy.....	141
5.3.3 Needs Supportive Rural CPD and Rural Motivational Ecology.....	142
5.4: Rurality as a Unique Motivational Ecology	144
5.4.1 Rural-Based Autonomy.....	144
5.4.3 Rural-Based Competence.....	145
5.4.4 Rural-Based Relatedness.....	145
5.4.5 A Theoretical Contribution: SDT Through Place	147
5.5 Conclusion.....	147
5.5.1 Knowledge Dissemination and Implications for Rural Practice	148
References	151
Appendix A: Situational Motivation Scale.....	169
Appendix B: Invitation to Participate	170
Appendix C: Consent Form.....	173
Appendix D: Interview Guide	174
Appendix E: Research Ethics Board Approval (St. Francis Xavier University).....	179
Appendix F: Research Ethics Board Approval (Nova Scotia Health).....	180
Appendix G: Healthcare Simulation Standards of Best Practice	181

List of Table

Table 1: SDT Mini Theories	47
Table 2: SIMS	83
Table 3: SIMS subscales	84
Table 4: Joint Display of Integrated Findings	120

List of Figures

Figure 1: SDT Continuum	51
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Figure 2: Statistics for SIMS subscales	86
Figure 3: Summary statistics for the SDI.....	86

Chapter 1: Introduction

The increasing complexity of healthcare practice, compounded by international health human resource scarcity, places mounting demands on practicing healthcare workers to maintain and enhance their clinical and collaborative competency for patient-centered care. These challenges are particularly pronounced in rural healthcare environments, where geographic isolation, limited access to specialized resources, and reduced opportunities for professional development create additional barriers to maintaining optimal standards of care and professional competency. Traditional didactic and professionally siloed continuing education strategies threatened to separate learning from its practice, creating the call for experiential and team-based strategies that have more direct relevance to clinical practice (Campbell & Sisler, 2019; Dow et al., 2012; Nyström et al., 2017; Reeves, 2016). Further, advances in patient safety research and advocacy have challenged the traditional ‘see one, do one, teach one’ apprenticeship model of medical education, highlighting the risks associated with practicing new procedures or communication strategies on real patients and underscoring the need for systemic reform in how healthcare providers develop and maintain the knowledge, skills, and attitudes to provide quality patient care (Kohn et al., 2000; Motola et al., 2013; Ziv et al., 2003). The landmark patient safety publication *To Err is Human: Building a Safer Health System* explicitly called for interprofessional education and simulation-based learning strategies to reduce patient harm (Kohn et al., 2000). In 2010, the World Health Organization (p.7) released a call to action, citing that “Interprofessional education is a necessary step in preparing a “collaborative practice-ready” health workforce” (p.7). Diaz-Navarro et al. (2024) released a global consensus statement on simulation-based practice in healthcare as a critical and necessary tool to enhance healthcare capabilities. The global consensus emphasizes the need for coordinated international efforts to

promote equitable access to high-quality simulation-based learning opportunities at all phases of the healthcare career, while maintaining adherence to ethical principles and simulation best practice standards.

Simulation, in its broadest sense, is an educational strategy in which a particular set of conditions is created or replicated to resemble authentic situations that are possible in real life for the purpose of practice and learning (Lioce et al., 2020). Despite a documented history that spans over 150 years, the past three decades have seen an exponential increase in the use of simulation in healthcare education (Owen, 2016). As a result, simulation-based education (SBE) in healthcare is well-founded in the literature and well-positioned as an effective strategy for improving patient outcomes (Gaba, 2007; Issenberg et al., 2005; Motola et al., 2013). Interprofessional simulation-based education, also referred to as Simulation-enhanced Interprofessional Education (Sim-IPE), has been a natural and synergistic progression of simulation-based education pedagogy (Palaganas et al., 2014; Robertson & Bandali, 2008). The premise of Sim-IPE is that facilitators and participants from two or more professions are coming together in a simulated healthcare experience with shared goals (Lioce et al., 2020). Sim-IPE is supported in the literature to enhance healthcare professionals' knowledge, skills and attitudes toward team function and collaborative patient care (Reeves, 2016; Reime et al., 2022; Zhang et al., 2011). Sim-IPE is founded on the theoretical principles of Experiential Learning and the concept of 'learning by doing' (Kolb, 2015; Poore et al., 2014; Yardley et al., 2012). This positions it as an ideal educational methodology to address the continuing professional development needs of rural healthcare providers and teams who cite the importance of practice relevance, context, and active learning strategies in their continuing education (Campos-Zamora et al., 2022; Gutenstein & Kiuru, 2018; Martin et al., 2017). By immersing learners in lifelike

clinical scenarios, simulation-based education encourages active participation, immediate feedback, and reflective practice. This interactive learning environment also enhances teamwork and communication, crucial aspects of effective patient care. However, despite robust evidence supporting simulation as an effective continuing education strategy, practicing provider engagement remains incompletely understood (Cook et al., 2017; Kurtović et al., 2024; Tavares, 2019). Participant ‘performance anxiety’ and insecurity being observed, are widely acknowledged as potential barriers in the context of establishing psychological safety in the simulation literature (Kolbe et al., 2020; Rudolph et al., 2014). More recently Drake et al., (2025) explored how medical students report experiencing these and other simulation anxieties and the impact on learning. Less is known about these vulnerabilities for practicing providers, which could help explain simulation participation patterns and engagement. Tavares (2019) highlighted the gap in simulation uptake as a continuing professional development (CPD) strategy among practicing clinicians and issued a pointed call to the healthcare simulation community to explore healthcare simulation through lenses that consider how individual beliefs, professional identities, social norms, and psychological conditions shape clinicians' decisions to engage, or disengage, with simulation learning. They argued that simulation research has prioritized questions of educational effectiveness but has largely neglected questions of engagement and factors impacting motivation. They concluded that shifting the research focus to the lived experiences of individuals within professional cultures, we can better understand why simulation is underutilized even when its educational affordances are well recognized. This call for theory informed inquiry in simulation was expanded by Eppich and Reedy (2022). They also appealed to healthcare simulation researchers to “become more thoughtful about engaging with and integrating relevant theoretical perspectives in our work” (p. 1), positioning that it is time for

simulation research to mature beyond ‘if’ simulation works to ‘how’ it works. Tavares et al. (2023) conducted a scoping review of the literature on simulation-based continuing professional development. Of the 8609 articles, only four directly explored participant motivation. This further demonstrated that existing literature focuses on the effectiveness of simulation as a CPD strategy but falls short of exploring the factors and conditions that influence clinicians’ engagement. Davies (2024) advances this work by specifically positioning Self Determination Theory (SDT) as a generative framework capable of advancing simulation research beyond justification toward a deeper understanding of how simulation works and how it might be optimized to be most effective. Further, they call for structured and theoretically sound research to explore associations between SDT and simulation to better understand why and how it can be most effective (p. 8). This highlights a gap and presents an opportunity to integrate an SDT perspective on what motivates rural practitioners to participate in Sim-IPE and the conditions that influence the uptake of this strategy for continuing professional development. Bridging the gap in understanding motivation as critical to engagement in Simulation and Sim-IPE is important to position this learning strategy in healthcare education and practice. Sim-IPE is resource-intensive and costly. Coordinating faculty, education materials, space, equipment, and participants requires considerable investment. It is essential to optimize the return on this investment in our resource-limited healthcare environment. Lin et al. (2018) highlights the importance of an economic evaluation of simulation-based education programming that considers resource allocation between education and clinical care. Gaining a better understanding of the motivation for and engagement in Sim-IPE will be an important factor in evaluating the cost and return on investment of this type of programming for continuing professional development among the health professions.

Background of the Study

A mobile rural Emergency Medicine Simulation-Enhanced Interprofessional Education (Sim-IPE) program was created in 2022 by a small interprofessional team of simulation educators and practicing healthcare professionals at a Regional Hospital in Nova Scotia. The physician lead of this team is the primary researcher for this study. The 8-hr in-situ Sim-IPE sessions were offered to rural emergency departments in Northeastern Nova Scotia beginning in June 2022 and continue to date. The initial impetus for the educational offering was to support the onboarding of several new rural emergency department staff who had arrived in Nova Scotia because of intensified rural recruitment strategies in recognition of the critical health human resource deficits and the resultant rural emergency department closures being faced across the province and country. The onsite simulation-based learning sessions were suggested by the interprofessional simulation team as a strategy to introduce the new clinical members to the emergency care space, the existing care team, and the system, all in the context of simulated clinical cases that reflected patient presentations they may encounter at that rural site in ‘real life’. It also reflected recommendations published in *The Rural Road Map Implementation Committee* (2021) that listed quality rural experiential learning opportunities as factors to support rural healthcare recruitment and retention. The success of the educational experience, as reported in session evaluations by participants, led to a request to schedule the sessions regularly. Word of mouth quickly prompted healthcare workers and educators from additional rural sites within the zone to request participation. The creating interprofessional team, in collaboration with zone leadership and rural site-based educators, committed to offering the sessions up to two times per year at each rural site on a rotating schedule. This was initially funded through a combination of an existing education budget within the healthcare organization and a zonal physician leadership

commitment. The evolution of simulation learning as a funded strategy across the organization supports this work at present.

Curricular Context

An 8-hr session is usually comprised of 4-5 individual simulation cases. The interprofessional simulation facilitation team transports the simulation equipment to the host rural site and the simulated cases are run in their acute clinical care space. Participation in the education session is voluntary and engagement is supported and advertised by the rural site's local leadership team. Nursing participation is supported as per local/union education practices that can include a combination of education credits and /or financial reimbursement of education time. There is no expectation to participate nor are there any consequence for not participating. Prospective attendees receive a welcome email 1 week before the session that outlines the format and provides access to a Dropbox of optional readings and resources related to the clinical objectives for the day. This preparation is intended to focus the participants, balance the cognitive load, and enhance the psychological safety of the day (Rossler et al., 2021). Attendance numbers have varied across the sites and from session to session. However, a requirement for the session to occur is to have participation that is, at minimum, a base representation of the host site's typical rural emergency care team which might include one physician and two to four nurses. This is to ensure that the acute care simulation cases can be practiced in a way that reflects real-life clinical practice at that site. There have been no cancellations to date due to a lack of adequate participant numbers. The simulation program was developed in keeping with *Kern's 6-step Model for Curriculum Development* (Khamis et al., 2016; Thomas et al., 2016). The Sim-IPE design, delivery, and debriefing are guided by the 2021 *Healthcare Simulation Standards of Best Practice* (Rossler et al., 2021) and more recently also by *The Society for*

Simulation in Healthcare (SSIH) Guidelines for Simulation Training (Stefanidis et al., 2024).

Case Curriculum

The case curriculum evolved from a base compendium of high acuity low occurrence (HALO) presentations spanning cardiopulmonary resuscitation and advanced airway management across the age spectrum. The curriculum also accommodated site-specific needs-informed requests for new case development across the spectrum of acute and emergency care. There are currently four volumes of cases with four to five cases per volume. All cases were created by me, the physician lead for the program, peer-reviewed by the interprofessional team and periodically updated. They are presented using an open-source scenario template from EMSIMCASES. The clinical cases have acute and/or resuscitative emergency care objectives, which are informed by peer review and best practice guidance in emergency medicine. They also have interprofessional competency objectives, which are informed by the work of the Canadian Interprofessional Health Collaborative (Collaborative, 2024). All objectives were shared with participants. Each in-situ Sim-IPE session was co-facilitated by an Emergency Physician (in this case, the primary researcher in this study) and at least one other non-physician simulation-trained healthcare professional. Facilitation included a structured pre-brief with explicit attention to principles of psychological safety, the case scenario, and a structured debrief. The simulated emergency care cases were delivered *in-situ*, within the actual emergency department clinical care space at each rural site. Participants were a mix of full and part-time staff at that site as well as occasionally learners doing clinical placements. A life-like and interactive computerized patient simulator represented the patient and live simulated participants were embedded as family members where necessary to create the appropriate case context (ie: an embedded parent in a pediatric case). Each session was intentionally structured to reflect the site's clinical reality,

with a complement of clinicians that mirrored typical staffing models for that location and the clinical scenario progressed in real-time as much as possible. The number of participants per session varied from four to twelve healthcare professionals including nurses, physicians, paramedics, and respiratory therapists. In sessions with larger groups, participants rotated between active clinical roles and structured observer roles. Observers were provided with explicit prompts aligned to the case objectives and interprofessional competencies to ensure active engagement and reflective contribution during debriefing. Facilitation was scaffolded in accordance with the *Healthcare Simulation Standards of Best Practice (HSSOBP)* with deliberate attention to pre-briefing, psychological safety, role clarity, scenario fidelity, and structured debriefing (see Appendix G). This standards-informed approach ensured consistency across sites while allowing contextual adaptation to the realities of each rural emergency department. The debriefing was aligned with the *Promoting Excellence and Reflective Learning in Simulations (PEARLS)* framework (Eppich & Cheng, 2015), and a focused on clinical knowledge, interprofessional competencies and the emergency care system. Participant and facilitator evaluation had several components. Formative assessment, directive feedback, and guided reflection were embedded in the debriefing of each individual simulation case and at the end of each eight-hour session. There was no summative or high-stakes assessment for any of the participants. Participants were asked to complete an anonymous electronic session evaluation that was designed to capture the participants' perception of how effective the session was at meeting their learning needs. This evaluative data was used purely for program improvement and was not part of this research activity. Contrary to my lived experience and the successful uptake of Sim-IPE by our rural emergency care teams, a review of the literature suggests that engagement in Sim-IPE by practicing healthcare professionals is comparatively underwhelming

and poorly understood overall (Cook et al., 2017; Kurtović et al., 2024; Tavares, 2019; Tavares, Piquette, et al., 2023). This suggested that the experiences and engagement of the healthcare workers in Northeastern Nova Scotia in Sim-IPE represented a positive variance compared to the literature. This highlighted the opportunity to address a gap in the literature by diving deeper into the socio-personal and socio-contextual elements of motivation and engagement that influenced the healthcare workers who participated in Sim-IPE in rural Northeastern Nova Scotia.

Need for the Study

Much of the literature to date has focused on demonstrating that Sim-IPE in health professions continuing education enhances individual and team performance and patient safety measures. A critical yet underexplored assumption is that healthcare workers will choose to engage in this type of continuing education. An understanding of the factors that motivate healthcare professionals to choose Sim-IPE as part of their continuing education is lacking in both IPE and CPD research. This limits how educators, administrators, and policymakers can design and support Sim-IPE to achieve maximum engagement and actualize the collaborative practice and patient safety benefits of this approach to continuing education in the health professions. Exploring Sim-IPE in continuing education as a socio-personal process through the theoretical lens of Self Determination Theory (SDT), the conceptual framework of psychological safety, and a validated measure of situational motivation was an opportunity to probe this underrepresented area in healthcare education research.

Research Problem Statement

Despite its established position in health professions education as an effective strategy to enhance team performance and advance patient safety, existing literature suggests that simulation and Sim-IPE have limited and unpredictable uptake by practicing healthcare practitioners for

continuing professional development (CPD), and that there is a lack of theory-informed exploration of the factors and conditions that influence this (Cook et al., 2017; Davies, 2024; Eppich & Reedy, 2022; Kurtović et al., 2024; Tavares, 2019; Tavares, Sockalingam, et al., 2023). As academic and healthcare organizations' interest and investment in simulation-based learning grow exponentially, a greater understanding of why this intervention is effective through the lens of SDT and healthcare workers' motivation to engage with or avoid this learning strategy is required. Moreover, in our critically resource-limited healthcare environment, there is an ethical and fiscal imperative that we do not fall victim to the fallacy that just because something works, people will choose to do it. Rural healthcare workers in rural Northeastern Nova Scotia have been engaging and participating in a mobile, locally delivered simulation-based interprofessional program since mid-2022. This raised the question and opportunity: Why do they come? The purpose of this study was to explore the experience of practicing rural healthcare workers who choose to participate in simulation-based interprofessional education (Sim-IPE) for continuing professional development (CPD) through the lens of SDT. The study aimed to generate a richer understanding of the motivational elements of Sim-IPE as a CPD strategy across professions and to consider its alignment with evolving competency-based, interprofessional, and workplace learning frameworks. Using motivational theory to better understand rural healthcare workers' experiences and the factors shaping their decision to participate, this work expanded an underrepresented area in the literature (Davies, 2024; Eppich & Reedy, 2022; Tavares, Sockalingam, et al., 2023).

Research Questions:

1. How do rural emergency healthcare workers in Northeastern Nova Scotia describe their motivation to participate in the locally delivered Sim-IPE?

- What personal, social, and contextual factors facilitate this participation?
 - To what degree is their participation self-determined?
2. How do rural emergency healthcare workers in Northeastern Nova Scotia describe their experience of psychological safety regarding their participation in simulation-based interprofessional education?
 3. What factors within the Sim-IPE experience influence participants' decision to participate in future simulation-based learning opportunities?
 4. How does the rural emergency healthcare workers' decision to participate relate to their scoring on the validated Situational Motivation Scale (SIMS)? (Guay et al., 2000)

Reflexivity/Positionality

My positionality is explicit to support the reader with sufficient context to understand how I view this work. I am a white, cis-gendered, heterosexual, able-bodied female. Until recently, I identified as a settler of English and Irish descent with colonial privilege. Through family discovery I now acknowledge my heritage among the Labrador Metis now recognized as Nunatukavut. I am a wife of 25 years and a mother to 5 healthy children. I was born and raised in a small fishing village on an island off the northeast coast of Newfoundland. Although I was the first in my family to receive a university degree, I was raised in a home that openly valued self-directed and lifelong learning. I studied medicine at McMaster University in the late 1990s, a period when the school was at the forefront of problem-based learning curricula in medical education. I gravitated there and away from the traditional instructor-driven, didactic models. I am now an Emergency Medicine physician with 20 years of clinical care experience in small regional and rural emergency departments. I have firsthand experience with the challenge of maintaining competency and acquiring new skills while working in rural environments. I have

experienced the systemic paradox of resourcing continuing education in urban locations more than rural locations despite rural sites having a relative lack of clinical exposure to trauma and emergency care and needing more continuing education to supplement clinical exposure and maintain their emergency care competency. To this very point, my commitment to simulation-based education began as a mid-career grassroots initiative with three of my interprofessional colleagues at our regional hospital over 10 years ago. I was committed to my professional growth and frustrated that while I delivered emergency care as part of an interprofessional team, my continuing education opportunities were primarily limited to physicians, an approach considered uniprofessional, and often completely disconnected from my rural clinical care realities. I committed to building interprofessional simulation-based education opportunities for myself and my regional and rural teams. I now hold multiple leadership roles in emergency medicine and simulation-based education. I am the current Provincial Medical Director for Nova Scotia Health Simulation Learning, our healthcare organization's provincial interprofessional simulation learning program. This research builds on my professional development as a healthcare simulation educator and advances my healthcare organization's priority of research and scholarly work. Most importantly, it explores the factors that influence participation in simulation learning for our rural healthcare workers and will help inform existing and future education programming to support collaborative rural emergency care practice and quality patient care. I recognize that my views are the balance and counterbalance of many overlapping identities, as am I, the researcher. My clinical work in rural emergency departments and my role in developing and delivering healthcare simulation shaped the questions I asked and the value I place on simulation as a strategy for rural CPD. These roles also carry relational weight and have likely influenced the learning culture in which this work is situated. I enter this study at both an insider and

systems-level. I occupy positions of professional and institutional privilege relative to many participants, particularly nurses, LPNs and paramedics. I am also a front-line rural emergency colleague. I am a clinician-researcher. I embrace a community-engaged research ethic where findings belong to, and are intended to benefit, the communities from which they emerge. Welton et al. (2025) positioned that "rural researchers are legitimate researchers and their positionality is of unique value to all research" (p. 4). Further, they argued that "research conducted in rural communities by rural researchers is essential to addressing the unique needs of a rural population" (p. 1). I entered this study from exactly that position. At the same time, I recognize that insider positioning in small, close-knit professional communities carries relational weight and ethical complexity. Drawing on the principles of relational accountability and mindful reciprocity described by Tobias et al. (2013) in the context of community-based participatory research, I approached this work with deliberate attention to power dynamics. My aim was not neutrality as this is an impossible standard, but rather transparency, reciprocity, and a commitment to conducting research with and for rural healthcare workers rather than on them. I identify as a teacher and a student.

Chapter 2: Literature Review

This literature review takes up Tavares (2019) call for a theory-informed exploration of the personal, social, and contextual factors that shape healthcare professionals' motivation to engage in Simulation Based Education (SBE) for Continuing Professional Development (CPD). It furthers the appeal of Eppich & Reedy (2022) to engage theoretical perspective and accepts the opportunity highlighted by Davies (2024) to leverage Self Determination Theory (SDT) in healthcare simulation research. The literature selections reflect their contextual, historical and theoretical connections to the research questions. It begins by connecting the reader with the shift from didactic to competency-based learning in health professions education and highlights the critical connection between health education and practice. Next, it explores the theories that underpin simulation as a learning strategy and the natural convergence of interprofessional education and simulation into Sim-IPE. From there, it considers Sim-IPE as a driver for patient safety and quality patient care relative to the continuing professional development of practicing healthcare workers and teams. It then situates the study within the evolving landscape of healthcare practice, CPD, the rural context, and the current literature on social and contextual factors influencing engagement in CPD. Finally, it will position the study within motivational theory and psychological safety as lenses for understanding the why and how of healthcare simulation as a continuing professional development strategy.

From Didactic to Competency-Based Learning: A Paradigm Shift

The 1910 *Flexner Report* fundamentally reshaped medical education in North America by advocating for scientifically grounded, university-based training that emphasized academic rigor (Flexner, 1910). While this reform established a strong foundation for medical science, with standardized curricula and licensing requirements, it also entrenched a didactic, teacher-

centered approach, often favoring knowledge over contextual application, and individual expertise over collaborative competence. In 1978, the World Health Organization (WHO) published *Competency-based curriculum development in medical education* to shift health professions education from content-heavy, time-based models to a competency-based curriculum focused on observable practice-relevant functions that were time-flexible, emphasizing outcomes over time and following mastery learning principles of feedback and guided learning to ensure that all learners demonstrated competency before progressing. While these principles continue to guide competency-based education (CBE) today, it was the rise in attention to healthcare quality and patient safety that came in the late 90s that really catalyzed the paradigm shift to CBE in health professions education. Landmark publications like the *To Err Is Human* report by the Institute of Medicine (Kohn et al., 2000) revealed widespread medical errors, highlighted inconsistencies in practitioner preparedness, and placed pressure on educational institutions to demonstrate that graduates were competent, not just having completed training. Follow-up publications in (2001), *Crossing the Quality Chasm*, and (2003), *Health Professions Education: A Bridge to Quality*, were key drivers of health professions education reform and the shift to a more holistic approach that places the patient, family and community more explicitly in the center of learning and deliberately links education to practice needs. These developments directly influenced momentum in the field of interprofessional education. In 2010, the WHO released the *Framework for Action on Interprofessional Education and Collaborative Practice* (World Health Organization [WHO], 2010), positioning the need to progress from individual competence to also include collaborative interprofessional competence in curricula to prepare learners to meet the challenges of quality patient care.

Theory and Health Professions Education

To understand the rural Sim-IPE experience, it is important to locate it within broader educational theories that explain how adults learn, change and sustain their practice over time. Experiential learning, transformative learning, and interprofessional education frameworks address how simulation can create powerful opportunities for practice, reflection, and team-based learning. Contemporary CPD scholarship emphasizes lifelong, systems-integrated learning rather than episodic content delivery. Building on these foundations, Self-Determination Theory offers a complementary motivational lens that helps explain not only whether learning occurs but also why clinicians choose to engage, persist, and integrate new ways of working into their professional identities. The following section outlines these key theoretical perspectives and their application to Sim-IPE, providing the conceptual grounding for the design, analysis, and interpretation of this thesis.

Adult Education and Adult Learning Theories

Learning in adulthood is often distinguished from childhood learning by its emphasis on self-direction, experiential engagement, and practical application (Knowles et al., 2015; Merriam & Baumgartner, 2020). While this distinction was most notably made by Malcolm Knowles, Merriam and Baumgartner (2020) synthesize a range of perspectives commonly grouped as adult learning theories, which collectively frame how adults learn across settings. These theories are widely applied in health professions education and underpin the design of evidence-informed continuing professional development and simulation-based learning (Bierema, 2018; Clapper, 2010; Mukhalalati & Taylor, 2019; Sargeant, 2009; Taylor & Hamdy, 2013). A shared premise is that adult learners are generally self-directed, bring substantial prior experience, are problem and practice-focused, and are strongly influenced by relevance, autonomy, and internal motivation. Accordingly, theory-informed educational design prioritizes authentic experiences, scaffolded

meaning-making, and structured reflection over content transmission alone. This orientation helps shift participants from surface to deep learning and strengthens the linkage between theory and practice. It also supports lifelong, self-directed learning across the continuum of health professions education.

Andragogy is a widely referenced concept introduced by Malcolm Knowles as a theory of adult learning (Knowles et al., 2015). Fundamental to Knowles' work is the concept that pedagogy is teacher-centred and places the learner in a submissive role that hinders adult learner engagement and success. Andragogy, by contrast is learner-centered, focusing more in facilitating learning than directing it (Knowles et al., 2015). Knowles (2015) model for adult learning is a process model that highlights the unique characteristics of adult learners, or what Knowles refers to as "core adult learning principles" (p. 80). These six assumptions are that (1) adults need to know why they need to learn something before they will engage, (2) adults have a self-concept of being responsible for their own learning and need to be seen as self-directed in their learning choices, (3) adults bring a volume of experience to learning situations and respond best to experiential learning strategies that consider and tap into their experience, (4) adults will have greater readiness to learn things they identify as relevant to their current roles, (5) adult orientation to learning is more problem-centred or problem-solving than subject-centred, and (6) adults are more responsive to internal rather than external motivators. According to Knowles, the andragogical process model for learning uses these assumptions to define the essential elements of an optimal learning environment for adults (Knowles et al., 2015). This learner-focused process model contrasts with traditional, transactional content models. There is a high degree of alignment between the essential elements of Knowles' process model for learning and the Healthcare Simulation Standards of Best Practice (INACSL Standards Committee, 2021;

INACSL Standards Committee et al., 2025). The standards operationalize many of Knowles' assumptions in simulation design, delivery, and debriefing to ensure high-quality, psychologically safe, learner-centered simulation experiences.

Experiential Learning and Reflective Practice

Traditional health professions education has been largely didactic learning delivered from a uni-professional frame of reference. (Issenberg et al., 2005; McNair, 2005). From William Osler's (1910) *Natural Method of Teaching* and *The Flexner Report* (1910), clinical education in the health professions has evolved considerably in the notion of experience as a source of learning. Experiential learning is one of several foundational theories in adult education. Key theorists of experiential learning include John Dewey, Kurt Lewin, John Piaget and David Kolb (Yardley et al., 2012). It differs fundamentally from behavioral learning theory, which informed traditional education methods. The basic tenet of experiential learning is the construction of new knowledge and meaning from an experience, emphasizing the critical role that experience plays in the learning process (Kolb & Kolb, 2017; Kolb, 2015; Yardley et al., 2012). Experiential Learning Theory (ELT) is the theory that explains how experience can be reliably transformed into learning (Kolb, 2015).

Kolb (2015) defines learning as "the process whereby knowledge is created through the transformation of experience" (p. 49) and explains further that "knowledge results from grasping and transforming experience" (p. 51). Grasping experience considers how we take in information, and transforming experience considers how we interpret and act on that information. Kolb's experiential learning cycle is a model that depicts modes of grasping and transforming experience. These four learning modes are the stages of the Experiential Learning Cycle: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization

(AC), and Active Experimentation (AE) (Kolb & Kolb, 2017, p. 32). CE and AC represent how we grasp experience, whereas RO and AE represent how we transform it. This, experience (CE), reflect (RO), think (AC) and act (AE) cycle has been widely applied in health professions education and is foundational to simulation-based learning (Poore et al., 2014). Simulation aligns naturally with ELT by providing structured experiential opportunities, guided reflection, and iterative practice. A structured debrief that promotes reflective thinking is a cornerstone of simulation-based education and a necessary element to meet the standards of best practice in healthcare simulation (INACSL Standards Committee, 2021). This is accomplished by the appropriate integration of feedback, debriefing and guided reflection by a facilitator competent in simulation facilitation (INACSL Standards Committee, 2021; INACSL Standards Committee et al., 2025). The goal of a healthcare simulation debrief is to create and maintain a psychologically safe and engaging learning environment that provokes engaging discussion and allows participants to identify and explore performance gaps and successes and integrate this learning into future performance and clinical practice. ELT as a cyclical model also highlights the continuous nature of learning and provides a framework for lifelong learning and what Kolb (2015) refers to as “The Learning Way; approaching life experiences with a learning attitude” (p. 335).

The quote “we don’t learn from experience... we learn from reflecting on experience” is often attributed to John Dewey, and while it never appeared verbatim in his published works, it does provide a relatable paraphrase of the key tenets of his philosophy on the importance of reflection in learning (Dewey, 1933, 1938). Reflection is a critical component of Kolb’s experiential learning cycle. Stephen Brookfield (Brookfield, 2017), Donald Schon (Schon, 1995), and Jack Mezirow (Mezirow, 2000) are important experiential learning theorists who also

highlight reflection as a primary source of learning. Regarding the importance of reflection in medical education, Sandars (2009) defines reflective learning as “a metacognitive process that occurs before, during and after situations with the purpose of developing greater understanding of both the self and the situation so that future encounters with the situation are informed from previous encounters” (p. 685). Reflective learning in the context of clinical practice is considered reflective practice (Sandars, 2009). Reflective capacity is regarded as essential to professional competence and, as such, is considered a critical component of prelicensure and continuing professional development in the health professions (Lawrence et al., 2018). Mann et al. (2009) conducted a systematic review to explore how reflection and reflective practice are conceptualized, taught, and assessed in health professions education from undergraduate through continuing professional education. They found that reflection is broadly regarded as a key component of professional development, enabling practitioners to learn from experience and improve clinical judgment, critical thinking, and patient care. They underscore that reflection is both foundational and complex within health professions education and that experience-based learning environments can enhance the depth of reflection. Simulation-based CPD operationalizes many of their findings, offering structured, authentic, and emotionally resonant contexts for developing reflective practitioners and offers an ideal setting for structured reflective practice. In simulation, healthcare professionals are placed in learning environments that encourage emotional and cognitive engagement. These experiences serve as fertile ground for reflection-in-action during performance and reflection-on-action during structured, facilitated debriefing. Evidence-informed Sim-IPE can also enable participants to explore ethical, interpersonal, or leadership challenges, facilitating reflection that supports growth in professional roles and highlights the value of reflection in professional identity formation.

Rudolph et al. (2007) drew on the reflective practice literature to design a debriefing with a good judgment approach in healthcare simulation. Their approach reframes debriefing as a disciplined combination of honest, behavior-focused feedback and genuine curiosity about learners' thinking, rather than choosing between critique and support (Rudolph, Simon, & Raemer, 2007). They explore how, in traditional approaches to feedback and debriefing, a judgmental stance criticizes performance bluntly, which can shut down reflection, while a non-judgmental stance avoids critique so completely that it can fail to stimulate reflection at all. They propose the middle ground of debriefing with good judgment to pair clear, behavior-specific observations with genuine curiosity into learners' thinking to surface underlying frames while preserving psychological safety (pp. 368-369). Grounded in cognitive psychology and reflective practice, the model assumes that participants' actions are sensible to them in the moment and that uncovering their underlying frames is essential for learning (p. 363). Facilitators are encouraged to share their observations and concerns transparently and to invite learners to explain their perspectives. This premise has become a cornerstone of debriefing practice in healthcare simulation, offering a teachable, evidence-informed method for turning simulation performance into opportunities for deep reflection, learning and behavior change.

Transformative Learning

A defining condition of being human is that we have to understand the meaning of our experience. For some, any uncritically assimilated explanation by an authority figure will suffice. But in contemporary societies we must learn to make our own interpretations rather than act on the purposes, beliefs, judgments, and feelings of others. Facilitating such understanding is the cardinal goal of adult education (Mezirow, 1997, p. 5).

While experiential learning theory highlights the importance of reflection and reflective observation as part of the experiential learning cycle, transformative learning theory explores how critical reflection can challenge existing beliefs and assumptions, resulting in new ways of seeing an issue. Understanding the meaning of our experience is central to transformative learning theory (Mezirow, 1997). According to Mezirow, a frame of reference is the mental lens through which we interpret an experience. He further describes these “structures of assumptions” as the ultimate guide to what we notice, how we judge it, and what we think is possible (Mezirow, 1997, p. 5). A frame of reference has two layers or components: habits of mind and points of view. “Habits of mind are broad, abstract, orienting, habitual ways of thinking, feeling and acting” (Mezirow, 1997, p. 5). They are relatively stable orientations that shape our default assumptions and generally reflect what we take as ‘true’, ‘right’, or ‘normal’. Habits of mind are ultimately expressed as points of view, which represent more specific beliefs or attitudes that express a habit of mind in a particular situation. Transformative learning occurs when adults critically examine their habits of mind, revise the points of view that flow from them, and thereby reconstruct their frame of reference. (Mezirow, 1997; Taylor, 2007; Taylor & Cranton, 2012). Mezirow explains transformative learning as a coherent 10-phase progression in which a disorienting dilemma disrupts our usual sense-making or does not fit comfortably within our usual frames of reference. This triggers reflection, which is often emotional and is followed by a critical assessment of the assumptions that informed our existing points of view. Next, the recognition that others share similar tensions promotes the exploration of new options, which can then be integrated into future actions to build confidence in the new approach and ultimately be internalized as a new or modified frame of reference (Mezirow, 1997, 2000).

Mezirow’s TLT underscores the importance of autonomous thinking, citing it not only as

the result of transformative learning but also as the goal of all adult learners. “The learner’s immediate objectives may be described in terms of subject matter mastery, attainment of specific competencies, or other job-related objectives, but his or her goal is to become a socially responsible autonomous thinker” (Mezirow, 1997, p. 8). Mezirow (1997) emphasizes that adult education should cultivate autonomous, critically reflective thinkers who can engage in dialogue, critically examine assumptions, and adapt frames of reference accordingly. This requires a shift from the traditional educator role to one of facilitation and co-learning, in learner-centered participatory environments that encourage learners to question assumptions and test new perspectives. Effective facilitation supports learners to critically reflect on their own and others’ assumptions, and engage in open dialogue that validates beliefs, actions, and outcomes. This requires a learning environment that is respectful, open to perspectives and with equal opportunity to challenge and defend points of view. These conditions are mirrored in the 2021 *Healthcare Simulation Standards of Best Practice*. It follows then that Mezirow’s transformative learning theory offers a strong conceptual foundation for interprofessional simulation-based CPD. Simulation’s immersive experiences and structured debriefings align with transformative processes. Healthcare professionals bring discipline-specific assumptions about roles, communication, and hierarchy. Simulation scenarios can make these assumptions visible under stress. Guided debriefing enables participants to critically reflect, test alternate perspectives, and adopt more inclusive and collaborative frames of reference. Briese et al. (2020) position that the 10 phases of TLT align well with the stages of a healthcare simulation-based learning experience. They further examine how TLT can guide simulation facilitators to create experiences that challenge participants’ habits of mind and points of view, ultimately directing learning that changes how those participants approach future experiences.

Simulation-Based Education

Over the past 30 years, simulation has become increasingly utilized as a methodology for experiential learning in healthcare. The seminal works of Dr. David Gaba and Pamela Jeffries are widely cited throughout the simulation literature (Gaba, 2007; Jeffries, 2005); Gaba from the lens of a practicing anesthesiologist and Jeffries as a nursing educator. Dr. Gaba is widely quoted in his definition: “Simulation is a technique, not a technology, to replace or amplify real experiences with guided experiences, often immersive in nature, that evoke or replicate substantial aspects of the real world in a fully interactive fashion” (Gaba, 2007, p. 126). Jeffries (2005) defines simulation as “activities that mimic the reality of a clinical environment and are designed to demonstrate procedures, decision-making, and critical thinking through techniques such as role-playing and the use of devices such as interactive videos or mannequins” (p. 97). The references to immersion, role playing, and interactive nature, clearly connect simulation to its theoretical foundation in experience as the source of learning. Simulation is not a new strategy in education. Simulation-based training in aviation originated in the early 20th century, driven by the need to safely train pilots for increasingly complex aircraft and high-risk environments without the safety risks and costs of in-flight training. The concept of knowledge and skill development without risk to the flying consumer quickly led to widespread industry adoption and, eventually, to legislation mandating simulation as a core component of pilot certification and recurrent training. The success of aviation simulation directly influenced the adoption of simulation in healthcare and set a precedent, demonstrating that complex, high-stakes environments require deliberate practice, ongoing skill refreshment, and crisis resource management (Gaba, 2000, 2004). Traditionally, health professions students and healthcare workers learned from clinical experience with real patients in an apprenticeship model. This

experience is notoriously unpredictable and can vary significantly across students in the same program or work environment, resulting in incomplete clinical and procedural exposure for trainees and incomplete exposure to maintain skills for practicing providers. This approach is further criticized for the ethical implications of practicing on real people. Simulation offers a safe space for high-volume, needs-based practice of decision-making and procedural skills without risk to patients. As such, it has been widely promoted as *practice without patient risk*. Simulation is a well-established experiential educational method and has become a staple for training and education in the health professions (Cook et al., 2011; Motola et al., 2013; Palaganas & Mancini, 2020; Ruesseler et al., 2010; Stefanidis et al., 2024). McGaghie et al. (2010) conducted a critical review of simulation-based medical education research and identified and discussed 12 features and best practices that educators should know to maximize the educational benefit. Motola et al. (2013) published *Simulation in Healthcare Education: A best evidence practical guide*, with the goal to “equip healthcare educators with the tools to use this learning modality to [its] full capacity” (p. e1511). In 2021, the International Nursing Association for Clinical Simulation and Learning (INACLS) released its 4th edition standards document, *Healthcare Simulation Standards of Best Practice*, as a guide to the use of simulation in academia, clinical practice, and research (Rossler et al., 2021).

Simulation has also evolved as a pivotal strategy for system-level learning, enhancing team performance and improving patient outcomes across healthcare settings (Brazil & Reedy, 2024; Diaz-Navarro et al., 2024; Nickson et al., 2021). The contemporary definition, “a technique that creates a situation or environment to allow persons to experience a representation of a real event for the purpose of practice, learning, evaluation, testing, or to gain understanding of systems or human actions” (Lioce et al., 2020, p. 44), reflects this evolution and marks a shift

from the traditional focus on individual knowledge and skills acquisition to the intentional use of simulation for evaluating, testing, and understanding entire healthcare systems. This approach has been consolidated as translational simulation, where simulation is strategically deployed to address real-world system issues, optimize workflows, improve interprofessional collaboration, and drive measurable improvements at both the patient and organizational level (Brazil, 2017; Brazil & Reedy, 2024; Nickson et al., 2021). This broadened application positions simulation not only as an educational tool but as an integral strategy for continuous system learning and integration (Brazil, 2017; Brazil & Reedy, 2024). In 2024, Stefanidis et al., published the first *Healthcare Guidelines for Simulation Training* to further support the evidence-based practice of simulation, renewing concerns for heterogeneity in this rapidly growing field. In 2024, Diaz Navarro et al. published a global consensus statement on the critical importance of coordinating simulation-based practice into healthcare strategies worldwide. Further, it recognized the interdependency and complexity of widespread application of healthcare simulation as a strategy and called for sustained political, institutional, and practitioner-level commitment to integrating simulation into clinical practice and all levels of professional training and including adherence to recognized best-practice standards for quality, faculty development, and accreditation. This call to action better acknowledges the nature of healthcare as a complex adaptive system and that healthcare simulation success has educational and system-level interdependencies (Brazil & Reedy, 2024; Ratnapalan & Lang, 2020).

Interprofessional Education

Interprofessional education (IPE) is education that occurs when two or more professions learn interactively together to improve collaboration and the quality of care (Reeves, 2016). IPE demands an interactive component and is not accomplished when different professions simply

learn side by side or share lectures (Hammick et al., 2007). Interprofessional education (IPE) has become an increasingly recognizable field of inquiry in health professions education. Its foundational aim is to educate healthcare students to be better collaborators by allowing them to learn with, from, and about each other (Paradis & Whitehead, 2018). This diverges from the traditional practice of training healthcare students within their own professional domain. IPE is meant to enable interprofessional collaboration (IPC) by improving the knowledge, skills, and attitudes of learners about collaborative teamwork. These concepts have extended rapidly from prelicensure education to post-licensure and continuing education in the healthcare professions.

Early in the twenty-first century, policymakers and healthcare educators recognized that healthcare professionals were entering practice without the knowledge, skills, and attitudes to function as part of a healthcare team, and that this had significant implications for patient care. (Palaganas et al., 2014). In 2000, the landmark study *To Err is Human; Building a Safer Healthcare System* highlighted simulation as a patient safety strategy and listed team-based simulation as a key recommendation to build leadership and knowledge for patient safety. In 2010, the *World Health Organization* (WHO) released the *Framework for Action on Interprofessional Education and Collaborative Practice* (World Health Organization [WHO], 2010). They positioned that “A collaborative practice-ready health worker is someone who has learned how to work in an interprofessional team and is competent to do so” (WHO, 2010, p. 7). They define collaborative practice as an occurrence “when multiple health workers from different professional backgrounds work together with patients, families, carers and communities to deliver the highest quality of care” (WHO, 2010, p. 7). A key conclusion from this document is that “After almost 50 years of inquiry, the World Health Organization and its partners acknowledge that there is sufficient evidence to indicate that effective interprofessional

education enables effective collaborative practice” (WHO, 2010, p. 7). Such advocacy for IPE secured its crucial role within the healthcare professions and acted as a global call to action for policymakers, educators, healthcare providers and all health advocates. In response to this global call to create “a collaborative practice-ready workforce” (WHO, 2010, p. 10), IPE has become an increasingly embedded healthcare education model around the world. In 2010, the *Canadian Interprofessional Health Collaborative (CIHC)*, released its National Competency Framework (Canadian Interprofessional Health Collaborative [CIHC], 2010), which was reviewed and updated in 2024 (Collaborative, 2024). Similarly, in 2011, the *Interprofessional Education Collaborative (IPEC)*, a collaborative of schools of health professions, released its *Core Competencies for Interprofessional Collaborative Practice* (Collaborative, 2016). These documents define and describe interprofessional collaboration competencies and offer a road map for achieving these competencies in academic and clinical practice settings. They explicitly foreground relationship-focused care/services, team communication, team functioning, and collaborative leadership as core domains, each of which presupposes team members’ experience of mutual respect, trust, and belonging.

Simulation Enhanced Interprofessional Education (Sim-IPE)

Tullmann et al. (2013) initially described Simulation-enhanced interprofessional education (SIM-IPE) as a retrofit of existing simulation-based education to incorporate attention to key elements of interprofessional education, including communication, professionalism, shared problem-solving, decision-making and conflict resolution. Conceptually, it is the overlap of simulation and IPE pedagogy. Sim-IPE (also referred to as interprofessional simulation-based education) has been recognized as an effective way to promote and deliver IPE (Costello et al., 2018; Robertson & Bandali, 2008). Sim-IPE “occurs when participants and facilitators from two

or more professions are engaged in a simulated health care experience to achieve shared or linked objectives and outcomes” (Decker et al., 2015, p. 294). Sim-IPE allows us to learn from, with, and about each other in replicated real-life settings. This simulated ‘bridge’ between the classroom and ‘real-life’ exposure is an important education and health system resource (Robertson & Bandali, 2008). IPE and Sim-IPE have been cited widely as effective strategies in health professions education and as a methodology to enhance patient safety (Gallo & Smith, 2015; Kohn et al., 2000) and enable collaborative practice (WHO, 2010). Sim-IPE has been proposed as a particularly powerful modality for operationalizing interprofessional and collaborative competencies because it enables teams to rehearse communication, role negotiation, disagreement processing, and shared decision-making, in realistic time-pressured scenarios while maintaining a psychologically safe container for experimentation and error. The CIHC domains of Team Functioning, Team Differences/Disagreements Processing, and Collaborative Leadership further support this view and call for interdependent working relationships, the creation of safe environments in which to express diverse opinions, and co-creation of practice cultures that value all team members and support their physical and mental well-being (CIHC 2024). Bochatay et al. (2025) completed a scoping review of Interprofessional simulation-based team training (ISBTT) and noted that issues of power and hierarchy were rarely discussed despite being foundational to IPE pedagogy and enabling collaborative practice. This calls for the attention of interprofessional and simulation educators to ensure that Sim-IPE programming is explicit in navigating complex intergroup dynamics. Chaplin et al. (2020) cited simulation for interprofessional learning as a top-priority research theme. The rural Sim-IPE programming that provides the context for this study explicitly listed interprofessional competency objectives, informed by the Canadian Interprofessional Health

Collaborative (CIHC), for each case scenario. (CIHC 2024).

The Evolving Landscape of Healthcare Practice and Continuing Professional Development (CPD) in the Health Professions

Over the past two decades, healthcare systems around the world have made a substantial commitment toward delivering safer, more patient-centered, and higher-quality care; changes that were catalyzed in large part by the Institute of Medicine's seminal report *Crossing the Quality Chasm: A New Health System for the 21st Century* (Institute of Medicine, 2001). Since then, major transformations have included, integrating health and education strategies to enable lifelong learning, as well as a heightened focus on interprofessional education and collaborative practice (Frenk et al., 2010; World Health Organization [WHO], 2010). In 2010, The Lancet Commission's landmark report titled *Health Professionals for a New Century: Transforming Education to Strengthen Health Systems in an Interdependent World*, highlighted the shifting needs for lifelong learning and competency maintenance among health professionals, advocating for transformative education models that respond to rapidly accelerating flows of knowledge and technology and other evolving health system challenges. The overall result of the Lancet Commission's report was a catalyzed global movement toward transforming health professional education, grounded in the recognition that future clinicians require lifelong learning and competency maintenance to meet the evolving demands of the health system. Systemically, this spurred curricular reforms aimed at interprofessional collaboration, integrated training, and competency-based models that emphasize critical thinking over rote memorization. The outcome included policy and accreditation changes at national and international levels and a shift that aligned programs and continuing education expectations with the report's call for a competency-based approach to education and assessment for the health professions (The Lancet Commission,

2010). Despite this forward movement, in 2016, *The Global Strategy on Human Resources for Health: Workforce 2030*, predicted that health systems worldwide would face profound workforce shortages. It described converging trends including population aging, increasing complexity of care, and the growing burden of chronic diseases. Cue a global pandemic and intensifying climate crises that starkly revealed the fragility of general health systems. The Covid-19 pandemic exposed an incapacity to effectively respond to surges in demand, highlighted the increasingly complex, dynamic, and evolving landscape of contemporary healthcare practice.

Continuing Education (CE) and CPD in the Health Professions

“If the licence to practice meant the completion of his education how sad it would be for the practitioner, how distressing to his patients!” (Osler, 1900, p. 73).

Continuing professional development (CPD) is an umbrella term for the formal and informal continuing education activities healthcare professionals engage in to maintain and enhance their knowledge, skills, and attitudes toward healthcare delivery (Filipe et al., 2018; Peck, 2000). CPD as a concept evolved from traditional notions of Continuing Education (CE), which often only focused on the dissemination of decontextualized clinical content required for clinical expertise. CPD further considers the broader range of competencies required for clinical practice (Filipe et al., 2018). Continuing professional development (CPD) and a commitment to lifelong learning are ethical and professional responsibilities within the certified healthcare professions (Peck, 2000). They are core values in professionalism. The complex demands of healthcare delivery are continually evolving. Maintenance, enhancement, and continuous improvement in clinical and practice competency are both individual and organizational imperatives, playing a critical role in patient safety and health outcomes. In 2010, the Institute of

Medicine (IOM) released its seminal report, *Redesigning Continuing Education in the Health Professions*, highlighting the flaws in the traditional CE system and calling for structural reform to establish a system of CPD enabling evidence-based, outcomes-focused, and self-directed lifelong learning for all health professionals as a cornerstone to building and sustaining a quality health workforce and providing quality patient care (Institute of Medicine, 2010). Bierema (2018) contended that effective health professions education should be grounded in adult learning principles and designed to support continuous, generative learning across a career, not just pre-licensure training. They positioned that the goal of health professions education is to develop professionals who combine strong clinical expertise with relational, reflective, and leadership capacities. Further, they emphasized problem-solving in real or simulated practice contexts over traditional passive content reception. They concluded that designing curricula and CPD around experiential learning, reflective practice, and interprofessional teamwork can create and sustain health professionals who are better equipped to adapt to change and improve the quality of care and health systems (Bierema, 2018).

It is often quipped that quality patient care is a team sport. The emergency department, as an example, is an intense and unpredictable care environment where patients require the attention of multiple healthcare professionals working collaboratively to address their needs. This underscores the extensive literature supporting interprofessional education as a driver of collaborative team-based clinical care (WHO, 2010). In 2019, *The Association of Faculties of Medicine of Canada* released a report including 11 recommendations to support physician learning and ongoing practice improvement (Campbell & Sisler, 2019). Further, they set out a vision for a national system to support continuous practice improvement that is evidence-informed and responsive to provider, patient, and organizational needs. Similar to IOM (2010),

key recommendations included a focus on the competencies required for team-based functioning and learning, as well as the prioritization of activities that support collaborative learning within formal or informal communities of practice (Campbell & Sisler, 2019, p. 6). More recently, Tavares, Sockalingam, et al. (2023) released a critical and innovative evaluation of CPD in the health professions, explicitly calling for “productive disruption of CPD assumptions” (p. S1) and a form of conceptual renewal in CPD that would improve practice and health outcomes. The resulting supplemental edition of *The Journal of Continuing Education in Health Professions* examined and challenged prevailing assumptions about CPD and proposes new theories, frameworks and insights for ongoing learning in the health professions. Price (2023) openly called for longitudinal, collaborative, context-specific, and team-based CPD opportunities to help health care professionals and organizations address increasingly complex health care delivery problems and improve patient outcomes. Van Hoof et al. (2025) examined the learning science of interprofessional continuing education and context. They specifically noted that unfolding case-based learning across multiple contexts, involving individual reflection and group discussion, engages more senses and brain regions than more traditional CPD offerings such as readings and lectures.

While this productive disruption is promising, it remains equally important to note that whilst the commitment to lifelong learning in the healthcare professions is arguably tacit, the specific formal and informal learning activities enabling this are still directly or at least indirectly, linked to provider choice (Cook et al., 2017; Kurtović et al., 2024). Health professionals’ engagement in CPD is influenced by complex, interconnected socio-contextual factors operating at the individual, organizational, and system levels, ranging from individual motivation and peer influence to organizational culture, human resourcing, regulatory

frameworks, and geography. (Al-Omary et al., 2024; Coventry et al., 2015; McMahon, 2017; Reis et al., 2022). How these factors influence healthcare providers' CPD strategies at the individual, team, and professional practice environment levels remains underexplored in the literature, particularly through a theoretical lens. Given the high level of self-direction required for CPD, consideration of factors such as motivation and choice are key to understanding and addressing this gap.

Sim-IPE as CPD, Continuing Interprofessional Education (CIPE) and Team Training.

The historically siloed approach to healthcare student education has also translated to largely siloed continuing education and CPD programming across the healthcare professions. Owen et al. (2014) highlighted differences between traditional continuing education and continuing interprofessional education (CIPE) and concluded that there is an opportunity to leverage CIPE to enhance collaboration among healthcare teams in learning and practice. CIPE is a natural extension of IPE conceptually into the domain of lifelong learning and CPD. Sim-IPE is pedagogically aligned with CIPE by emphasizing attention to the principles of interprofessional competency, team-based learning, and workplace learning. *Simulation-Based CPD*, models an approach to continuing education that is evidence-based, driven by learner and system needs, and can enhance interprofessional collaboration and patient safety (Dow et al., 2012). A landmark study by Draycott et al. (2006) was the first to demonstrate a clinically important and sustained improvement in patient care resulting from a multi-profession simulation-based education intervention for practicing obstetrical care teams. Several researchers have since demonstrated the benefits of Interprofessional simulation, Sim-IPE and team-based training for practicing healthcare workers (Black, 2018; Kaldheim et al., 2021; Lee et al., 2021; Schmidt et al., 2024).

In-situ simulation specifically refers to simulation conducted in the actual patient care environment to achieve a high level of realism (Lioce et al., 2020). It is often cited for its unique systems focus and its ability to evaluate system competence and identify latent conditions that predispose to medical errors and threaten safety (Couto et al., 2018; Patterson et al., 2013; Petrosniak et al., 2017). It is an intentional blend of simulation and real working environments (Sørensen et al., 2017). In-situ simulation can be interprofessional and often includes practicing providers, making it a CPD activity. However, it can be more difficult to track in the literature as a subset of Sim-IPE due to the lack of a universal language or lexicon. In-situ Sim-IPE may occur in reports of team-based training and workplace learning that involve simulation technology, however, the multitude of terms used to describe such simulation activities can make it difficult to discern whether their design is explicitly interprofessional. Recognizing this gap, Bochatay et al. (2025) conducted a scoping review of published accounts of interprofessional simulation-based team training (ISBTT) to determine whether they incorporated the interprofessional competencies foundational to IPE and Sim-IPE. Concern was noted that many ISBTT strategies are less explicit about interprofessional competency and as a result, less likely to uncover and address issues of power and hierarchy, risking that those barriers to collaboration get perpetuated in practice. They suggested adding the phrase “learning about, from, and with each other” as explicit program goals, consistent with accepted IPE pedagogy (World Health Organization [WHO], 2010, p. 13).

Engagement in Simulation-Based Continuing Professional Development

Much of the literature existing examining simulation as a CPD strategy speaks to its effectiveness or utility to meet specific learning or procedural outcomes (Burstein et al., 2017; Cordovani et al., 2019; Tavares, Sockalingam, et al., 2023). Earlier work on engagement in

simulation-based education focused on simulation factors like realism, or how well the simulation-based experience reflected real life across different domains (Dieckmann et al., 2007). Rudolph et al. (2007) expanded on this to consider how socio-contextual factors, or non-simulation factors impacted realism and engagement. Padgett et al. (2019) conducted a narrative review of the education and workplace literature to better understand engagement and its potential application in the healthcare simulation context. They explicitly called for research exploring how simulation participants experience engagement and how that engagement relates to learning concepts such as motivation (Padgett et al., 2019). Byrnes et al. (2021) used a validated engagement tool to identify factors specific to interprofessional engagement in simulation debriefing, including group size, participant learning level, and facilitator behaviour. They concluded that a qualitative study would be a logical next step to better understand this (Byrnes et al., 2021). Newhouse & Polwart (2025) took the approach of exploring the perspective of the reluctant simulation participant. They identified three overarching themes that described factors that influenced practicing medical and nursing professionals' engagement in simulation-based education: participant anxiety, protective or defensive mechanisms from other participants, and specific simulation facilitator characteristics. While these studies undoubtedly broaden our understanding, they fall short of leveraging and expanding theoretical understanding.

Rural healthcare context

Rural healthcare providers have similar continuing professional education requirements to their non-rural counterparts, but with several unique challenges. They often work in remote geographical locations, as part of smaller teams, and with less investigative capability. They have less exposure to managing critically ill patients and less direct support when they do, and yet

paradoxically have less access to skill maintenance training and continuing education (Gutenstein & Kiuru, 2018; Waller et al., 2021). Campos-Zamora et al. (2022) explored the challenges faced by rural healthcare providers to participate in continuing education and how they valued different types of learning strategies. Participants expressed a desire for practical learning with an interprofessional and reliable format. The researchers acknowledged that the influence of the rural context on continuing education is not well understood and called for further research in this area. Somerville et al. (2024) conducted a realist review of mobile and distance simulation to support equity in access to simulation-based learning in the rural context. Their work reinforced the notion that important sociocultural elements unique to rural healthcare practice should be considered in continuing education and that these areas remain underexplored in the literature. The rural context also has unique health human resourcing (HHR) challenges and longstanding fragility in recruitment and retention. This highlights the importance of research linking CPD as an organizational and systems-level strategy for effective healthcare recruitment and retention (Arvier et al., 2007; Lackie & Murphy, 2020; Morris et al., 2023; Rural Road Map Implementation Committee, 2021).

Rural Culture and Learning. Culture can be understood as the shared values, norms, expectations, and implicit assumptions that shape how individuals within a group interpret experiences and enact behavior within a given context (Schein & Schein, 2017). In the health professions, learning culture, organizational culture, workplace culture, and practice culture represent distinct but interconnected expressions of this broader construct. Learning culture reflects norms around feedback, error, and growth; organizational culture encompasses leadership practices, policies, and resource allocation; workplace or team culture refers to patterns of communication, hierarchy, and trust; and practice culture captures shared

understandings of the work and its constraints. Strasser (2016) specifically identifies “rural realities” (p. 2) as unique drivers of these accepted norms, highlighting blurred roles, reliance on generalism, and the need to ‘get things done’ in small, interdependent teams as key to understanding the nature of rural practice. Together, these cultural layers shape how rural clinicians experience, value, and participate in educational activities such as simulation and how readily new learning can be integrated into everyday practice.

Theoretical Framework

Theoretical awareness is essential to scholarly work. According to Grant & Osanloo (2014), the theoretical framework is the “blueprint” and “serves as the guide on which to build and support your study” (p. 1). “Theories give researchers different ‘lenses’ through which to look at complicated problems and social issues, focusing their attention on different aspects of the data and providing a framework within which to conduct their analysis” (Grant & Osanloo, 2014, p. 1). It is essential that theory underpins the methodological design, selection, conduct, and interpretation (Crowe et al., 2011). The purpose of this study was to explore the experience of rural emergency health care workers’ participating in a local Sim-IPE program to understand their motives for engaging in this type of learning opportunity. This study was guided by Edward Deci and Richard Ryan’s Self-Determination Theory (SDT) and the conceptual framework of psychological safety.

Self Determination Theory

Self-Determination Theory (SDT) is a macro-theory of human motivation that provides a framework for understanding the factors that promote or impede engagement, performance, persistence, and overall well-being (Deci & Ryan, 2008). More simply put, it is a “general framework for understanding why we do what we do” (Ryan, 2023, p. 3). Over the years, SDT

has evolved and broadened to include six interrelated mini-or sub-theories, each focusing on a specific aspect of human motivation and personality and how they give direction to behaviour. (Davies, 2024; Ryan, 2023). Table 1 provides a brief overview of the six mini-theories (Davies, 2024). SDT is well established in the literature, and its foundations have been expanded across multiple domains of life, including education, healthcare, and the workplace (Gagné & Deci, 2005; Ryan & Deci, 2000a, 2000b). It has a clear organismic orientation, viewing humans as active, growth-oriented beings rather than passive reactors to their environment (Ryan et al., 2021). At its core, SDT posits that all humans are intrinsically motivated to grow and will inherently tend toward learning, relationship building and personal development. The expression of this growth tendency, however, is shaped by the degree to which the social and contextual environment provides the necessary growth ingredients (Ryan & Deci, 2017). As such, three basic psychological needs emerged as the necessary growth ingredients that must be satisfied for optimal function: *autonomy*, *competence* and *relatedness* (Ryan & Deci, 2017; Vansteenkiste et al., 2023). Autonomy refers to behaviors that are self-endorsed, volitional and align with authentic interests and values. Competence refers to the need to feel effective, capable and achieve mastery. Relatedness refers to the need to feel socially connected and have a sense of belonging. Basic Psychological Needs theory (BPNT), one of the six STD mini theories, explains that the satisfaction of these basic needs accounts for the development and maintenance of intrinsic motivation. It follows then, where basic needs are supported, humans, universally, will flourish and where they are frustrated or neglected, humans will decline (Ryan & Deci, 2017; Vansteenkiste et al., 2023). This foundational understanding of behavior as relative to basic psychological needs satisfaction provides the framework to connect all the SDT mini theories (Ryan & Deci, 2017; Vansteenkiste et al., 2023).

Table 1: SDT Mini Theories

Overview of the six mini-theories of self-determination theory (SDT)

Theory	Focus	In brief
Cognitive evaluation theory	Intrinsic motivation	Examines supporting and/or undermining factors relating to intrinsic motivation (for example different types and quantities of reward)
Organismic integration theory	Extrinsic motivation	Examines the different qualities of extrinsic motivation
Basic psychological needs theory	Autonomy, competence and relatedness	Examines these three basic psychological needs and how they are associated and involved with motivation, psychological well-being and ill-being
Causality orientation theory	Individual variations	Examines the differences in individual experiences as they relate to social context
Goal contents theory	Intrinsic and extrinsic goals	Examines how the type of life goals people strive for (i.e. intrinsic vs extrinsic) will shape people's attitudes and behaviours and influence well-being in systematic ways
Relationship motivation theory	Relatedness (basic psychological need)	Examines relational dynamics within the framework of SDT and the further understanding of what motivates and sustains people in relationships

Note. Adapted with permission from "Health simulation through the lens of self-determination theory: Opportunities and pathways for discovery," by Davies, E., 2024, *Advances in Simulation*, 9(1), Article 31.

In its broadest sense, SDT considers motivation across three general categories: intrinsic motivation, extrinsic motivation and amotivation. Central to SDT is what Ryan and Deci (2017) describe conceptually as the "autonomy-control continuum," where types of motivation are differentiated along the continuum based on the extent to which they represent autonomous (self-endorsed) vs. controlled regulations (p. 14). Intrinsic motivation describes motives of pure interest and enjoyment. These behaviors are volitional, self-aligned, and more likely to be maintained (Pelletier & Rocchi, 2023; Ryan & Deci, 2017). Extrinsic motivation includes all motives outside pure enjoyment of the activity, and is generally driven by influence, rewards or the avoidance of punishment. Amotivation generally means, without motivation or any

associated interest or intention. Organismic Integration Theory (OIT) is the SDT mini-theory that “explains how society and social contexts effects peoples’ motivation” (Pelletier & Rocchi, 2023, p. 53). It considers motivational orientations along a continuum of motivational regulation that reflects the degree to which external influences and motives have been *internalized* and integrated into the self (Pelletier & Rocchi, 2023; Ryan & Deci, 2000b). Internalization is the process of attributing internal value to something that is initially externally motivated.

Integration describes the inherent human tendency to assimilate behavior with one’s sense of self (Pelletier & Rocchi, 2023; Ryan & Deci, 2017). OIT explains how individuals can adopt values and behaviors initially regulated externally and internalize them into their own sense of self to different degrees along the autonomy-control continuum. This differentiates types of extrinsic motivation according to the degree to which their regulation is internalized. At one end of the continuum is *external regulation*, where behavior is performed to obtain rewards or avoid punishments. This is the least autonomous form of extrinsic motivation. Moving toward autonomy, *introjected regulation* reflects somewhat internalized behavior driven by internal pressures such as guilt or self-esteem maintenance. Further along, *identified regulation* refers to actions that individuals consciously value and accept as personally important. The next and most autonomous form of extrinsic motivation is *integrated regulation*, in which externally influenced behaviour has been fully internalized and assimilated with one’s sense of self and personal values (Pelletier & Rocchi, 2023; Ryan & Deci, 2017). OIT predicts that participation in externally initiated activities can become increasingly self-endorsed (internalized) when personal and social contexts support autonomy, competence, and relatedness and that these more autonomous forms of regulation are associated with greater persistence, performance quality, and psychological well-being than more controlled forms (Pelletier & Rocchi, 2023; Ryan & Deci,

2017). Accordingly, conditions that facilitate internalization of behaviors relate to better overall function. This is critical to understanding the impact of incentives and rewards on motivation and why extrinsic motivation does not necessarily lead to negative consequences (Pelletier & Rocchi, 2023).

SDT also explains motivational orientations in terms of their support for self-determination (Deci & Ryan, 2000; Pelletier & Rocchi, 2023; Ryan, 2023; Ryan & Deci, 2000b, 2000a). Being self-determined entails having a sense of choice and freedom in pursuing one's chosen activities. In contrast, non-self-determined behavior is considered controlled to the extent that a person feels pressured to do it (Ryan, 2023). This conceptually parallels internalization as the most self-determined behaviors have been internalized as valued (Deci & Ryan, 2000; Ryan & Deci, 2000b). Motivational categories can be placed along a continuum of high to low levels of self-determination, with intrinsic motivation being the most self-determined form, amotivation being the least, and the extrinsic motivations (integrated, identified, introjected and external) layering in the middle from highest to lowest self-determined (Ryan, 2023). The most self-determined or internalized types of motivation are intrinsic and integrated motivation. They are considered autonomous as they are driven by choice and volition. The degree of self-determination is influenced by the extent to which the behavior satisfies each of the three basic psychological needs (Deci & Ryan, 2000; Ryan & Deci, 2000b, 2017). Behaviour, then, is situated along this spectrum of self-determination and understanding behavior considers where a person identifies along the spectrum of self-determination for that behavior. Further, the degree that the behavior is self determined is directly related to how it satisfies the basic need for autonomy, competence and relatedness (Ryan, 2023; Ryan & Deci, 2000b). This has particular relevance for behaviors and practices that may begin as extrinsically

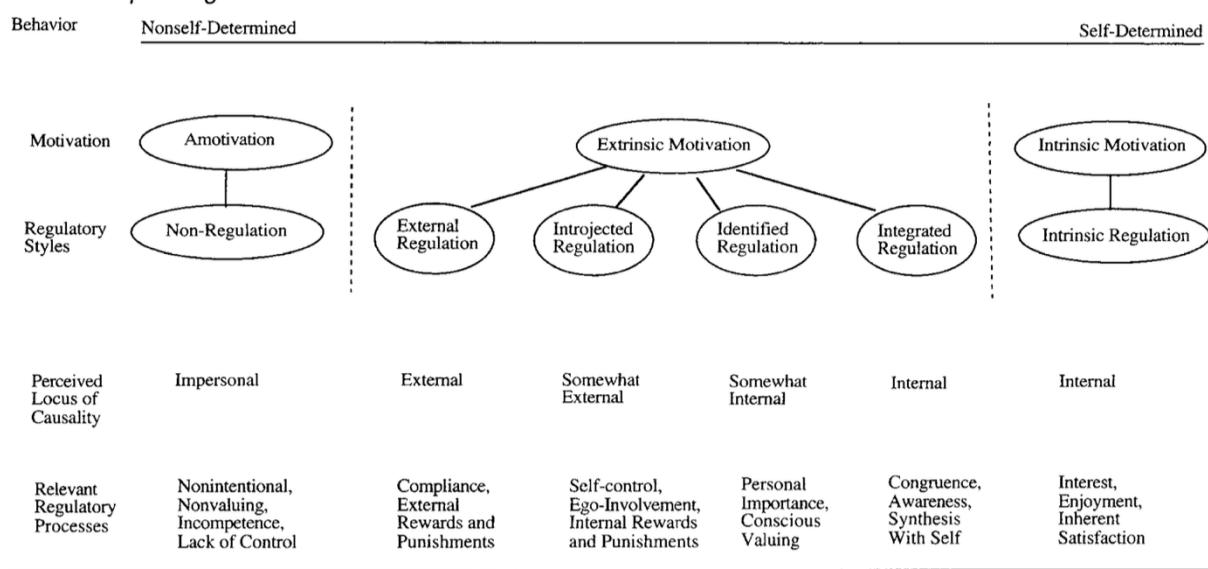
or externally motivated, like for example, when an educator attempts to foster participation in Sim-IPE. Since motivations differ by how much a behavior's value is made one's own, it is key that educators understand that an externally motivated and regulated behavior can be supported to shift along the spectrum of self-determination and that the more self-determined they experience that activity, the more effectively they engage and the more likely they are to persist by choice (Ryan & Deci, 2000b).

Cognitive Evaluation Theory (CET), the first of the SDT mini-theories, focuses more exclusively on intrinsic motivation and how it is influenced by the social environment (Reeve, 2023; Ryan & Deci, 2017). It explains how the dynamics of basic need satisfaction that enhance or diminish intrinsic motivation directly reflect social contexts and environmental supports. As such SDT addresses social environments in terms of the extent they support autonomy, competence, and relatedness (Ryan & Deci, 2017). The key insight of CET is that the impact of any social or environmental condition on intrinsic motivation depends entirely on how it is experienced (Reeve, 2023). This refers to the “functional significance” or psychological meaning of the event or experience and its interpretation as informational, controlling or amotivating (Reeve, 2023, p. 36). An *informational* experience is interpreted as chosen and needs-supportive, while controlling means the person experienced pressure or coercion, and amotivating means they experienced it as either irrelevant or distant to their needs. Arguably, external events can have a mix of these interpretations, and the resulting motivational impact depends on the element most salient (Reeve, 2023).

Figure 1, created by and published in Ryan and Deci (2000) illustrates the autonomy- control continuum.

Figure 1: SDT Continuum

Figure 1
The Self-Determination Continuum Showing Types of Motivation With Their Regulatory Styles, Loci of Causality, and Corresponding Processes



In summary, SDT explains human motivation as a psychological dynamic that hinges on the degree to which a behavior satisfies their innate and fundamental need for autonomy, competence and relatedness. The more needs are supported, the more a behaviour is internalized and experienced as self-directed, and the more likely one will be to succeed and sustain it (Ryan, 2023). Conditions that support internalization are those same conditions that attend to the psychological needs of autonomy (providing choice, rationale), relatedness (activities that promote connection to others, community) and competence (participants feel effective and capable of achieving success). Education and workplace learning are often tied to external goals and rewards such as performance, certifications, or promotions. SDT explains that need-supportive approaches to learning that foster autonomy and relevance will make those activities more self-determined (Ryan, 2023).

Self Determination Theory and CPD in the Health Professions. The role of motivation and motivational frameworks in health professions education has been considered in the

literature (Cate et al., 2011; Ganotice et al., 2023; Kusurkar, Cate, et al., 2011; Kusurkar, 2019; Moll-Khosrawi et al., 2024; Schulte-Uentrop et al., 2020; Teuwen et al., 2024). In healthcare education, and particularly simulation for CPD, SDT offers a useful lens to design learning environments that support knowledge acquisition and sustained professional growth. When basic psychological needs are satisfied, individuals are more likely to experience autonomous motivation, characterized by engagement, and deeper learning (Ryan, 2023). Conversely, when these needs are ignored or hindered, learners are more likely to experience controlled motivation or disengagement (Ryan & Deci, 2017). In the context of interprofessional simulation-based education (Sim-IPE), psychological needs are especially salient. Interprofessional simulation brings together diverse healthcare professionals to rehearse, reflect on, and improve collaborative practice in experiential healthcare scenarios. Well-designed simulations can be powerful vehicles for reflective learning, identity development, and system-based care improvement (Palaganas et al., 2014; Rudland et al., 2020). The demanding and high-stakes nature of health professions education (HPE) presents both opportunities and risks to participants' motivational well-being. The literature increasingly recognizes the relevance of SDT as a lens through which to understand learner behavior, achievement, professional identity formation, and wellness (Cate et al., 2011; Kusurkar, Cate, et al., 2011).

A growing body of research supports the construct validity of SDT in medical and nursing education. (Kusurkar, Cate, et al., 2011) demonstrated that medical students who reported higher levels of autonomous motivation were more likely to engage in self-regulated learning and perform better academically. Similarly, Cate et al. (2011) argued that designing clinical education that supports autonomy, particularly during clerkships, where students often feel peripheral and under-confident improves autonomous self-regulation for learning. Promoting

autonomous motivation through structured feedback and graduated responsibility aligns with SDT's emphasis on supporting autonomy and competence without inducing controlling pressure. Ganotice et al. (2023) provide a nuanced application of SDT by offering a motivational framework tailored to the needs of clinical learners and educators, that underscored autonomy, competence, and relatedness. They demonstrated that intentional motivational design in IPE programming targeting autonomy, competence, and relatedness was effective in enabled outcomes of team cohesiveness, behavioural engagement, team effectiveness and goal achievement. This work has direct application to rural Sim-IPE where scenario relevance and choice support autonomy, facilitated debriefing and feedback support competence and respectful interprofessional dialogue, and role clarity support relatedness. Importantly, Ganotice et al. (2023) highlighted the need to embed motivational constructs into program design and faculty development, reinforcing the notion that needs-supportive learning environments cannot be left to chance. The work of Moll-Khosrawi (2024) considered the impact of social interactions and peer-to-peer contact on motivation. They used SDT-based motivation measures and environmental variables to assess both motivational quality and the associated contextual features. They concluded that autonomy-supportive, competence-affirming, and relationally safe environments are associated with more autonomous motivation, better engagement, and well-being. In short, they provide empirical support for the applicability of SDT to health-professions education and for the link between satisfaction of basic psychological needs in learning environments and autonomous motivation (Moll-Khosrawi et al., 2024). Kusrkar, Croiset, et al. (2011) used SDT to develop a list of specific autonomy supportive teaching behaviors to stimulate intrinsic motivation in medical students. More recently, Davies (2024) explicitly called for exploring healthcare simulation through the lens of SDT, suggesting that it

offers a generative framework to enhance our understanding of why simulation works, when it works best, and how simulation learning environments can be optimized. Rather than positioning simulation as inherently effective, Davies (2024) challenges the field to critically examine the motivational mechanisms underpinning it and its successes to provide a theoretical foundation for its continued growth and optimization. They challenged existing and accepted practices in healthcare simulation and suggest exploring them through the alternative lens of SDT as part of a broader call to expand theory-informed perspectives in healthcare simulation (Eppich & Reedy 2022).

SDT and Team Motivation. SDT, as a macro-theory of human motivation, has been criticized conceptually for being overly individual-focused and for failing to adequately consider group and team dynamics (Grenier et al., 2024; Van den Broeck et al., 2021). Grenier et al. (2024) extended SDT to the team level and defined team motivation “as a collective source of energy driving the direction, intensity, and persistence of team activities” (p. 1). They proposed a multilevel model in which individual psychological needs for autonomy, competence, and relatedness interact through team processes and gradually converge into a team-level motivational state. In this model, team autonomy reflects shared influence over goals, and decisions; team competence reflects collective efficacy and affirming feedback; and team relatedness reflects trust, cohesion, and psychological safety within the group. Reciprocal patterns of need-supporting or need-frustrating behaviour among members shape whether they experience autonomous team motivation or, conversely, team-level amotivation. They positioned that designing environments in which early team interactions are strongly need-supportive, creates a self-reinforcing loop that stabilizes autonomous team motivation, whereas inconsistent or controlling climates tend to reinforce low collective motivation. This conceptualization aligns

closely with best practices in Sim-IPE, where psychologically safe, supportive team learning environments are central (INACLS 2021). It also underscores the potential to leverage in-situ Sim-IPE as a natural crossover between workplace and learning, where real teams can rehearse clinical work while experiencing autonomy, competence, and relatedness in a deliberately designed educational context. SDT acknowledges how psychological need satisfaction is impacted by group level experiences in what they refer to as a group-conscious approach to Basic Psychological Needs Theory (BPNT) (Kachanoff, 2023). This approach considers how individuals' need satisfaction is impacted by whether they perceive the needs of their other group members and/or the group as a whole to be satisfied (Kachanoff, 2023). Kachanoff (2023) describe an analogy of “cross-pollinating plants” as interdependent units whose essential need-supporting nutrients at the individual level are impacted by their perception of the need-supporting nutrients available at the group level (1091).

Psychological Safety

Psychological safety has been extensively linked to behavior and organizational culture in the business literature and, more recently, in healthcare and patient safety (Edmondson, 2019; Edmondson et al., 2016; Kahn, 1990). While varied definitions exist, the most widely cited is Edmondson's: “the belief that one will not be punished or humiliated for speaking up with ideas, questions, concerns, or mistakes, and the team is safe for interpersonal risk-taking” (Edmondson, 2019, p. 354). Behavior and courses of action are then measured by the interpersonal risk associated with them. At the team level, psychological safety refers to a climate where people are comfortable being and expressing themselves, as evidenced by a “shared belief that the team is safe for interpersonal risk taking” (Edmondson, 1999, p. 350). Edmondson's foundational work on psychological safety in healthcare teams positioned that care environments that foster open

communication and non-punitive responses to error are more conducive to organizational learning and better patient outcomes (Edmondson, 1999). Edmonston (2004) examined the influence of group and organization-level factors on errors in drug administration at two hospitals and reached a surprising conclusion: teams that scored higher on well-validated measures of team function had more errors. This highlighted a paradox: the teams most in need of improvement were the least likely to trigger standard improvement interventions, not because errors weren't happening, but because they weren't being reported. What it surfaced was that unit-level willingness to openly discuss mistakes was inversely correlated with reported unit error rates. Further, willingness to discuss mistakes directly correlated with perceptions of the consequences of error at the leadership level. This highlighted an imperative at the organizational level to foster open, learning-oriented work environments that value errors as learning opportunities.

Edmonson et al. (2016) examines psychological safety specific to health care and education. Both are high-stakes human service industries in which frontline professionals work under uncertainty, intense external accountability, and strong professional norms of autonomy and expertise. They explore how hierarchy, perceived leadership effectiveness, and the broader accountability culture shape whether people feel safe to speak up, ask for help, and engage in learning-oriented risk-taking. The authors argue that entrenched professional norms often reinforce counterproductive communication patterns and discourage voice and feedback, thereby constraining adult learning and professional growth (p. 68). They contend that efforts to build psychological safety must occur early in career and attend explicitly to hierarchy and to developing leaders who model fallibility and actively solicit input. Interestingly, they conclude that psychological safety is only one of the elements that support adult learning in work groups,

noting that it can set the stage for safe engagement and learning, but does not necessarily or independently motivate it. They propose considering psychological safety more as a moderating variable (Edmondson et al., 2016, p. 80). This calls for additional inquiry to better understand how psychological fits into motivational frameworks.

Conceptually, psychological safety has spread so rapidly as an organizational must-have that it is increasingly vulnerable to misuse and conceptual drift. Edmondson's widely cited book, *The Fearless Organization: Creating Psychological Safety in the Workplace for Learning, Innovation, and Growth*, clearly dispels common misconceptions that psychological safety is about being nice, having an extroverted personality, equating it with generic trust, or lowering performance standards (pp. 32–34). The message is clear that psychologically safe workplaces are not devoid of accountability or challenge, but rather are structured to allow for voice, curiosity, and experimentation in the face of complexity and uncertainty and explicitly speak to reframing work as learning and failure as a learning opportunity (Edmondson, 2019; Tucker & Edmondson, 2003). Edmondson (2019) also delineates the synergy of psychological safety and intrinsic motivation as partners in self-determination and in building high-performance teams. More specifically, Edmondson treats psychological safety and intrinsic motivation as mutually reinforcing conditions for high performance. Edmondson explicitly describes them as equal partners: teams need both a climate in which it is safe to speak up and a strong, internal drive to contribute and improve (Edmondson, 2019).

Psychological safety is considered foundational to quality and effective healthcare simulation. (Daniels et al., 2021; Kolbe et al., 2020; Rudolph et al., 2014). The work of Rudolph et al. (2014) represented a key evolutionary step in healthcare simulation, moving from viewing psychological safety as a desirable backdrop to treating it as a deliberate, structured practice that

begins before the scenario starts. Early simulation work largely assumed that a respectful educator and good debrief would “naturally” create safety, without specifying how to do this consistently. Rudolph and colleagues made psychological safety explicit by framing prebriefing as a formalized process for building what they call a safe container: “an environment where learners face professionally meaningful challenges and are held to high standards in a way that engages them but does not intimidate or humiliate them” (Rudolph et al., 2014, p. 339). This involves four essential practices: clarifying expectations, establishing a fiction contract, attending to logistical details, and conveying respect for learners' perspectives. They operationalize concepts from broader psychological safety literature into concrete facilitator behaviors and scripts, and in doing so, have moved the field from “be nice and debrief well” toward an evidence-informed, teachable set of practices that can be embedded in faculty development and organizational simulation policies. This article has significantly influenced healthcare simulation guidelines and standards, emphasizing that prebriefing is not a superficial introduction but a structured, relational process that enables psychological safety, honest participation, and deep learning. (Rudolph et al., 2014). McDermott (2020) and the INACSL Standards Committee (2021) provided further nuanced direction distinguishing prebriefing into preparation activities (equipping learners with content knowledge to decrease anxiety and work at the edge of their ability) and briefing activities (orienting to environment, roles, confidentiality, and ground rules).

Psychological safety in Sim-IPE functions simultaneously as a foundational requirement and an aspirational ideal. This apparent contradiction underscores a more contemporary understanding that psychological safety is a relational construct that cannot be unilaterally imposed or guaranteed. Rather, it must be co-created through deliberate, responsive facilitator practices and learner agency and engagement. It is also dynamic, and even when obtained needs

to be actively maintained and sometimes repaired (Kolbe et al., 2020; Purdy et al., 2022; Rudolph et al., 2014). Importantly, psychological safety does not eliminate stress or discomfort but is meant to create conditions where learners "feel safe enough to embrace being uncomfortable" (Rudolph et al., 2014, p. 340). This is a crucial distinction if interprofessional simulation is to address issues of hierarchy, role clarity, knowledge gaps and speaking-up behaviors, as they can be uncomfortable. Purdy et al. (2022) explored participants' experiences of psychological safety in an embedded, interprofessional simulation program at a large tertiary emergency department (ED) in Australia. They identified specific conditions that support psychological safety in ED simulation, including clear purpose, confidentiality, non-punitive culture, skilled debriefing, attention to hierarchy, and respect for workload and context. They concluded that ED clinicians value simulation for practicing rare events, teamwork, and communication, but also describe anxiety, fear of judgment, and concern about reputational harm when simulations are poorly framed or facilitated. They argued that psychological safety is not an automatic by-product of simulation; it must be intentionally created and maintained at organizational, program, and session levels. They also highlighted the central role of facilitators in either enhancing or undermining psychological safety and call for formal faculty development on pre-briefing, debriefing, managing hierarchy, and responding constructively to errors or emotional reactions. They positioned that emergency department (ED) teams experience simulation as psychologically risky as well as educationally valuable, and that explicit, evidence-informed attention to psychological safety is essential if ED simulation is to achieve its learning and performance goals (Purdy et al., 2022).

Psychological safety serves as a complementary conceptual framework alongside SDT to explore not only what motivates rural emergency healthcare workers in Northeastern Nova

Scotia to participate in locally delivered interprofessional simulation (Sim-IPE), but also how the experience of psychological safety shapes the quality of that engagement. In the rural healthcare context, psychological safety plays a distinct and potentially heightened role. Rural emergency departments are often staffed by small, interdependent teams in close-knit professional and community networks. The risks of interpersonal judgment or reputational harm are magnified in these settings, making the perceived safety of the simulation environment a key determinant of whether individuals engage authentically in continuing professional development. Psychological safety also represents an established conceptual bridge between healthcare simulation and Self-Determination Theory (SDT). Within simulation practice, psychological safety is widely regarded as foundational to learner engagement, reflection, and willingness to take interpersonal risks such as making mistakes or speaking up (Purdy et al., 2022; Rudolph et al., 2014; Somerville et al., 2023). From an SDT perspective, psychologically safe environments can be understood as those that support the basic psychological needs of autonomy, competence, and relatedness, thereby fostering intrinsic motivation (Ryan, 2023; Ryan & Deci, 2017). Reexamining psychological safety through an SDT lens offers an opportunity to move beyond surface-level assurances in simulation and to consider additional elements that may require attention in simulation design and delivery (Davies, 2024).

Chapter 3: Methodology

According to the vast work of Guba and Lincoln (1994), a research paradigm is viewed as the set of basic beliefs based on ontological, epistemological, and methodological assumptions that comprise the researcher's worldview. I acknowledge a social interpretive/constructivist research paradigm where reality is to be both constructed and interpreted depending on the subjects' experience while also acknowledging the possibility for reconstruction and consensus. "The investigator and the object of investigation are assumed to be interactively linked so that the "findings" are literally created as the investigation proceeds" (Guba & Lincoln, 1994, p. 111). The goal of this inquiry is to understand and facilitate participants' engagement with their ideas and beliefs as potential tools for knowledge creation. The connection between the researcher and the participants is critical to achieving this goal. I leveraged my collective view as a rural healthcare practitioner, a simulation leader and an educator to strengthen this connection. I also acknowledge my pragmatic lens. According to Creswell (2007), "Individuals holding this worldview focus on the outcomes of the research- the actions, situations, and consequences of inquiry-rather than antecedent conditions" (p. 22). This speaks to my values-laden axiology and desire to conduct research that benefits people.

Research Methodology and Design

A mixed-methods case study was used to explore the motivation of rural healthcare workers participating in Sim-IPE in their rural emergency departments in Northeastern Nova Scotia. A convergent parallel mixed methods design was employed. This is a type of design where qualitative and quantitative data are collected in parallel, analyzed separately and then merged (Creswell & Plano Clark, 2018). Mixed methods research is a type of research where the

researcher combines elements of qualitative and quantitative approaches to further the breadth and depth of understanding of the research problem (Creswell & Plano Clark, 2018). This approach to inquiry reflects the researcher's social interpretive/constructivist worldview and seeks an integrated response to the research questions that is deeper than either method could do alone (Halcomb, 2015). A convergent mixed-methods design allowed the researcher to compare quantitative statistical results with qualitative findings and was useful because the research was conducted within a limited time frame, and this enabled the collection of both types of data during a single interaction with the participant (Creswell & Plano Clark, 2018). A case study design is favorable when a researcher has 'how' or 'why' questions (Yin & Campbell, 2018). This aligned well with the research problem and questions: specifically exploring why rural healthcare workers are motivated to participate in simulation-based interprofessional education and exploring the socio-personal and socio-contextual factors that shape this motivation. Additionally, "case studies allow you to focus in-depth on a 'case' and to retain a holistic and real-world perspective" (Yin & Campbell, 2018, p. 4). This was important because this study explored participants' experience of an educational activity in their natural work environment and simulated the emergency care expectations of their rural healthcare teams. This real-world context was particularly relevant to exploring the socio-contextual factors underlying motivation to participate.

Research Participants and Selection Criteria

The target population for this study was rural healthcare workers who participated in a scheduled mobile rural Sim-IPE session between March and June 2025. The criteria for participant selection were as follows: (a) they were a healthcare professional working full-time or part-time in one of the identified rural emergency departments during the study period, and (b)

they participated in a Mobile Rural ED Sim-IPE session during the selected study period. All participants meeting criteria were identified based on the Sim-IPE attendance record and invited to participate. All participants had engaged in at least one, voluntary, eight-hour in-situ Sim-IPE session conducted within their own rural emergency department clinical care space. Each session included four to five high-acuity simulated emergency care cases delivered by the same mobile facilitation team and structured to reflect the site's typical staffing model. The number of participants per site ranged from five to ten clinicians representing medicine, nursing, paramedicine, and respiratory therapy. Participants rotated between active clinical participant and structured observer roles, with facilitation aligned to the *Healthcare Simulation Standards of Best Practice (HSSOBP)* (See Appendix G) and debriefing guided by the PEARLS framework (Eppich & Cheng, 2015). Facilitators emphasized psychological safety, real-time clinical fidelity, interprofessional collaboration, and formative reflective learning without any summative assessment component. Because participants' decision to attend the simulation preceded the research invitation, the risk of coercion was minimized. Participants had the option to complete only the anonymous SIMS electronic survey or to complete the survey *and* be considered for an interview. The recruitment goal for participation in the anonymous SIMS survey was 20. The recruitment goal for interviews was a minimum of 6 and a maximum of 9 across the 4 rural emergency departments enrolled for Sim-IPE in Northeastern Nova Scotia during the selected study period. Site selection was opportunistic and reflected scheduled mobile rural Sim-IPE sessions across the seven possible host sites over the four-month investigative period. Site selection was contextually relevant, but the researcher did not require institutional site access, as data collection consisted of online semi-structured interviews and electronic surveys that occurred after the simulation. Given the relatively small team sizes at rural sites, distributing

participants across four sites reduced the likelihood that any individual would be identifiable in the data and protected their privacy. With a similar privacy intention, the sites were referred to in the data as rural emergency departments in Northeastern Nova Scotia rather than by specific names. Any specific site reference in the narratives were replaced as Site 'x' where x was one of the letters A through D that were randomly assigned to the sites. The same sample was used for qualitative and quantitative data collection. According to Creswell and Plano Clark (2018), using the same sample is effective when the researcher plans to relate the qualitative and quantitative data sets directly.

Purposive sampling for interviews across the four sites was iterative to achieve maximum variation sampling with respect to healthcare workers' professional backgrounds, years in practice, gender diversity and extent of simulation experience. The original goal was to have equal numbers of physicians and nurses and to include one physician and one nurse in their first five years of practice, one of each with more than fifteen years and to have gender diversity across the sample. The incidental integration of paramedics in the rural emergency care environment expanded the potential for broader interprofessional inclusion. Participants were selected on a first-come, first-served basis, consistent with the sample criteria. In qualitative research, purposive (or purposeful) sampling allows the researcher to intentionally recruit participants who have experienced the central phenomena being explored (Creswell & Plano Clark, 2018). The strategy to maximize variation considering the profession, gender, and years of clinical practice was undertaken to allow a more diverse representation of individuals expected to hold different perspectives on simulation for continuing professional education (Creswell & Plano Clark, 2018).

Following Research Ethics Board (REB) approval from both STFX and NSH, a data

collection protocol was developed to reflect the scheduling of the rural emergency simulation sessions over a 4-month period from March to June 2025. The participants and rural sites were determined opportunistically during the data collection period, in line with scheduled Mobile Rural Sim-IPE Sessions. The invitation to participate in the study was sent to all participants across the four rural sites. The email included the invitation to participate, the informed consent form, and the secure REDCap link to the Situational Motivation Scale (SIMS) with instructions for completing it. The email was sent from an NSH work email, which is the standard communication expectation for the rural simulation sessions. It is a secure Canadian MS Office email clearly identified with the researcher's full name. It was preferred over the researchers' STFX email, which is nondescript and risked being ignored or misinterpreted as spam. Potential participants were instructed to respond to the researcher if interested, and interviews were scheduled in the order of their responses and availability. All participants were instructed to review, complete and return the informed consent form to the researcher by email prior to the interview. Participants were reminded at the beginning of the interview that their participation was voluntary and that they could withdraw at any time without explanation or consequence.

Reimbursement/ Research Budget

Participants who agreed to an interview received a token of appreciation for their participation in the form of a \$50 Amazon or Canadian Tire gift card. The primary researcher covered this cost. There was no reimbursement for completing the anonymous SIMS survey. There were no anticipated or other recognized costs to participants beyond their time.

Quantitative Data Collection

Quantitative data were collected using an electronic version of the Situational Motivation Scale (SIMS) (Guay et al., 2000), administered through REDCap, a secure web-based data

capture platform, using an REB-approved Nova Scotia Health (NSH) account. Permission to use this validated instrument was granted by Dr. Frédéric Guay, the scale's lead developer, via email on May 27, 2024. The SIMS is a recognized 16-item Self-Determination Theory (SDT)-based measure designed to assess individuals' situational (state) motivation toward a specific activity. It captures four motivational subtypes situated along the SDT continuum of self-determination: intrinsic motivation (IM), identified regulation (IR), external regulation (ER), and amotivation (AM) (Guay et al., 2000). According to SDT, self-determination reflects the degree of inherent choice and freedom the individual experiences in their decision to engage in the behaviour or activity (Ryan & Deci, 2017). The SIMS represents a validated, self-report measure of the degree of intrinsic motivation, identified regulation, external regulation, and amotivation that characterized the rural healthcare workers decision to participate in the rural Sim-IPE. The REDCap SIMS survey link was included in the original invitation-to-participate email sent to all participants in the Mobile Rural Sim-IPE during the designated study period. Participants were invited and instructed to complete the electronic version of the SIMS scale (Guay et al., 2000). Anonymous consent was built into the REDCap survey design. Participants were asked to specify the degree to which each of the 16 items on the scale represented their reason for participating in the simulation session. Each item had a 7-point Likert scale, where 1 = "Does not correspond at all" and 7 = "Corresponds exactly" (Guay et al., 2000, p. 210). The organization and management of the data were maintained using a password protected NSH REDCap user account, ensuring that all data were stored locally on secure NSH servers. Transparency and explicit detailing in data management were a priority to enhance validity/ credibility.

Qualitative Data Collection

The goal of qualitative data collection and analysis is to capture the meaning intended by

the source and interpret the information as it is being collected to ensure it connects to the case and the purpose (Yin & Campbell, 2018). Qualitative data was collected through individual semi-structured interviews. A semi-structured interview strategy was used as a middle ground between highly structured and unstructured to allow respondents to have space to share unique experiences but also have enough embedded structure to support getting a certain amount of information from all respondents (Creswell & Plano Clark, 2018). This helped to keep the study's purpose and the researcher's positioning in check. All potential participants who responded to the original email met the criteria and were scheduled for virtual interviews in the order of their responses and availability. Interviews were conducted on MS Teams with privacy settings, including permissioned entry. All interviews were scheduled within 4 months of the rural Sim-IPE experience. The interview timing was very flexible and accommodated the busy schedules of rural healthcare workers. Virtual interviews with video recording enabled observation of non-verbal communication and offered greater flexibility and inclusiveness, as participants were situated in different areas of the province. Interviews were also audio-recorded and transcribed verbatim using MS Teams transcription software. All recordings and transcriptions were reviewed by the researcher and made accessible to the individual participant on OneDrive as a form of member-checking for accuracy and intended messaging. Interviews took between 45 minutes and 1 hr. All video and transcribed files were stored with password protection on the researchers' OneDrive. The research interview guide (Appendix D) considered the six types of interview questions suggested by Patton (2002). Given the purpose to explore the motivation and experience of the different healthcare workers participating in the Sim-IPE, it began with background / demographic questions, such as the interviewee's profession, years in practice, and experience with Sim-IPE. From there, it moved into experience and behaviour

questions to promote recount and reflection on why they chose to participate in the rural Sim-IPE experience, with attention to allowing organic crossover into feeling questions, particularly to facilitate the emergence of emotional and socio-cultural influences. There was intentional room for opinion and values questions, to better explore how the different healthcare professionals position their motivation for participating. Probing was a strategy used on an as-needed basis. Interpretive questions were used where needed and highlighted as member checks to enhance internal validity (Merriam & Tisdell, 2016). Qualitative data were analyzed with the intention of further informing subsequent data collection (Merriam & Tisdell, 2016). Qualitative data collection considered thematic saturation, as determined by the lack of new and relevant information surfacing (Merriam & Tisdell, 2016), and considered Malterud et al. (2016) principles of information power. It is important to note that the aim of an exploratory analysis is not to cover everything related to phenomena but rather to consider selected patterns most relevant to the research questions (Malterud et al., 2016). This was key to keeping a clear vision of what was relevant information, as a semi-structured approach enabled more open conversation that was not always applicable. Reflexive journaling and periodic reviews with an advisor and a critical friend supported this process and enhanced validity.

Data Analysis

According to Merriam and Tisdell (2016), data analysis is the process of making sense of the data with the goal of answering your research questions. Data analysis in a mixed methods case study considers the analysis plan for both the quantitative and qualitative data as well as how they are integrated. Data integration refers to how quantitative and qualitative data come together to describe the case (Creswell & Plano Clark, 2018). This study used a convergent parallel design in which data integration occurred after each set was analyzed separately

(Creswell & Plano Clark, 2018).

Quantitative Data Analysis

Quantitative data were analyzed according to the SIMS's validated use (Guay et al., 2000). For each participant, subscale scores for Intrinsic Motivation (IM), Identified Regulation (IR), External Regulation (ER), and Amotivation (AM) were calculated by summing the items corresponding to each factor, as specified by Guay et al. (2000), yielding four individual-level indices of situational motivation. The subscale scores were then combined to calculate a Self-Determination Index (SDI), which provided a single indicator of each participant's self-determination to participate in the simulation activity. The SDI was computed by weighting each SIMS subscale according to its position on the self-determination continuum and summing the weighted scores for each participant to yield an individual SDI, where $SDI = (2 \times IM) + IR - ER - (2 \times AM)$ (Howard et al., 2020; Vallerand, Robert J., 2007). This score approximates participants' level of self-determination for the activity, with higher levels being associated with perceived competence, interest, autonomy, and positive emotions toward the activity (Guay et al., 2000). Vallerand (2007) posited that the more self-determined the level of situational motivation, the more likely a participant is to continue engaging in the activity. The individual SDI scores were then used to explore the group-level motivational climate by calculating the mean SDI across the full sample and examining variance among participants to characterize the extent of situational motivation homogeneity or heterogeneity within the case group. The SIMS was selected because it is sensitive to context-specific motivational states and therefore well suited to measuring participants' motivation toward a discrete simulation-based learning experience (Guay et al., 2000). In keeping with this study's mechanism-focused case study design, the quantitative strand was descriptive and explanatory rather than prevalence-seeking or

powered for statistical inference. The intent was not to generate population level estimates but to characterize motivational patterns within this bounded rural Sim-IPE context and to support triangulation with qualitative findings. In this way, the SIMS data provided structured insight into motivational profiles, while the qualitative strand situated those patterns within the sociocultural realities of rural emergency practice.

Qualitative Data Analysis

Qualitative data analysis was grounded in Braun and Clarke's (2019, 2022) reflexive thematic analysis. This approach was selected because it is both theoretically flexible and well-suited to exploring complex, context-driven phenomena, such as the socio-personal and socio-contextual motivations underlying healthcare workers' engagement in simulation as continuing education. It is also critical that this approach recognizes the researcher as an active participant in knowledge construction and values both experiential and theoretical insight (Braun & Clarke, 2022). A reflexive thematic analysis enabled the researcher to integrate a priori constructs derived from Self-Determination Theory (SDT) and psychological safety literature with codes generated inductively from participant interviews. Consistent with Braun and Clarke's (2022) description of theoretically informed reflexive analysis, a priori constructs functioned to orient inquiry without constraining it, and not as a predetermined coding template. This dual approach facilitated an inquiry grounded in established theory while keeping the researcher attentive to new, unanticipated themes arising from the interviews, continuously modifying, and expanding the coding framework as warranted by the data. Using an approach outlined by Saldana (2021), codes were viewed as words or short phrases that captured the primary content and essence of the data with the goal of attributing meaning for the later purpose of pattern detection and theme generation. Consistent with reflexive thematic analysis, the researcher's positionality and prior

professional experience were acknowledged as influential, with ongoing reflexivity maintained through coding reviews with an advisor and a critical friend, and member-checking with participants. This ensured coding was not a purely mechanical process, but involved critical reflection on how the researcher's assumptions, positionality and perspective as a simulation leader and educator shaped interpretation. In keeping with Braun and Clark's (2022) core assumptions of reflexive thematic analysis, the researcher's subjectivity was leveraged and interrogated as a resource for analysis (Braun & Clarke, 2022). Further, reflexivity was embraced as an ongoing process of reflection. Reflexive journaling was used to facilitate insight and make sense of the research journey. While a priori constructs served to guide the initial analysis, the evolving codebook was iteratively revised to capture both anticipated and emergent themes, thereby ensuring analytic rigor, credibility, and resonance with participants' experiences (Braun & Clarke, 2022). Most importantly, this blended approach provided depth (from theory) and breadth (from participants' recounts and perceptions), resulting in a richer, more credible understanding of the elements influencing motivation to engage in rural simulation-based education. Themes, or identified patterns of meaning, were produced through the researcher's immersion in and systematic engagement with the data (Braun & Clarke, 2022). Themes were supported with direct quotes and linked to formalized literature. All de-identified coding was reviewed with my advisor and a "critical friend" who is an interprofessional simulation educator (Merriam & Tisdell, 2016, p. 259). This enhanced internal validity by cross-checking that interpretations were grounded in events and observations and helped to interrogate the researcher's position and personal beliefs. It also ensured the coding was collaborative and reflexive, creating a richer reading of the data rather than a purely consensus approach to meaning (Braun & Clarke, 2019).

Braun and Clarke's six-step process for reflexive thematic analysis provided a clear yet flexible guide for interpreting the qualitative data. (Braun & Clarke, 2019, 2022). Data familiarization was achieved through deep and repetitive immersion in the data. Transcripts and audio were examined reflexively alongside reflexive journaling. This supported coding and ultimately the broader patterns of meaning that supported the construction of themes. Codes were examined through an SDT lens to explore how the participants' experiences reflected the support or frustration of autonomy, competence, and relatedness. Themes were iteratively reviewed, refined, and merged as needed to capture and communicate their essence. The resulting analytical story was connected to theory and the existing literature.

Data Integration

In keeping with the convergent parallel mixed-methods design, the quantitative and qualitative strands were analyzed independently and then merged to generate a more comprehensive understanding of rural healthcare providers' motivations to participate in Sim-IPE. In convergent designs, integration is intended to develop interpretations that expand and deepen understanding of the research questions (Creswell & Plano Clark, 2018). Following separate analyses of the Situational Motivation Scale (SIMS) and qualitative interview data, integration was undertaken to compare, relate, and synthesize findings across strands to generate meta-inferences about motivation for participation in rural Sim-IPE. Consistent with Creswell and Plano Clark (2018), inferences were first drawn within each strand, while meta-inferences were developed through deliberate comparison across strands (p. 217).

Integration followed the simultaneous bidirectional topology described by Moseholm and Fetters (2017), using a structured merging matrix to align quantitative SIMS subscales (intrinsic motivation, identified regulation, external regulation, and amotivation) with qualitative themes

related to motivation, engagement, and participation. This process allowed findings from each strand to inform interpretation of the other, rather than privileging one dataset over the other and assuring quantitative findings were not assumed to explain participant experiences independently, nor were qualitative narratives interpreted without reference to the motivational patterns observed in the survey data. Instead, each strand was used to inform and constrain interpretation of the other. Attention was given to areas where the findings aligned (convergence), differed (divergence), or complemented each other (expansion) (Creswell & Plano Clark, 2018). A joint display was developed to juxtapose key quantitative findings with corresponding qualitative themes and relevant Self-Determination Theory (SDT) constructs. This display served as a primary analytic tool for identifying relationships between situational motivational profiles and lived experiences of Sim-IPE participation. In addition, a side-by-side comparison approach was used within the results and discussion sections to integrate quantitative and qualitative findings narratively. Throughout the integration process, SDT functioned as a theoretical lens and interpretive framework, to guide the development of meta-inferences. Specifically, SDT and its mini theories were used to explain motivational patterns. Meta-inferences were developed iteratively through repeated examination of the joint display and narrative comparisons, focusing on higher-order conclusions that could not be derived from either dataset alone. The purpose of integration was therefore not simply to confirm findings across methods, but to generate theory-informed explanations for participation in rural Sim-IPE, demonstrating how SDT constructs help account for motivation, engagement, and sustainability in a resource-constrained rural context.

Rigor/ Trustworthiness

Matters of rigor/ trustworthiness are found in the way data is collected, analyzed,

interpreted, and shared (Merriam & Tisdell, 2016). Ultimately, rigor in a mixed methods study demands that steps be taken to ensure both qualitative and quantitative standards were met. Rigor and trustworthiness in this mixed-methods study were enhanced through the intentional alignment of design, analytic procedures, and theory-informed integration. In keeping with a convergent parallel mixed-methods design, quantitative and qualitative data were collected and analyzed independently prior to integration, preserving the integrity of each strand and reducing the risk of premature convergence or confirmation bias (Creswell & Plano Clark, 2018).

Quantitative rigor was supported through the use of a validated instrument (the Situational Motivation Scale (SIMS)), transparent scoring procedures, and clear reporting of descriptive statistics. Qualitative rigor was achieved through intensive and systematic data immersion and iterative coding, with embedded cross-checking to identify and develop patterned meaning across the data as it related to answering the research questions (Braun & Clarke, 2022).

Trustworthiness of the integrated findings was further strengthened by using a simultaneous bidirectional integration topology (Moseholm & Fetters, 2017), which allowed findings from each strand to inform, challenge, and refine the interpretation of the other. Rather than treating one dataset as explanatory or confirmatory, integration occurred through structured comparison, joint displays, and iterative analytic review, enabling identification of convergence, divergence, and expansion across strands. Self-Determination Theory (SDT) functioned as a theoretical lens and interpretive framework during integration, enhancing analytic coherence while avoiding post hoc fitting. SDT constructs and mini-theories were applied consistently across both quantitative and qualitative findings to generate explanatory mechanisms rather than surface-level alignment. The use of theory in this way strengthened interpretive validity by providing a principled basis for linking motivational patterns, participant narratives, and

contextual conditions specific to rural healthcare practice.

Given the applied nature of healthcare education research, it was imperative that this mixed methods case study be conducted in a way that ensured any insight gained or conclusions made regarding the factors influencing rural healthcare providers' engagement in Sim-IPE would ring true to providers, healthcare educators and other researchers (Merriam & Tisdell, 2016, p. 238). Participants were recruited for the study through a tailored *Invitation to Participate* (Appendix B) that provided explicit details on the research's purpose and voluntary nature. Each participant provided informed consent prior to any data collection, formally documented using the study's approved consent form (Appendix C). Building strong rapport and clearly communicating the study's intent and value were vital to fostering honest, open sharing. Efforts included respectful pre-interview introductions, flexibility in accommodating participants' work schedules, and maintaining a collegial, non-hierarchical atmosphere throughout each interaction. All interviews were conducted by the primary researcher, who personally reviewed all transcriptions alongside the recordings to ensure accuracy and context retention. Every participant was also invited to verify and revise their transcript, a collaborative approach that supports authenticity and enhances the trustworthiness of the data. Any changes or clarifications offered by participants were incorporated before formal analysis began. Throughout the data review process, careful attention was paid to note-taking, journaling, and systematic reflexivity, acknowledging how the researcher's own experiences in rural simulation education and professional background could influence interpretation. Reflexive journaling and audit trails were maintained for every interview to support transparency and maximize transferability of findings to similar rural healthcare settings. Triangulation of methods, using qualitative and quantitative methods and integration, was used to enhance rigor. Balancing the emic or insider

lens of the qualitative data with a more etic or outsider lens using a validated multidimensional scale also supported credibility (internal validity).

Ethical Considerations

The approval of the St. Francis Xavier University Research Ethics Board, as well as the Nova Scotia Health Research Ethics Board, was a pre-requisite to data collection and also served to interrogate this inquiry to ensure it upheld the three core principles of the Tri-Council Policy Statement- 2 (TCPS 2); respect for persons, concern for welfare, and justice (Canadian Institutes of Health Research et al., 2018). The principle of justice is particularly relevant to this work as there was the potential for power imbalances between the researcher and the participants. While there was no individual performance assessment or employment outcomes associated with participation in the simulation-based education or the research, Nova Scotia Health has a direct employment relationship with the participants. The researcher was intentionally situated as a colleague and partner with the participants in this work.

The ethical conduct of the qualitative researcher is paramount to ensuring data is trustworthy (Merriam & Tisdell, 2016). The trustworthiness of the data is directly tied to the trustworthiness of those who collect and analyze it (Merriam & Tisdell, 2016, p. 260). It was, therefore, imperative that the researcher continually examined for and recognized inherent bias in the study to substantiate their preconceived position (Yin & Campbell, 2018). The experience of the healthcare providers and their motivation to engage in the in-situ Sim-IPE were the unit of analysis in this exploratory case study. The researcher's role as creator of the educational experience that served as the context for the phenomena being measured was a critical disclosure. The simulation education curriculum was created by the researcher as part of an interprofessional team, prior to committing to this mixed-methods inquiry. It was informed

through the primary researcher's position as an experienced emergency medicine physician and extensive training and experience as an interprofessional simulation-based educator. The high degree of researcher embedment in this project is evident, and reflexivity was a critical acknowledgement and commitment throughout the data collection and analysis process. The researcher was situated to assume the stance of participant-observer. This enabled an emic lens to enhance the study's internal validity and overall trustworthiness. Consistent with Braun and Clarke's (2022) principles of reflexive thematic analysis and Guba and Lincoln's (1994) social constructivist research paradigm, researcher insider status was presented as enabling rather than complicating and was embraced as an active and shaping force in the production of knowledge rather than a source of bias to be neutralized. Deliberate attention to power dynamics was guided by two recognized community-based research commitments: (1) *relational accountability* which acknowledges how the relationships embedded in this work shaped it and (2) *mindful reciprocity* which commits the researcher to actively working to balance power and ensure the research serves those who participate in it (Tobias et al., 2013). In practice, relational accountability was demonstrated through transparent positionality disclosure, voluntary participation design, and member-checking. Mindful reciprocity was reflected in the sharing of transcripts with participants, a token of appreciation for their time, and the explicit framing of this research as a contribution for rural healthcare workers rather than an evaluation of them. The potential for issues of power or hierarchy to influence participants' responses in the semi-structured interviews was acknowledged and openly addressed in the interview guide. Underpinning this study in the conceptual framework of psychological safety supported an open dialogue. Participants were positioned not as research subjects but as knowledge holders, whose honest accounts were understood as essential to improving a shared system. Before and during each interview, it was

clearly communicated that the research aimed to capture their unique experiences, insights, and perspectives. Participants were reminded that there were no right or wrong answers and that their honest reflections were essential for understanding the complexities of simulation participation in rural health contexts. This message was conveyed in the invitation materials, during consent, and at the start of each interview, to foster a psychologically safe space for open dialogue.

Quantitative data collection using the Situational Motivation Scale (SIMS) provided a complementary, anonymous perspective on participants' situational motivation. Integrating the SIMS data with qualitative interview findings using a convergent parallel design enhanced interpretive depth by allowing motivational patterns to be examined across data sources within the rural context. Overall, this study posed a low risk to the participants. Their decision to participate in the research came after they already participated in the rural Sim-IPE experience. This addresses issues of coercion. The potential for psychological conflict for participants asked to share details of their personal motivation with a colleague and a leader in their workplace was balanced by an anonymous tool and integrated measures that frame participant input as critical to drive and inform system growth, rather than for individual evaluation. There is a low risk in individual identity as results will be de-identified and/or anonymized and distributed across different professions and sites. The only connection between the research and the participants' employment and professional identity is the potential for their input to influence future simulation programming within the organization.

Delimitations and Limitations

Research limitations are the inherent weaknesses or constraints of a study that are often largely outside the researcher's control, but that may impact validity. Delimitations are the intentional boundaries the researcher sets that define the project's scope (Ross & Zaidi, 2019;

Theofanidis & Fountouki, 2019). Delimitations of this study include; restricting the study population to rural emergency healthcare workers in four rural emergency departments in Northeastern Nova Scotia over a 4 month period; data collection period tied to prescheduled education limiting to opportunistic site and participant selection; focusing on a specific Sim-IPE program; focusing on motivation constructs and psychological safety over broader outcomes; and using a convergent parallel mixed methods case study design. These delimitations were necessary to keep the study temporally and financially feasible and to allow focus within a motivational framework on the central question: why do they come?

There are also limitations and vulnerabilities of the study that require intentional acknowledgement and, where possible, mitigation. Four rural emergency departments with small teams in a single health system and geographic region is a small sample size that will limit generalizability and external validity. The voluntary nature of the Sim-IPE educational experience, which is a prerequisite for participation in the study, creates self-selection bias; those more motivated or positively inclined toward simulation may be overrepresented. This is a named vulnerability across the simulation literature (Newhouse & Polwart, 2025) and was intentionally explored in the interviews through a motivational framework that considered intrinsic and extrinsic drivers of participation. At the same time, self-selection warrants careful contextual consideration relative to the primary research question and the broader gap this study was designed to address. Tavares (2019) issued a pointed call to the healthcare simulation community to shift research focus beyond effectiveness studies toward understanding the conditions, mechanisms, and contextual factors that shape clinician engagement. Eppich and Reedy (2022) echoed that call explicitly, arguing it is time for simulation research to mature beyond if simulation works and expand its theoretical understanding of how it works. Davies

(2024) positioned SDT specifically as a generative framework capable of advancing that agenda. This study is a direct response to that call. Given the primary research question, *why do they come?* self-selection, in this context, is arguably part of the phenomenon to be understood rather than solely a bias to be eliminated. Exploring the nature and texture of positive motivational variance through the lens of SDT offers theoretically grounded insight into the conditions that support autonomous engagement, and in doing so, begins to answer the field's call to understand beyond *if* rural Sim-IPE works, to how, and for whom, and under what conditions. The study's reliance on self-report, both for the Situational Motivation Scale and the interviews, introduces risks of recall error and social desirability, particularly in a small, close-knit rural context where participants may worry about judgment. This vulnerability was named in the invitation to participate, reiterated at the start of the interview, and reinforced by reminding participants that there are no right or wrong answers.

This mixed-methods study used a convergent design with non-equivalent data, which posed a potential challenge for integration. In line with Creswell and Clark (2018), while the qualitative and quantitative data in this convergent parallel design were not identical and involved different sample sizes, integration focused on how group-level patterns in the motivation scale scores related to the individual experiences shared in interviews. This approach foregrounds complementarity and contextual richness rather than strict participant-level comparisons, thereby mitigating threats to validity arising from non-equivalence and sample size discrepancies in mixed-methods research (p. 251). Researcher embeddedness, and specifically the primary researcher's role as a physician lead, the creator of the Sim-IPE curriculum, and also the interviewer and primary analyst, presented a challenge and opportunity. There is acknowledged risk of researcher and social desirability bias, as participants may moderate

criticism, and interpretations may be influenced by the researcher's investment in the program. This was explored in the unique context of rural research and the rural clinician -researcher in the preceding *Ethical Considerations* section. Further, and in line with Braun and Clarke (2022) principles of reflexive thematic analysis, it is accepted that the researcher's positioning will shape their engagement with the data (p. 14). This was made visible through a multi-layered rigor strategy that included explicit positionality statements revisited across all phases of this work, sustained reflexive journaling to surface and interrogate analytical assumptions, member checking with participants, co-review of de-identified coding with an academic advisor and a simulation-trained critical friend and triangulation with anonymous situational motivation (SIMS) data. The following chapter presents the study's research findings.

Chapter 4: Findings

This chapter presents the findings of the study, describing how rural healthcare workers experienced and reflected on Sim-IPE, their situational motivation to participate, and indicators of psychological safety. Results are organized by data strand, with quantitative, qualitative, and integrated findings presented to illustrate key patterns related to motivation and participation in rural interprofessional simulation.

Quantitative Findings: Situational Motivation Scale (SIMS)

Table 2: SIMS

Situational Motivation Scale (SIMS) subscales and the 4 items corresponding to each subscale's regulatory style

Subscale	Items in subscale
Intrinsic motivation	Because I think this activity is interesting Because I think this activity is pleasant Because this activity is fun Because I feel good when doing this activity
Identified regulation	Because I am doing it for my own good Because I think this activity is good for me By personal decision Because I believe that the activity is important for me
External regulation	Because I am supposed to do it Because it is something I have to do Because I don't have any choice Because I feel that I have to do it
Amotivation	There may be good reasons to do this activity but personally I don't see them I do this activity, but I am not sure if it is worth it I don't know; I don't see what this activity brings me I do this activity, but I am not sure it is a good thing to pursue it

Note. Adapted from "On the assessment of situational intrinsic and extrinsic motivation: The Situational Motivation Scale (SIMS)," by F. Guay, R. J. Vallerand, and C. Blanchard, 2000, *Motivation and Emotion*, 24(3), 175–213.
<https://doi.org/10.1023/A:1005614228250>

*Table 3: SIMS subscales**Summary statistics for the SIMS subscales and SDI*

Measure	Mean(M)	Standard Deviation (SD)	Possible Range
Intrinsic Motivation (IM)	20.8	6.4	4-28
Identified Regulation (IR)	25.9	3.3	4-28
External Regulation (ER)	11.6	5.0	4-28
Amotivation (AM)	5.4	2.7	4-28
Self-Determination Index (SDI)	45.1	17.7	-72 to +72

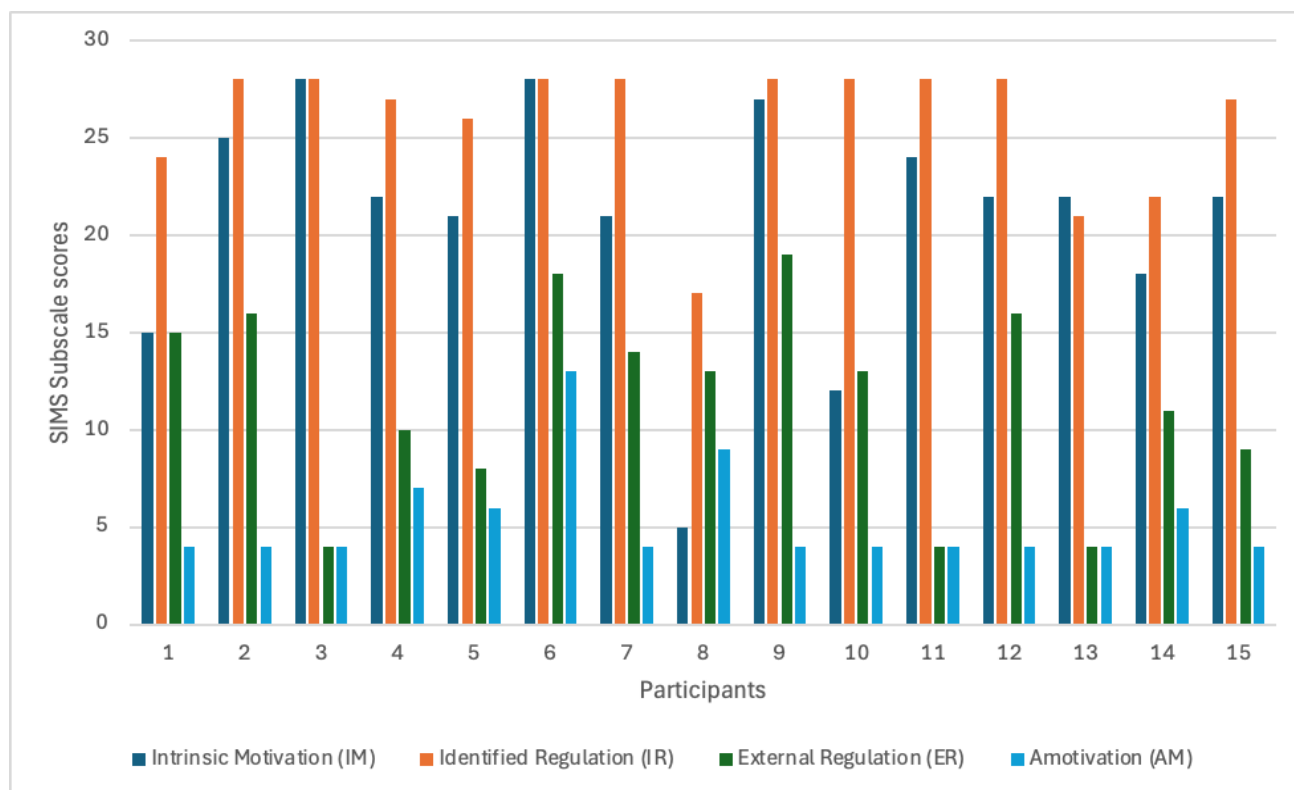
Note. $N = 15$. SIMS subscale scores represent the sum of four items per subscale, with items rated on a 7-point Likert scale (1 = *does not correspond at all* to 7 = *corresponds exactly*). Higher scores indicate greater endorsement of the corresponding motivational orientation (Guay et al. (2000). The Self-Determination Index (SDI) was calculated following Vallerand 2007, with higher positive values reflecting more autonomous motivation.

Quantitative analysis included 15 completed Situational Motivation Scale (SIMS) responses.

Three additional participants opened the survey but did not complete it and were excluded from analysis. For each participant, subscale sum scores were calculated for Intrinsic Motivation (IM), Identified Regulation (IR), External Regulation (ER), and Amotivation (AM), yielding four indices of situational motivation toward the Sim-IPE experience (Guay et al., 2000). Subscale scores were determined by summing participants' ratings across the 4 items corresponding to each subscale's regulatory style (range 4–28 per subscale). Each item was rated on a 7-point Likert scale (1 = “does not correspond at all” to 7 = “corresponds exactly”), with higher scores indicating stronger endorsement of that reason for participating in the rural Sim-IPE session. The Subscales and their corresponding items are listed in Table 2. Together, these subscales positioned participants' situational motivation for the Sim-IPE session along the self-determination continuum from highly self-determined (intrinsic, identified) to controlled (external) and non-motivated (amotivation), characterizing their overall motivational profile. These subscale scores were subsequently combined to calculate a Self-Determination Index

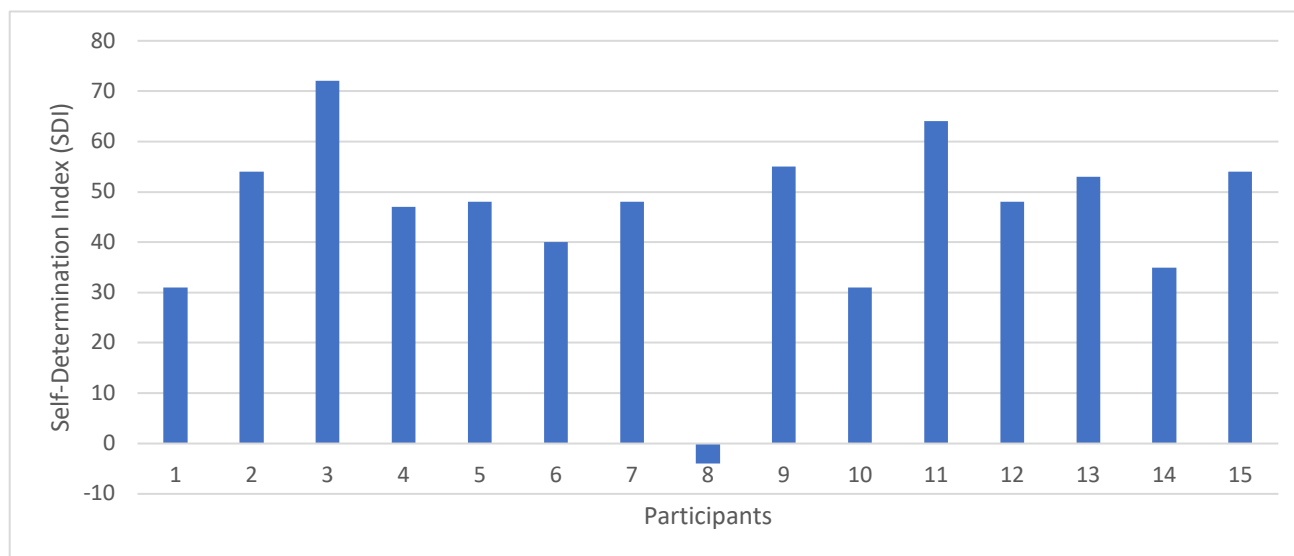
(SDI), providing a single indicator of the degree to which participation was autonomously motivated. Descriptive analysis revealed a predominantly self-determined motivational profile among participants. Mean scores were highest for Identified Regulation (IR) ($M = 25.9$, $SD = 3.3$) and Intrinsic Motivation (IM) ($M = 20.8$, $SD = 6.4$), indicating that engagement in Sim-IPE was largely driven by perceived professional value and interest. In contrast, External Regulation (ER) ($M = 11.6$, $SD = 5.0$) and Amotivation (AM) ($M = 5.4$, $SD = 2.7$) scores were comparatively low, suggesting limited reliance on obligation or lack of purpose as motivational drivers. The overall Self-Determination Index (SDI) demonstrated a positive pattern ($M = 45.1$, $SD = 17.7$; range = -72 to $+72$), indicating that participation was generally experienced as autonomously motivated. One participant (Record 8) exhibited a negative SDI (-4), representing an outlier instance of non-autonomous motivation within an otherwise highly engaged group. Of note, group level summary statistics for the SIMS subscales and SDI are presented in Table 3. Individual participant subscale and SDI scores are presented in Figures 2 and 3. Individual scores illustrate individual-level variation in SIMS subscale scores and Self-Determination Index (SDI) values across participants. Consistent with the descriptive statistics, most participants demonstrated higher intrinsic motivation and identified regulation relative to external regulation and amotivation, resulting in predominantly positive SDI values. One participant (P8) exhibited a negative SDI, reflecting a comparatively higher degree of controlled or non-self-determined motivation relative to the group. Overall, the figure highlights both the consistency of autonomous motivation across participants and the presence of meaningful individual variability.

Figure 2: Statistics for SIMS subscales



Note: This figure displays the SIMS Subscale score for each participant. Subscale scores were determined by summing participants' ratings across the 4 items corresponding to each subscale's regulatory style (range 4–28 per subscale) (Guay et al., 2000).

Figure 3: Summary statistics for the SDI



Note. This figure displays individual Self-Determination Index (SDI) scores for each participant, calculated as $SDI = (IM + IR) - (ER + AM)$, where IM = Intrinsic Motivation, IR = Identified Regulation, ER = External Regulation, and AM = Amotivation. Possible range is -72 to +72 (Vallerand, 2007).

Qualitative Findings

The qualitative findings presented in this chapter are drawn from six semi-structured interviews analyzed using reflexive thematic analysis. Participants represented a diverse interprofessional group, including two physicians, two registered nurses, one licensed practical nurse, and one paramedic, with emergency care experience ranging from 2 to over 23 years across multiple rural sites. Gender representation included male, female, and non-identified participants. This diversity of professional roles, experience levels, and perspectives supported a deep exploration of motivation, psychological safety, and interprofessional relationships in rural Sim-IPE and was consistent with principles of information power in qualitative research (Malterud et al., 2016; Merriam & Tisdell, 2016). The participant interviews yielded rich qualitative data characterized by a high degree of introspection and emotional candor. Despite the potential power dynamics inherent in researching professional peers, participants demonstrated a notable willingness to be vulnerable. They frequently expanded beyond direct responses to share fears, uncertainties, and reflective insights related to their simulation experiences and motivations for attending. From a reflexive standpoint, this openness was accompanied by observable signs of engagement during the interviews, including sustained eye contact, relaxed posture, and participants' tendency to lean forward as they processed their experiences in real time. These observations were interpreted as indicators of psychological safety within the interview context rather than as objective measures of affect. Data analysis revealed four major themes: Individual motivation, Team Motivation, Psychological Safety and Professional Identity, and Rural Context. The following section presents the findings across these themes and their associated sub-themes.

Theme 1: Why I Show Up: Individual Motivation for Sim-IPE

It is noted that many of the individual motivational elements described below are also relational and team oriented. This was interpreted as reflecting the interdependence of individual motivation in rural practice with team functioning.

1.1 Autonomy and Autonomous Motivation. All participants identified that they chose to participate in the simulation education to support better care for real patients. A desire to learn more, think in new ways, and be better for patients and colleagues was clearly articulated throughout the narratives.

Nurse J articulated her foundational motivation and also the tension between fatigue and commitment:

Just seeing what it was all about, wanting to make myself better in certain skills, wanting to understand certain things. I've always been interested in learning more, but you know, like I said, working shift work, it's hard sometimes on your days off, you kind of just want to chill and not think of work. But just being were rural, you know, these patients sometimes stay here with us quite a long time before EHS comes, so wanting to be better for my patients. And for being a resource for my staff.

Nurse B similarly reflected on this:

I always try if I'm available to go. I usually attempt to go even if I've done it before. Just because some things you don't see very often, so it's nice to get in the habit of, you know, keep practicing and practicing.

Nurse A reinforced this motivation: "I attended because I want to try to learn more and maybe, you know, think of different things that I might not necessarily think of in a real situation." The rural Sim-IPE was consistently evaluated as high-yield learning and for some "the most complex, realistic SIM that I've done to date" (Physician A). Some participants framed it as fun yet

challenging and even voiced a fear of missing out if they cannot attend. Physician S explicitly articulated this dynamic pointing out “I have a major fear of missing out because it’s also become a part of medicine that I enjoy so much. So yeah, I just can’t get enough really.” They subsequently expanded to note, “It kind of opens you up to the things you don't know as well. And that's probably the most important thing is to know what you don't know, I think” (Physician S). When describing their motivation to participate, Physician S also discussed the role of productive stress, a learning mindset and how they position it, stating:

Me personally, I want to be challenged in a place where I have to try... I think that kind of being challenged sort of on the spot. Maybe it sounds bad, but in that kind of environment, doing the thing, trying to run through the scenario and talking about it; it’s a way that I find I learn really well and much better than reading.

They further elaborated:

And also stumbling and then kind of figuring out where, you know, I could have done it better, or seeing somebody else do something that I wouldn’t have thought of, and then you know that I would never have asked that question to that person or maybe had that conversation about this scenario. Just sort of [being] parachuted into the middle of a problem where you are now trying to escape your way out of it, kind of thing to you learn things you didn't know. (Physician S)

Paramedic G echoed this sentiment with a systems perspective:

Again, it comes to my mindset of maximizing all experiences that I can get. It was a great opportunity, and I looked at that like. I haven't had the chance to do a lot of critical cases at the hospital, and it was like a perfect setting for that, so I hopped on immediately.

Across professions, participants framed challenge not as a threat but as a valued condition for

learning, positioning Sim-IPE as a space where productive stress enhanced rather than undermined motivation.

1.2 Elements of Sim-IPE That Supported Autonomy. Participants described their experience of autonomy in several ways. For some it was voicing self-authored standards for participation like “it’s my responsibility as a practitioner” (Paramedic G). For others it was about framing the day as learning and “Knowing there’s no tests at the end of the day” (Nurse J). Participants explicitly valued having a voice, protected time, and respect within a shared learning space and identified specific facilitator and program design features that supported this.

Paramedic G noted:

You’re able to put your input, especially in the in the post session discussion or debrief. Everybody can talk and put out their input. There was a sense of patience. Even though I’m French, so there’s always the translation barrier or language barrier, but people still take the time to listen.

Nurse B described delivery elements:

I think kind of like what you do at the start, like the rundown of everything. I think that does help... just to put it out there for people cause it kind of reminds people like, yeah, everyone does have a different set of skills and everyone is comfortable with certain things more than others.

Physician S emphasized how facilitator humility and collegial positioning created autonomy support:

And then, you know, the fact that your team, you guys are such a cohesive team and everybody’s like, no, there’s no outlier that’s kind of a hotshot, you know? everybody is somehow super experienced and super knowledgeable and not intimidating.

Nurse A similarly appreciated the approach, stating "I found it was a positive environment. And I felt like, there was positive feedback, really to each person about something positive that they did." Choice in case content and preparation was highlighted. Physician S valued the opportunity to engage with the content in advance:

I really love the zip drives that you send and just kind of having the opportunity to think about topics that maybe I haven't thought of in a little while or was not as focused on and kind of come up with some questions on, 'how do I manage that?' or like, 'this is what I've been doing, but I really am not sure about it'.

These narratives suggest that participants felt their voices mattered and appeared to contribute to a sense of ownership over the learning.

1.3 Competence and Readiness for Rare but High-Stakes Rural Events. Participants repeatedly emphasized the need to be ready for high acuity, low frequency cases in their rural emergency departments. Nurse A described it as a looming awareness, "you know it's coming; you just don't know when." The Sim-IPE experience was linked to avoiding "panicking in a real emergency" (Nurse J), and as an opportunity to move from traditional didactic education and reading to doing it hands-on, in real-time. Physician S described the impact the Sim-IPE had on them:

You're that much stronger. Like you built some muscles you didn't have before, and all of this insane job is just a tiny bit less scary now. And yeah, just knowing that you can. Also, there's a sense of accomplishment with doing SIM as well as garnering the learning that you apply to the job.

When describing the impact of the Sim-IPE on their confidence in their role, they said emphatically, "100 million percent. It's been transformative, actually" (Physician S).

An LPN narrative shared a similar sentiment:

I would say it was probably the best that I've done I felt positive after going the first time and I felt like I learned quite a bit and thought of different things than I might have because of the different simulations. (Nurse A)

Another nurse spoke pragmatically, highlighting:

I find very important for us to keep up with these skills. So, say it's running codes or chest tubes- if you don't have the ongoing education, you know, when it comes in emergency, that's not the time to be going on dynamic health and figuring out how to care for a chest tube. (Nurse J)

These narratives portray the Sim-IPE as an effective way to rehearse uncommon but high-stakes events, and shift participants from anticipatory anxiety and fear toward a tangible sense of preparedness, confidence, and growth.

1.4 Practice Without Patient Risk. One of the hallmarks of simulation-based education in health professions education is its deviation from the traditional apprenticeship model of, *see one, do one, teach one*, on real patients. Participants' emphasis on competence and readiness was closely tied to this opportunity to rehearse without patient risk, highlighting Sim-IPE as a safer bridge between knowing and doing. Nurse A reflected on this shift from her perspective:

I really enjoy the simulation because it gives me an opportunity, with my coworkers, to go through a scenario when it's not a real person. Prior to that, it was very scary because it's all real people. So I appreciate that.

A similar sentiment was captured from physician S, who articulated the value of, "just kind of putting yourself in those sort of scenarios so then when you're in the real thing, you've kind of done it together already." Through these narratives, Sim-IPE emerged as a more ethical and

comfortable bridge between learning and clinical practice.

1.5 A New Health Human Resource (HHR) Reality. Participants repeatedly described rural emergency care as operating in an increasingly resource-limited and unstable staffing environment. One experienced rural physician highlighted how escalating turnover has fundamentally changed team functioning and the perceived value of team-based training:

There is more turnover in staff than there's ever been before. I think in my 23 years, the last five years, more nurses have come and gone, and so I think it's even more important. Fifteen years ago I would have said, you know, this is still interesting and fun, but I'm used to the same nurses and we've already worked together. I don't think it would have been as much benefit as it is now, certainly with the turnover of nursing staff and LPNs and newer physicians. It's critical that we practice these skills of teamwork. (Physician A)

This narrative illustrates a shift from a relatively stable, relationship-rich workforce to one characterized by constant change, with Sim-IPE now viewed less as extra education and more as essential infrastructure for maintaining team coherence and coordination in a resource-constrained rural system. For these participants, showing up to Sim-IPE seemed to serve as a personal response to systemic instability and an individual strategy for coping with workforce turnover and preserving team function.

1.6 Structural and Pragmatic Enablers. Beyond intrinsic interest, participants identified concrete structural elements that enabled and motivated their participation in Sim-IPE. Meeting professional accreditation requirements, receiving paid time, and aligning program delivery with service delivery, emerged as pragmatic considerations, particularly for physicians and paramedics navigating complex professional obligations.

Physician A acknowledged the evolving landscape of mandatory hands-on continuing education:

I think now there is something new for family doctors for CME [Continuing Medical Education] where so many credits in a cycle have to be something hands on ... There certainly would be motivation because a lot of CME is not necessarily hands on. ...But with these new stipulations ... There certainly would be motivation to do even more Sims.

I mean if simulation doesn't qualify for that, I don't know what would!

This reframing of Sim-IPE as meeting professional development requirements repositions it from an optional enrichment to strategically valuable education. Paid participation was acknowledged across the non-physician professions, and the narratives specifically positioned it as organizational recognition of Sim-IPE as legitimate work rather than an external pressure to participate. Paramedic G described the impact of discovering retrospectively that they had been compensated for their attendance:

I did not even put my hours in for the day cause I thought it was not paid. That's how it usually is, but they paid me anyway. So just to show you how their perspective is very good—they see it as important.

This unexpected compensation communicated organizational commitment more powerfully than policy statements alone. Paramedic G further contextualized payment as a potential equity issue:

Our financial situation allows us to do these kinds of things. We're not fighting for the last cent, so I can take a day to go do that elective and maybe not stress too much about the financial repercussions. I know that's not the situation for everybody. So in other words, I'm trying to show the importance of how being paid for these kind of things is probably the barrier for most people.

Physician A articulated how current remuneration structures for physicians create opportunity costs that might deter participation:

It's free, so cost is not a barrier. Well, free in the sense that it doesn't cost us. But there is some opportunity cost, especially with the new contracts. This is time that we can't really apply towards our contract. If we were told, yeah, you can have a full day and that's a day of work and you can bill X number of dummy patients—bill as if this was a real patient and you were working this code or case in real life—that would certainly be an incentive... I like that idea. It would make us want to do a lot of simulations.

They also described the implications of attending Sim-IPE amid other less flexible clinic responsibilities with an insightful analogy:

And so you know, it's great SIM but it when it's thrown into the middle of a working day it's like trying to teach someone how to cook in the middle of a busy restaurant.

You're in the right location, but boy, it be a lot better when the restaurant was closed for business and you could just focus on what you need to do in the kitchen (Physician A).

Several participants held formal or informal leadership positions and described a dual motivation that included personal learning interest combined with a sense of responsibility to model engagement. Physician A stated:

As chief of staff, there's also a sense of responsibility that if I don't do it, well then, it's easier from some colleagues to say, 'well, he's not doing it, maybe I don't have to do it'.

That's not the only reason I do it ... working on the team, I mean that's one of the big motivations, and just getting comfortable with staff" (Physician A).

Similarly, Nurse J, serving as clinical educator, described actively recruiting hesitant colleagues, stating, "I kind of encouraged people to try to go and said it was really good and we found it very helpful," recognizing her endorsement carried weight in shaping peers' perceptions of Sim-IPE's value. Physician S reinforced the importance of this dynamic:

I think our nursing leadership is really pro this and I think that's really important cause that motivates other people too. Like when the vibe amongst the team [is] like, this is important, we need to show up for this, this is something that matters to all of us, I think it probably affects and influences people that might be a bit shy about showing up.

Leadership support was framed not merely as permission but as cultural endorsement that legitimized prioritizing Sim-IPE amid competing clinical demands. Participants interpreted organizational actions, including paid time, backfill staffing, and bringing the education to the rural sites, as demonstrations that the organization valued both the education and the providers themselves. The deliberate allocation of resources to enable participation communicated that Sim-IPE was important to workforce development. Physician S connected the mobile delivery model directly to organizational valuing:

Helping, especially when you're rural..... it just would be great ... to kind of really emphasize, I guess, that bringing education to people that are in places like this is so beneficial. It's like so much value added to have learning at home.

The perceived effort required to bring high-fidelity simulation to dispersed rural sites signaled investment that participants experienced as organizational recognition of rural practice challenges. Taken together, these structural factors functioned as need-supportive conditions in SDT [Self Determination Theory] terms. Protected time, financial recognition, and visible leadership endorsement seemed to signal to participants that Sim-IPE was valued work, not a personal extra.

1.7: Productive Tension: Voluntary vs Mandatory Participation. Most participants endorsed being personally motivated to participate regardless of the program's voluntary or mandatory status. There was also considerable introspection and reflection that unfolded during

the interviews, where participants openly grappled with this conceptually. Nurse A explicitly reflected on voluntary vs mandatory positioning of the rural Sim-IPE program and concluded:

I feel like some people may not sign up for it if they're nervous and they're scared they might not do well on the simulation. However, I feel like it would benefit everybody if it was mandatory because you're going to get real people anyways. You're going to get real people and you know, I think it would be better to make a mistake you know, like when it's not a real person and learn from that and not on a real person.

Paramedic G offered a complementary notion that values choice and the energy of people who want to be there, but also sees how mandatory exposure could convert reluctant colleagues.

What I like about the voluntary aspect ... is that you have a sense that the people that are there want to be there and that enhances the experience of simulation...However, having everybody there could show the person that is reluctant, like for the first time, OK, actually it wasn't that bad. Maybe next year I'll go with more of a positive mindset and maximize the experience even more.

Together, these narratives suggest participants appreciate motivation as dynamic rather than fixed, anticipating that initially pressured participation could evolve into more self-endorsed engagement over time. More broadly, they suggest that individual motivation to participate in rural Sim-IPE was grounded in a complex interplay of personal values, professional responsibility, perceived competence needs, and inseparable from structural realities.

Theme 2: Practicing as the Team We Really Are: Team Level Motivation and Learning Culture.

Across sites and professions, participants identified the Sim-IPE as a structured opportunity to practice as the team they actually are in real life, highlighting the interdependent,

team-based nature of emergency care, particularly in rural settings.

2.1: Team-Level Motivation: Relatedness and Collective Competence. Participants strongly valued interprofessional cases involving physicians, nurses, LPNs, paramedics, and learners over uni-professional models. This preference reflected both learning outcomes and authenticity. One physician articulated:

For this kind of learning, when you're always going to be in a situation with those types of professionals that also bring a different way of thinking and approaching problems and tackling challenges . . . getting to mesh that all together is when it really gets to the sweet spot, you know? So that kind of layered learning that happens in that kind of space amongst different people with different professions . . . that's really valuable. (Physician S)

Another physician highlighted the opportunity for improving interprofessional communication, noting “Positive too, is that you'll figure out quickly things that you don't know . . . [like] how to interact with people and how people are able to receive information and stuff” (Physician A).

Other participants also placed strong emphasis on the value of practicing as a team to better understand who does what, and who feels comfortable in which roles. This surfaced as critical in rural sites that need to be able to function as smaller, variable teams, especially in the current state of high staff turnover and increasing reliance on travel nurses. Working ‘with your own team in your own space’ was repeatedly described as uniquely valuable for clarifying roles, surfacing assumptions, and learning how different providers actually work together under pressure. The Sim-IPE days were labelled “bonding” (Physician S), “bringing the team together” (Physician A) and creating a shared sense of readiness and “we got this” (Nurse J). Participants consistently framed motivation not as individual enthusiasm alone, but as emerging from shared

understanding, coordination, and trust within the team. From an SDT [Self Determination Theory] lens, these accounts illustrate how rural Sim-IPE can support team-level relatedness and a sense of collective competence, in addition to individual mastery.

2.2: Team-Level Autonomy. Team-level autonomy emerged in two domains. First, participants valued having input into the Sim-IPE scheduling as well as case topics and content. They valued locally suggested scenarios and attention to local contextual realities such as limited labs and equipment. Second, teams described meaning in adapting roles during scenarios, such as paramedics leading airways or nurses taking initial leadership, when the physician would realistically not yet be in the room. This mirrored real rural workflows, reflecting pragmatic sequencing of care and created opportunities for conversations around scope of practice and shared leadership. Local leadership support, case input, and prioritization of participation created a sense of collective ownership rather than an externally imposed exercise. Together, these features appeared to satisfy autonomy needs at the collective level by supporting teams to shape both the design and delivery of their learning. This is consistent with Grenier et al. (2024) framing of shared autonomy as a driver of team motivation.

2.3: Team-Level Competence and Collective Efficacy. Participants commonly described leaving the Sim-IPE day with a shared sense of accomplishment, as one participant put it, “as if we all just went through that together ... it wasn't just like ... this is what you did. You know, it's ... we all did it “(Physician S). Participants also repeatedly recognized instances in the Sim-IPE where the team got stronger, emphasizing that practicing and learning exposed not only individual gaps but also team-level issues, such as equipment location and operation, communication and scope awareness and coordination. Working through these issues together in real time and then debriefing as a group was articulated by several participants as a way the team

could share learning and modify workflows. This appeared to enhance confidence in the team's capability rather than simply in any one person's skills. One participant described the physical flow of the Sim-IPE and the impact of moving as a team from the prebriefing space to the care space as building team-level confidence and competence. They noted, "Even the physical, let's walk down the hall, and we are a team walking down the hall, and let's go into the room and let's see what's thrown at us" (Physician A). This embodied progression, from prebrief [prebriefing] through shared case action to the debrief [debriefing], was repeatedly described as reinforcing the team's belief in its collective capability suggesting a sense of collective efficacy in the Sim-IPE experience.

2.4: Team-Level Relatedness and Cohesion. Participants valued interprofessional cases because rural emergencies require collaboration within small, fixed teams and limited resources. Unlike standardized courses, the Sim-IPE reflected the actual mix of professionals present during rural emergencies, enhancing transferability to practice. Across professions, participants highlighted the way Sim-IPE built rapport, trust, and a deeper appreciation of colleagues' strengths. Nurse, physician, and paramedic perspectives described valuing "working with your own team" (Physician A) and seeing how others think and noticing things they "never thought of" (Nurse A), which they planned to incorporate into future care. Another participant highlighted that the Sim-IPE included "cases that are very realistic and force the team to develop approaches and find out what works well and things that we don't know at our site" (Physician A). This use of group language when describing the experience was a common finding. For newer team members, shared high acuity learning experiences appeared to accelerate integration into the team, compressing what would otherwise take months or years of clinical exposure. An early-career nurse and an LPN newer to emergency medicine specifically highlighted Sim-IPE as

supporting their confidence as more novice members of the rural team.

The Sim-IPE also created opportunities for rural teams to build relationships with colleagues in larger Regional Sites. When simulated cases had embedded phone conversations with consultants at the larger Regional Hospitals there was an added layer of realism and opportunity. Physician A, described their experience with a simulated case where they coordinated the care by phone with a consultant at the Regional Hospital:

And afterwards I remember a number of our colleagues said to me, “that was amazing.”

And boy, knowing that they're willing to do that in the simulation and how that went.

That was a great thing to help develop interpersonal relationships with our colleagues and [remembering] that we do work together from a rural site to the tertiary site.

Another participant described a similar experience and a sense of validation, noting, “It's just all of a sudden you're not just some person in Rural Site B ... it's like you're a person and we all work together and I just find that so gratifying” (Physician S). These narratives share powerful experiences of professional belonging. Through simulated inter- and intra-professional interactions, rural clinicians experienced both validation of their expertise and deepened connection with regional and tertiary colleagues, transforming isolated practice into a recognized and integrated part of a larger healthcare system.

2.5: Reciprocal Need Support and Motivational Climate. Finally, participant narratives highlighted a reciprocal dynamic in which facilitators, local leaders, and peers co-created the team motivational climate. Facilitators and local champions modelled autonomy-supportive behaviours by explicitly inviting input on cases, acknowledging difficulty, sharing their own mistakes, and engaging in debriefs with curiosity rather than judgement, which signaled that imperfection and vulnerability were acceptable. This was articulated by Nurse J,

who noted:

You know, this is a learning environment. You're not expected to be the superhero, and you're not targeted for what you did wrong. Yeah, we do have to talk about what we did wrong, but it's not in a negative environment. It's very positive.

Colleagues encouraged each other to attend, and reassured nervous peers: “it was really good... I learned quite a bit” (Nurse A) and effectively created a self-reinforcing loop of enthusiasm where participants described wanting to go and get more out of it each time. Conversely, participants noted competing priorities, including being called in and out of SIM during a busy workday, and how disparaging or judgmental comments about others’ performance would undermine safety and discourage future participation.

Taken together, the narratives illustrate that motivation in rural Sim-IPE was not only an individual phenomenon, but also a shared team experience shaped by collective ownership, mutual trust, and coordinated action. Participants described learning as something the team did together, reinforcing a sense of collective efficacy and cohesion that extended beyond the simulation itself. In this way, Sim-IPE functioned as both a learning intervention and a cultural practice that supported how teams work, adapt, and sustain themselves in rural emergency care. These patterns map closely to Grenier (2024) view of team motivation as arising from the socially shared satisfaction (or frustration) of autonomy, competence, and relatedness needs.

Theme 3: It Has to Feel Safe to Stretch: Psychological Safety in Sim-IPE

Psychological safety, or that “shared belief that the team is safe for interpersonal risk taking” (Edmondson, 1999, p. 350) is generally accepted as foundational to quality simulation-based education in healthcare. While participants unanimously described the Sim-IPE as psychologically safe, their narratives revealed psychological safety as a dynamic, emotionally

layered experience rather than a static condition. Participants universally described a distinct vulnerability and emotional journey that spanned the Sim-IPE experience, from the decision to participate through the prebrief, the simulation, and the debrief, and beyond. Before entering the simulation space, participants across all professions articulated a pervasive nervousness tied to specific stakes. As Physician A explained, there was inherent tension in learning with one's own team:

[I was] you know, nervous. And because there's so many benefits in doing a simulation with your team. But on the other hand, if you kind of mess up, then you're afraid you're going to lose the confidence of your team and you want to have the confidence of the nurses and the physicians that you work with.

This fear extended to Physician S, who acknowledged "apprehension about like looking dumb in front of colleagues and things like that, and ... especially in front of residents." For Nurse J, who had seventeen years of emergency nursing experience, the anxiety took the form of imposter syndrome despite her expertise:

I was like kind of fearful like, you know, you're in nursing for 16 years, but are they going to say something that you're supposed to know or supposed to do when you have no idea? And they're probably going to be like ... [they're] incompetent.

The apprehension preceding simulation-based IPE was deeply rooted in vulnerability across the narratives. Of note, it seemed less specific to performance anxiety and communicated more as a fear of losing professional credibility and collegial trust. What is also significant is that rather than deterring participation, this anxiety appeared to signal professional identity investment and a desire to maintain collegial relationships and trust.

The simulated case component of the Sim-IPE was marked by a shift toward engagement

and presence across all participants. Physician S described it as: "really kind of engaged, I guess, and really like motivated. Interested, kind of in it, focused, I guess. And kind of enjoying myself." For Nurse J, their narrative shared the journey in real time:

So at the beginning, I was like kind of fearful.... the day goes on, that's not at all the vibe that you get because it's so relaxed and you guys make it so. You make it fun, you know?So yes, afterwards, it was like, 'we've got this'.

These accounts mirror that even for individuals, psychological safety is not a static state but something that must be actively enacted and reinforced throughout the learning experience.

After the Sim-IPE, participants consistently reported a profound sense of accomplishment and renewed competence. Physician S's language captured this metaphorically:

just like, kind of like a form of elation, actually, you know? Just, you know, feeling like you've come through something together. You've learned a lot too. You're that much stronger. Like you built some muscles you didn't have before.

Physician A remarked pragmatically that "for the next month, I think everyone in the team feels much more prepared if something were to come in." Collectively, these narratives revealed that psychological safety in the rural Sim-IPE was a dynamic relational achievement that was actively constructed and sustained throughout the phases of the session. It began in shared vulnerability, was deepened through engagement and presence during the case, and solidified through shared accomplishment in the debrief. This active journey seemed to transform fear into trust and collective strength.

3.1: Creating a 'Safe Container'. Rudolph et al. (2014) brought the concept of psychological safety to the forefront in simulation-based education and coined the "safe container" as an environment where learners face professionally meaningful challenges and are

held to high standards in a way that engages them but does not intimidate or humiliate them” (p. 339). Participants were invited to discuss how they experienced psychological safety in the Sim-IPE experience and what they felt enabled it. All participants identified the prebrief [prebriefing] as foundational to creating a psychologically safe learning environment. Physician S articulated what made it effective, noting “you had ... a few slides I think, about it. And you just really take time. It's very important to say, ‘this is SIM and it's safe and this is how we all behave.’” They continued with:

If you ever thought that somebody was just saying it, like it's the thing you're supposed to say, and now you said it, and now we're past that you know? It's not like that at all. It's really, what it is. And you have people recognize that, I think, and then suddenly there's kind of a giant exhale. I think that goes through the whole room.

Physician A also made similar note that, “Ahead of time there's some good Ice Breakers, there's the ‘cone of safety’ that's implemented, and reinforced.” This suggested that participants believed it was not merely performative and that it was authentic and reinforced throughout the day. Participants comments also suggested that practical elements of the prebrief [prebriefing] contributed significantly to flattening hierarchy and normalizing vulnerability. Physician S highlighted, “And just making a point of like ... the team building ... kind of levelling it all ... and we're all just sort of talking about tequila or coffee or whatever.” The recognition of these informal elements reinforces that they are not tangential to learning, but rather intentional interventions that can establish shared humanity and reduce the psychological distance between facilitators and participants. This signals that these elements were experienced as deliberate pedagogical strategies, not incidental niceties. For Physician S, the facilitators explicit framing safety and learning expectations in the prebriefing shifted their entire posture:

You [facilitators] take such great pains, and I remember that distinctly from the first time, of making it like it's a safe space to learn, and it's a safe space to challenge yourself to be able to kind of take everything you can from it. You're not trying not to look dumb; you're trying to learn, and it just, ... I find it so inspiring, and it's really helpful for me for sure.

The debrief [debriefing] was the other place where psychological safety became visible. Across all participants, the Sim-IPE debrief was identified as a collaborative learning conversation. One participant described it as, “everyone having [the] ability to talk and be open” (Physician A). Physician S described the debrief structure and its impact for them:

I love that there's usually teaching points that happen, so, I love that somebody kind of summarizes it and then we have an opportunity to talk as a team. And, similar to how we would debrief a big case that happened in our Emergency room.

The facilitator debriefing style was noted by participants as more general and group-focused language. Nurse J observed with appreciation, "you guys don't pinpoint, like that's not how you do it... You know, we debrief and you guys, [say] maybe next time or what if we think of this?" This reframing potential individual knowledge gaps as collective learning is subtle but profound. When facilitators say ‘we’ and ‘what if’, they position mistakes as data for team learning rather than as individual failures. The debriefing structure also emphasized a learning mindset which was reflected in participant narratives. Nurse A stated, "it seemed more welcoming ... it was good to talk amongst my coworkers about how they felt or what they think or what I think could have been done differently." Physician S commented on the value of “also stumbling and then kind of figuring out where, you know, I could have done it better.” They also noted “practicing that kind of exercise is really helpful, being supportive and honest and open there's

[educational] nuggets that occur and everybody gets into that. And it's not about how anybody performed it's just, like everybody's 'nerding out'" (Physician S). Paramedic G reflected on the importance of modelling "how being vulnerable is OK." This vulnerability reflects the professional courage to admit uncertainty, ask for help, and surface concerns in real time, which are precisely the behaviors that demonstrate psychological safety and foster a growth mindset and learning culture.

3.2: Safe is Not Stress-Free. Participant narratives supported a shared awareness that psychological safety is not the absence of stress. Rather, it is the channeling of stress toward productive challenge rather than toward evaluative threat. The challenge is to create conditions where the cognitive and physiological arousal of high-acuity cases supports learning rather than triggering defensive reactions. Paramedic G articulated their psychological physiology of productive stress:

During the sim is very good, normal feelings. I'm not stressed to the point that I can't think so I just, I observe and I think and I'm kind of in a perfect arousal state that can learn on the spot and think.

Other participants identified several ways facilitators supported productive stress while minimizing self-protective reactions. First, facilitators modeled fallibility and intellectual humility. Physician A noted, "The facilitators are humble. You know, they acknowledge that it's sometimes difficult. They acknowledge mistakes they've made in practice or in simulation. They've acknowledged they're still learning as well, and that certainly goes a long way." This stance communicates that mistakes and uncertainty are not signs of incompetence but normal features of expertise development. Facilitators were also noted to frame complexity as an opportunity for collective problem-solving rather than as a test. Nurse J described this:

even like, you know, we're rural and we don't see this often and we're not very sure how to go about this scenario... you know, you guys arrive ... you guys work, ER. And you know there's definitely more experience in bigger centres, but none of you guys make us feel like 'you guys should know this.'

Participants also took note that facilitators positioned themselves as teachers and learners.

Physician A highlighted:

sometimes I think the facilitators have also given the sense of, oh, you're teaching us something. And that's interesting. And so you, you kind of still feel like it helps you feel more collegial when you realize, oh, I've got something to teach the teacher.

This reciprocal learning stance is distinctive and communicates that expertise is contextual and distributed. This inversion of expertise can also temporarily suspend traditional hierarchies and affirm participants' contextual expertise further supporting psychological safety. The narratives also showcase how the rural Sim-IPE was relationally situated, enabling teams to rehearse communication, negotiate roles, process disagreement, and share decision-making in realistic, time-pressured scenarios. It is well documented in the simulation literature that this type of collaborative learning can surface social tensions and emotions that can be particularly stressful and trigger defensiveness if not balanced skillfully in safe and reflective learning spaces (Kolbe et al., 2020; Rudolph et al., 2014; Somerville et al., 2023). Participant narratives in this study describe relationship-building and critical stereotype-reducing effects of their Sim-IPE experience as valuable growth opportunities. Nurse B shared how simulation helped them develop "more of a rapport with people" and allowed them to see "their strengths and maybe something they're doing that... is a little more efficient". This suggests that the shared experience of managing complex clinical scenarios together fostered appreciation for interprofessional

competencies that might otherwise remain invisible in siloed education and practice. Paramedic G emphasized debriefing where "everybody can talk and [give] their input" underscoring how the rural Sim-IPE experience was a structured opportunity for all professions to voice their perspectives. This directly aligns with the relational elements of communication and inclusive dialogue emphasized in the CIHC framework (CIHC 2024). Physician A's interview yielded an authentic reflection that captured a critical moment of perspective transformation:

I think sometimes as a physician- well, I don't know. I'm stopping myself mid thought, so where I'm going with this is I think it must be easier for the nurse in the simulations because you know at the end of the day it's the Doctor Who should be doing the orders and things like that. On the other hand, sometimes it can be harder for the nurses because they got a lot, and they have different responsibilities. So I don't know. Maybe it's not easier or harder it's just different.

The physician's initial assertion "it must be easier for the nurse in the simulations because...it's the Doctor who should be doing the orders" (Physician A), suggests assumptions about hierarchical role distributions and differential knowledge expectations common in traditional medical education. However, the real-time self-correction that follows, "I'm stopping myself mid thought Maybe it's not easier or harder it's just different" (Physician A), demonstrates a cognitive disruption and perspective-shift. By recognizing and articulating that nurses have a different set of responsibilities and stressors, it appears that Physician A moved from a hierarchical framing of interprofessional work (easier/harder, more/less pressure) toward a horizontal understanding that acknowledges distinct but equally demanding professional responsibilities. This stereotype-reducing effect has been previously documented by Liaw et al. (2014) and is particularly salient in rural settings where professional isolation may allow

stereotypes to persist unchallenged.

3.3: Barriers and Threats to Psychological Safety. While participants consistently experienced the sim-IPE as psychologically safe, they identified specific structural and relational factors that could undermine psychological safety if not addressed. Physician A articulated a poignant metaphor for how interrupted learning destabilizes psychological safety:

the clinic was rushed... I had to leave that safe space and then come back into it and get in and out of it. You kind of lose that blanket. You're taking the blanket off and on, off and on, off and on.

When sim-IPE is inserted into a busy clinical day without protected time and space, participants could not fully commit cognitively or emotionally to the learning environment. This was experienced to threaten psychological safety. For nurses and LPNs, different pressures surfaced. Nurse A described the vulnerability of integrating into a team where role clarity was evolving:

I felt like there was a couple people that are not really in our team that were there. So then I was kind of like, well, that can happen at any time as well because we have a lot of nurses coming and going.

Two participants named a distinctly rural challenge; the overlap of professional and personal relationships. For one:

There are certainly some people at the hospital, whether you're married to them or very good friends. That's a bit more awkward, too, right? I mean, you know, these people. Then you're going to go home, and if you did poorly in a SIM, at least you can leave the parking lot and go. But if you come home and the same person that saw you do poorly in the SIM is across from the supper table, you know that that maybe cuts a little deeper.

(Physician A)

For another, the personal connection encouraged participation, noting “I love working with my wife as well. So she was like, OK, let's do it together” (Paramedic G). Together, these accounts show that psychological safety can be experienced differently across professional roles, shaped by perceptions of role expectations, visibility, and community proximity. It also highlights a relational vulnerability unique to small communities that requires explicit acknowledgment and normalization.

3.4: Sim-IPE Stimulating Reflection on Professional Identity. For one participant, the Sim-IPE experience surfaced significant tensions between their professional training, scope of practice, and the expectations placed on them within the current rural EM [Emergency Medicine] environment. They surfaced professional identity dissonance through their reflection on the Sim-IPE experience:

So then, what I come out with is like, OK, we need to find a plan for me. This profession as a paramedic in that environment [Emergency Department] is new, especially in these rural sectors. They can kind of utilize us as they want, but then again, is it the best way that we are utilized in those contexts, or could there be a better role for us because we're not trained the same way as RNs? I'll gladly learn all the skills that the RNs can show me but it showed me as well that the environment in the ER [Emergency Room] or in the hospital setting, the way it's set up right now, [may not be] conducive to keep us paramedics there (Paramedic G).

This reflection illustrates how Sim-IPE can surface latent professional identity tensions that may otherwise remain unarticulated in daily practice. For other participants the Sim-IPE inspired professional growth. One nurse noted:

My experience has been so positive to the point that I've enrolled in [a simulation

facilitation course] to be the support person for staff and run some scenarios on downtimes with them and for them, to be proficient in skills. (Nurse J)

Together, these narratives demonstrate that Sim-IPE functioned as a reflective mirror for professional identity. It surfaced unresolved tensions and scope misalignments for some, and catalyzed professional growth and renewed commitment for others, suggesting Sim-IPE's capacity to illuminate and reshape how rural clinicians understand their roles within the healthcare system.

3.5 Sim-IPE to Model and Embed New Cultural Norms. Participants explicitly connected their experience of psychological safety in sim-IPE to aspirations for cultural change, signaling that simulation is not only a venue for skill practice but also a cultural intervention that can model norms participants wish to institutionalize. Participants described carrying these interactional norms back into clinical leadership and daily practice. Nurse J expressed this as a contrast between the Sim-IPE and their lived experience:

sometimes we transfer patients and you call and you say like we've done this and this and certain nurses can be like Why did you guys do that? That's not how it's done... and you're like.... you're like on edge.

Sim-IPE offered them an alternative model: "when we went with you guys and had such a relaxed environment... it was like, 'we've got this'" (Nurse J). They expanded on how they now carry this forward in their new role as Clinical Nurse Lead, where they explicitly support staff participation in simulation to model the learning culture they want to foster in their department. Paramedic G connected Sim-IPE and psychological safety to professional identity and hierarchical levelling:

I also have seen that it can be difficult for me to put out my point of view, being a

paramedic in that role ‘cause you have the team lead which tends to make most decisions. But I’m learning when to input and when not to. It can be difficult.

They went further to share:

You’re able to [share] your input, especially in the post session discussion or debrief. Everybody can talk and [give] their input.... So, for me, that’s the example of a psychological safe space; you’re able to put in your input, and [not] feel judged.

(Paramedic G)

3.6: It Cuts Deep: Influence of Prior Simulation Experience. While all participants had some prior simulation experience, there was considerable variability that ranged from a single previous exposure to regular, ongoing simulation as part of local education programs. For some, a rich history of simulation-based learning experiences was strongly motivating. One early-career nurse described having multiple post-graduation simulations and stated, “I did it, and I’m like, ‘this is great. I’m going to go to every one of these I can’ and yeah, here we are” (Nurse B), highlighting how repeated positive exposure built both confidence and a ‘forever student’ mindset toward simulation learning. Others contrasted very limited prior experience with a trepidatious curiosity stating:

I signed up just to kind of see what it was like and at first I was a little bit nervous and I kind of felt like I might not do so well, compared to other people, with my lack of background in emergency, but I didn't feel that way. (Nurse A)

They further reported the impact of their positive rural Sip-IPE day, stating, “after the first one, I felt a lot better about it and I felt like I learned so much. The last one I felt a little more confident than I did the first time I took it” (Nurse A). This highlights the impact of a positive Sim-IPE experience to reinforce its value and sustain future engagement.

Participants also underscored the enduring impact of negative simulation experiences. A nurse recalled undergraduate simulation experiences where everything was recorded and replayed, noting that “It was awful. I didn't enjoy it” (Nurse B). They went on to reflect:

You're still very new to nursing and you're put in this situation, and I think everyone just expects like, you're gonna do super well, and you're gonna do 100% and it's just really high expectations. And then if you don't meet those expectations, I think people just feel like they're a failure. And I think that kind of gets drilled into people's heads, unfortunately. (Nurse B)

They contrasted this with feeling “this is great” after their first practice-based SIM (Nurse B). Similarly, Paramedic G described facilitators in their earlier training who used “a bit of a condescending tone” and observing that “it can affect you throughout the rest of your career and your perspective on simulation” (Paramedic G). These accounts suggest that prior simulation experiences, especially when judgmental or harshly evaluative, can create a residual apprehension that influences whether rural providers view new Sim-IPE offers as opportunities for growth or as an interpersonal risk. This underscores how psychological safety is not only experienced in the moment, but shapes willingness to engage in future simulation-based learning. It also emphasizes the importance of exploring past simulation experience in the prebrief [prebriefing] and explicitly *reframing* Sim-IPE as a safe learning space when inviting those with mixed or negative past experiences. It also calls for mindfulness regarding the role of evaluative Sim-IPE as CPD [Continuing Professional Development].

Taken together, these findings demonstrate that psychological safety in rural Sim-IPE is not a binary condition but a dynamic, relational process that unfolds before, during, and after simulation. Participants described safety as something actively created through facilitation, team

norms, and organizational structures, and threatened by time pressure, hierarchy, and prior negative experiences. Psychological safety, therefore, functioned not only as a prerequisite for learning but as a mechanism through which professional identity, motivation, and team culture were shaped.

Theme 4: Embracing Rural Healthcare

Theme 4 centers on place and how Sim-IPE was experienced as uniquely valuable because it occurred in their rural emergency departments as they actually function and embraced the constraints of staffing, equipment, geography, and local workflows. Participants described the Sim-IPE not only as training, but as a form of systems discovery and organizational learning that made rural realities visible and actionable. They also described it as producing a time-limited but meaningful increase in collective readiness, which they attributed to practicing in their own space with familiar constraints. This motivational ‘boost’ was tied to both team bonding and confidence in navigating their specific rural environment.

4.1: In-Situ Realism, Rural Relevance, and Systems Learning. Having the Sim-IPE conducted *in-situ* (in the emergency care space) at participants' home [primary work] site was repeatedly identified as a powerful educational advantage. Participants consistently described the realism, contextual relevance, and systems-level insights that emerged from conducting simulation training in their own clinical environments, using existing equipment and teams. Physician A reflected on the value of practicing "with our own space, with our own equipment and our own people," emphasizing how this grounded the learning experience in the actual conditions providers would encounter in real emergencies. This authenticity created immediate, concrete relevance for participants while simultaneously exposing latent safety threats and systems vulnerabilities that would have remained invisible in a generic training setting.

Participants across disciplines highlighted the discovery of practical incompatibilities and equipment deficiencies that became apparent during the in-situ Sim-IPE. They described the importance in discovering that “Tube A doesn't fit Tube B” (Physician A) and identifying missing or misplaced equipment, as things that were able to be corrected after the simulation and important to future patient safety. Physician A summarized this insight powerfully: "To have this experience right in our facility that exposes significant but realistic deficiencies in rural trauma and acute care ... there's certainly a benefit in that regard". Beyond equipment compatibility, participants valued the opportunity to practice with their colleagues. As one physician noted, the Sim-IPE days allowed the team to learn "who goes to the board, who does this kind of skill, who feels comfortable in certain roles" (Physician A), highlighting that these insights that would strengthen real-world coordination when emergencies occurred. Another participant's practical discovery that knowledge held historically by individual staff members, such as where specific equipment was stored, could be lost with staff turnover highlighted how in-situ Sim-IPE could also function as a repository and periodic renewal of organizational knowledge (Physician A). These findings provide powerful examples of how the rural in-situ Sim-IPE extended beyond clinical education to what Brazil and Reedy (2024) define as *translational*, where it can diagnose real clinical systems issues that are translated into concrete changes in the practice environment.

Rural relevance and local context were repeatedly highlighted as critical to rural Sim-IPE planning and success. One physician appreciated the intention behind the Sim-IPE, sharing that:

The cases are so applicable, the kinds of things that make us feel weak in the knees, but yet are also things we could absolutely run into and with complications that we will face. And I think part of that is 'cause you kind of frame it to our environment and it seems like there's some care taken to make it just very, very applicable to us in our day-to-day.

(Physician S)

Nurse J noted how important it was that the Sim-IPE reflected their natural team, identifying “that’s real life...I don't have a full team of 10 people at the table running a code with me, that's not real for us". The authenticity of team composition made the learning experience more directly applicable to the actual working relationships participants would rely upon in real life emergencies.

4.2: Rural Context: Constraints, Creativity, and Organizational Responsibility.

Participants articulated the distinctive challenges of rural practice that made in situ Sim-IPE particularly valuable. These constraints included a broad scope of practice, infrequent exposure to critical events, difficulty travelling for courses, and complex contract structures, particularly for physicians that limited time and options for CPD {Continuing Professional Development}. These innate challenges surfaced powerful enablers including local leadership support and local input on in Sim-IPE scheduling. Multiple interprofessional participants noted that their local leadership protected their time by backfilling shifts, paid them equivalent to clinical work, and explicitly endorsed the Sim-IPE as valuable to providers and the team. They described this as crucial to allowing them to balance attending with time off, clinical need and financial limitations. This organizational endorsement positioned simulation not merely as education but as an expression of organizational values and commitment to team development.

Some participants positioned simulation as serving dual purposes: competency support and recruitment/retention. Physician S noted that having simulation "come to us" addressed the barrier that made external education nearly impossible for rural teams; "you can't get a locum to do what we're doing anymore” (Physician S). The in-situ Sim-IPE also represented a strategic investment to highlight the site and enhance the rural learning experience for medical residents

noting:

being part of a place that has that kind of energy. It encourages people to want to come back, even if they don't stay, they want to come back. And I mean, I'm learning more and more how valuable that is. (Physician S)

They also expanded on the broader potential for Sim-IPE to influence rural retention:

it's made a massive difference. And I think if somebody was really not sure about staying in their job and got to have those kind of opportunities where then they get to apply them and feel more solid? That is definitely something I think could help tether somebody to an important job. (Physician S)

Through these accounts, Sim-IPE emerged as an organizational intervention with explicit capacity to reshape rural team experiences, reinforce professional identity, and create the conditions for workforce stability through strategic educational investment.

4.3: Sim-IPE as a Mirror for Roles, Identity, and System Design. Participant narratives portrayed how simulation functioned as a mirror reflecting misalignments between professional training and actual role deployment. A paramedic described discovering during simulation that many of the roles available to them in the rural emergency department did not align with their advanced care paramedic training: “They're putting a paramedic in an RN role, which is OK... but it showed me... I'm not as comfortable as I should be” (Paramedic G). The Sim-IPE debriefing conversations created additional opportunities to surface these role-identity tensions and offered a concrete mechanism for surfacing system-level design issues that might otherwise remain unspoken. Physician S spoke to how the Sim-IPE supported them to expand their professional identity noting “I'm trying to teach residents and ... it helps me be a better teacher.”

Taken together, the sub-themes of theme 4 illustrate how the rural Sim-IPE was experienced not only as education, but also as a place-based system intervention. In situ delivery surfaced rural realities including equipment limitations, role expectations, staffing instability, and workflow vulnerabilities. These were made visible and discussable in ways that off-site training could not. The Sim-IPE experience supported not only individual and team readiness, but also organizational learning and workforce sustainability, positioning it as a form of rural infrastructure rather than an optional educational add-on.

Integration Results

Following independent analysis of the quantitative and qualitative strands, integration was conducted to generate meta-inferences about rural healthcare providers' participation in, and experience of, rural Sim-IPE through the lens of Self-Determination Theory (SDT). Meta-inferences are interpretations drawn from across the quantitative and qualitative data strands (Creswell & Plano Clark, 2018; Fetters et al., 2013). Integration followed Moseholm and Fetters' (2017) simultaneous bidirectional topology, enabling findings from each strand to inform interpretation of the other without privileging one dataset. A joint display (Table 4) was developed to juxtapose SIMS subscale results with qualitatively derived themes, illustrative quotations, and an integration column noting convergence, divergence, or expansion across strands (Creswell & Plano Clark, 2018; Guetterman et al., 2015).

Table 4: Joint Display of Integrated Findings

SIMS Subscale/ SDT Needs	Quantitative pattern (Mean scoring)	Qualitative Theme(s)	Representative Participant quote(s)	Integration
Intrinsic Motivation (IM)	20.8/28	Theme 1: Why I show up; Theme 3 It has to feel safe to stretch	I really enjoy the simulation (Nurse A), It's fun. You get yourself into the role. It's fun (Physician A), "And then afterwards, just like, kind of like a form of elation"(Physician S)	Convergence
Identified Regulation (IR)	25.9/28	Theme 1: Why I Show up, Theme2: Team Motivation, Theme 3 It has to feel safe to stretch, Theme 4: Rural Context	"it's my responsibility as a practitioner" (Paramedic G), That's how you're going to keep your skills up and not panic in a in a in a real emergency (Nurse J). You're that much stronger. Like you built some muscles you didn't have before and all of this insane job is just a tiny bit less scary now (Physician S), I find very important for us to keep up with these skills (Nurse J)." "there's also a sense of responsibility" (Physician A),	Expansion
External Regulation (ER)	11.6/28	Theme 1: Why I show up, Theme 2: Team Motivation, Theme 4 : Rural Context	"If we could... bill as if this was a real patient... that would certainly be an incentive." (Physician A), "So having a point system, it kind of encourages them to go ahead and do some extra education".(Nurse J), "they do pay us to go so I mean, that's a bonus as well." (Nurse A)	Expansion
Amotivation (AM)	5.4/28	Absent	Absent	Convergence
Self-Determination Index (SDI)	45.1/72	Theme 1: Why I show up, Theme 2: Team Motivation, Theme 3 It has to feel safe to stretch, Theme 4: Rural Context	"that's incentive, to have a sense that your voice is heard"(Paramedic G) "My experience has been so positive to the point that I've enrolled in [a simulation facilitation course]"(Nurse J)	Convergence
Autonomy Support -Because I Think it is interesting -By personal Decision	6.6/7 6.5/7	Theme 1: Why I show up, Theme 2: Team Motivation , Theme 3: It has to feel safe to stretch, Theme 4: Rural Context	"You're able to put your input... Everybody can talk." (Paramedic G), "Like when the vibe amongst the team [is] like, this is important, we need to show up for this, this is something that matters to all of us"(Physician A),	Convergence/ amplified
Competence Support -It's good for me.	6.6/7	Theme 1: Why I show up, Theme 2: Team Motivation, Theme 4 Rural Context	"For the next month, everyone on the team feels much more prepared"(Physician A); "cases that are very realistic and force the team to develop approaches and find out what works well and things that we don't know at our site"(Physician A). "the confidence that I'll have to go do those things has changed me as a physician for the better for sure" (Physician S), "extremely relevant for me" (Paramedic G), "The last one I felt a little more confident than I did the first time." (Nurse A),	Convergence/ amplified
Relatedness Support	N/A	Theme 2: Team Motivation, Theme 3 It has to feel safe to stretch, Theme 4: Rural Context	"Just, you know, feeling like you've come through something together" (Physician S). "There is more turnover in staff than there's ever been before" (Physician A), "That was a great thing to help develop interpersonal relationships with our colleagues and [remembering] that we do work together from a rural site to the tertiary site" (Physician A),	Amplified
Psychological Safety	N/A	Theme 1: Why I show up, Theme 2: Team Motivation, Theme 3 It has to feel safe to stretch, Theme 4: Rural Context	"You create such a safe space...there's no hierarchy (Physician S). So at the beginning, I was like kind of fearful....the day goes on, that's not at all the vibe that you get because "it's so relaxed and you guys make it so. You make it fun, you know,? ..it was like, 'we've got this'(Nurse J)"Ahead of time there's some good Ice Breakers, there's the cone of safety that's implemented, and reinforced. There's debriefing afterwards with everyone having an ability to talk and be open" (Physician A), "then suddenly there's kind of a giant exhale"(Physician S).	Mechanism

Note. This table presents a mixed-methods integration of quantitative data from the Situational Motivation Scale (SIMS) subscales and autonomy/competence/relatedness support items, alongside corresponding qualitative themes and representative participant quotes. SIMS subscale scores represent mean scores across all participants (possible range: 4–28). Autonomy and competence support items represent mean scores for single-item measures (possible range: 1–7). The Integration column indicates the relationship between quantitative and qualitative findings: Convergence indicates alignment between quantitative patterns and qualitative themes; Expansion indicates qualitative themes that extend or deepen quantitative findings. IM = Intrinsic Motivation; IR = Identified Regulation; ER = External Regulation; AM = Amotivation; SDI = Self-Determination Index. Relatedness support was assessed qualitatively through psychological safety and team motivation themes rather than quantitative measures.

Integrated Finding 1: Convergence Between SIMS Self-Determination Profiles and Participants' Lived Experience Indicates Predominantly Autonomous Motivation.

Quantitative analysis demonstrated high levels of Intrinsic Motivation (IM) and Identified Regulation (IR), alongside relatively low levels of External Regulation (ER) and very low levels of Amotivation, indicating a predominantly self-determined motivational profile among participants. When integrated with qualitative findings, these scores converged strongly with participants' narratives describing enjoyment, personal endorsement, and perceived relevance of Sim-IPE to real patient care. Participants repeatedly articulated that they chose to be there, valued the challenge, and viewed Sim-IPE as high-yield learning rather than an obligation. The integration of these findings supports the meta-inference that rural healthcare providers' participation in Sim-IPE was primarily autonomously motivated. Further, it expanded understanding of their autonomous motivation, grounding it in professional values, a desire for clinical competence, and a commitment to team and patient care.

Integrated Finding 2: External Events and Structures Functioned as Need-Supportive Rather Than Controlling

SIMS results showed comparatively low External Regulation (ER) scores (M=11.6/28), alongside very high Identified Regulation (IR) scores (M=25.9/28), suggesting that participation was not experienced as coerced or without choice and that participants believed the Sim-IPE experience was good for them. Qualitative data expanded on this finding by revealing that multiple external conditions relative to the Sim-IPE existed for participants and included combinations of paid time, protected scheduling, leadership endorsement, and local delivery. These external events were not interpreted as external pressure; rather, they were seen as signals of organizational valuing and legitimacy. Participants framed compensation and backfilling

positions as recognition that Sim-IPE was valuable and as reducing opportunity costs rather than undermining choice. The integration of these findings suggests that, in this rural context, external and structural supports functioned as autonomy- and competence-supportive conditions rather than as controlling motivators, helping to explain the low ER and high IR scores despite the presence of external incentives.

Integrated Finding 3: Psychological Safety as a Mechanism Linking Motivation, Learning, and Engagement

Although psychological safety was not directly measured in the quantitative strand, integration revealed it as a critical explanatory mechanism linking SIMS-measured motivation with qualitative accounts of engagement and learning. High autonomous motivation scores converged with narratives describing willingness to be vulnerable, engage deeply, and return for future Sim-IPE. Qualitative findings expanded the quantitative results by showing how principles of psychological safety, actively created through prebriefing, facilitation style, and debrief practices, enabled participants to tolerate productive stress, surface uncertainty, and transform anxiety into learning. This integration supports the meta-inference that psychological safety functioned as a key contextual mechanism to satisfy basic psychological needs, thereby supporting autonomous motivation and meaningful engagement in Sim-IPE.

Integrated Finding 4: Place-Based Conditions Amplified SDT Need Satisfaction

Quantitative indicators of strong self-determination indices (SDI), ($M = 45.1, -72$ to $+72$) were further explained by qualitative findings. Participants emphasized the importance of in-situ delivery and rural relevance in the Sim-IPE experience. Participants described having the Sim-IPE conducted in their own emergency departments as uniquely motivating and meaningful, specifically noting it addressed local constraints, exposed system gaps, and strengthened

confidence in managing real emergencies with existing teams and equipment. Integration of these findings suggests that place-based delivery amplified autonomy (through local ownership), competence (through realistic practice), and relatedness (through working with familiar colleagues), expanding and adding dimension to the consistently high autonomous motivation profiles observed in the SIMS data.

Taken together, these integrated findings reveal that rural providers' motivation to participate in Sim-IPE cannot be understood solely through quantitative scores or qualitative narratives. Rather, integration through side-by-side comparison revealed areas of convergence and expanded understanding of the quality of motivation underpinning Sim-IPE participation. SDT explains that these findings reflect a theoretically coherent pattern in which psychological safety, organizational structures, and place-based realities interact to shape participation, engagement, and learning in rural Sim-IPE as CPD.

Chapter 5: Discussion of Findings and Implications

The literature reviewed for this study traces the evolution of health professions education and healthcare simulation, highlighting simulation's growing role as a high-impact learning strategy and the expanding body of evidence supporting its integration into healthcare education and practice. Despite this growth, a persistent gap remains in the theoretical understanding of how and why simulation-based education succeeds, especially in complex practice environments such as rural healthcare. This study addresses that gap by exploring rural healthcare workers' engagement in simulation enhanced interprofessional education (Sim-IPE) through the lens of Self-Determination Theory (SDT). As a theoretical framework, SDT offered a robust lens to view the healthcare workers' motivation to engage in Sim-IPE at the individual and team level. SDT scholarship emphasizes that motivation and sustained engagement are shaped by learning environments and workplace cultures that support autonomy, competence, and relatedness while minimizing interpersonal risk (Ryan, 2023). By integrating qualitative interview data with a quantitative measure of situational motivation, this study explored how practicing rural nurses, physicians, paramedics, and licensed practical nurses experienced Sim-IPE, the quality of motivation guiding their participation, and how these motivational processes could inform the design, delivery, and sustainability of Sim-IPE as continuing professional development (CPD). The data describe a predominantly autonomous motivational profile, suggesting that the rural providers' participation was self-determined and driven by perceived value, relevance, and personal endorsement rather than external pressure. At the same time, the findings caution that such motivation may not be sustained without structural support and integration specific to rural health realities.

The following sections are grounded in the study's research questions and use SDT as the

primary interpretive lens for discussing the quantitative and qualitative findings. It begins by addressing why rural healthcare providers choose to participate in Sim-IPE. It examines participants' predominantly autonomous motivational profiles and situational motivation results and uses SDT and its mini-theories to explain how autonomy, competence, and relatedness were experienced and how they fostered team-level motivation, collective competence, and stereotype reduction. The discussion then considers how participants experienced psychological safety, explaining it not simply as a background condition but as a dynamic mechanism that enabled productive challenge, learning, and internalization. Subsequent sections address the factors that sustain future participation in rural Sim-IPE and how organizational structures, leadership support, and feedback can shape motivation and promote internalization. The discussion concludes by foregrounding the rural context as a unique motivational ecology, arguing that the rural context for this study amplified the relevance of need- support in the Sim-IPE experience. Together, these sections integrate theory, empirical findings, and context and highlight implications for the design, delivery, and sustainability of Sim-IPE as integrated CPD in rural emergency care settings.

5.1 Why Do They Come? Autonomous Motivation and Psychological Need Support

This study explains rural healthcare providers participated in Sim-IPE not simply because it is effective, but because it satisfies core psychological needs for autonomy, competence, and relatedness within the realities of their rural practice. Exploring how Sim-IPE was needs-supportive surfaced the dimensions of their motivation. This shift extends our understanding of rural Sim-IPE as educationally effective and reframes it as motivationally sustainable. Most participants did not describe motivation as a simple matter of enjoyment or obligation, but as an ongoing negotiation between desire to learn, responsibility to patients and colleagues, and the

constraints of rural practice. *Why I show up*, was therefore both deeply personal and inseparable from the broader system in which participants worked.

5.1.1 Autonomous Motivation

Autonomy and autonomy support is central to SDT (Ryan & Deci, 2017; Vansteenkiste et al., 2023). “Autonomy refers to the experience of volition, willingness and authenticity in one’s actions, thoughts and feelings” (Vansteenkiste et al., 2023, p. 85). Autonomous motivation is driven by choice and endorsement and contrasts with controlled motivation, which involves feeling externally pressured and compelled by external factors (Ryan & Deci, 2017). The findings of this study explain that participation in Sim-IPE among rural emergency care teams in Northeastern Nova Scotia is predominantly autonomously motivated. Quantitative findings from the Situational Motivation Scale (SIMS) demonstrated consistently low external regulation (ER) (M: 11.6/28), alongside high Identified Regulation (IR) (M:25.9/28) and low Amotivation (AM) (5.4/28) scores across participants. From an SDT perspective, this motivational profile is theoretically coherent and meaningful. High Identified regulation (IR) reflects engagement in rural Sim-IPE because it is personally valued and aligns with participants goals and professional identity. Participants did not experience the rural Sim-IPE as something they *had to do*, but rather as something worth doing (Pelletier & Rocchi, 2023). The self-determination index (SDI), a composite measure of the subscale scores, is also relatively high (M: 45.1/ 72), supporting that Sim-IPE participation was self-determined, based on interest and personally endorsed values rather than pressure or indifference (Guay et al., 2000). Taken together, these quantitative findings suggest that Sim-IPE participation was predominantly self-endorsed and experienced as valuable. Integration with qualitative findings demonstrated strong convergence, as participants described Sim-IPE as personally important, relevant to their clinical work, reflective of their

team composition, and responsive to the realities of their rural emergency practice. SDT and more specifically Organismic Integration Theory (OIT) explain these findings as indicating the participant's identified the rural Sim-IPE as personally valuable through its support for their autonomy, competence, and relatedness as rural healthcare workers (Pelletier & Rocchi, 2023; Ryan & Deci, 2017). Internalization describes the process through which participants' experienced the Sim-IPE as meaningful, choice-based, and congruent with their lived experiences (Ryan & Deci, 2000b, 2017; Vansteenkiste et al., 2023). Participants reported that the Sim-IPE enhanced their competence and confidence, team functioning, and preparedness for high-acuity, low-occurrence events. They also linked their experience to feelings of professional satisfaction and positive patient outcomes. Basic Psychological Needs Theory (BPNT) explains that participants' experience in rural SimIPE satisfied their innate psychological need for autonomy, competence and relatedness and this allowed for a more internalized connection with the activity. Team-level SDT perspectives extend this conclusion by framing rural interprofessional groups as collective agents whose motivation also depends on shared autonomy, shared competence, and shared relatedness (Grenier et al., 2024). Participants across all professions highlighted the interdependent, team-based nature of rural emergency care. They appreciated the structured Sim-IPE debriefs that invited every discipline's perspective, named collaboration and surfaced hierarchical tensions. They also emphasized that repeated Sim-IPE exposure is needed to maintain individual and collective preparedness and openly shared their intention for future participation.

SDT offers a theoretically grounded explanation for the SIMS subscale scores and participant narratives. It provides an understanding of rural Sim-IPE participation that moves beyond the reputed effectiveness of healthcare simulation and explicitly names the motivational

dynamic and recognizes needs-supportive strategies that favour autonomous motivation and professional well-being (Ryan & Deci, 2017).

5.1.2 Energy as an Outcome Worth Naming

Participants described leaving the Sim-IPE experience feeling “I’m ready” (Physician A) and “like, ‘we got this’” (Nurse J) and even “a form of elation” (Physician S). Physician S elaborated: “I kind of move closer and closer to feeling more competent in this, and that’s super exciting and I really get a lot of energy thinking about that.” This language extends beyond satisfaction or confidence and points toward a form of energized engagement that SDT explicitly conceptualizes as *subjective vitality* - “the energy behind human flourishing” (Frederick & Ryan, 2023, p. 215). Within SDT, subjective vitality is closely linked to autonomous motivation and is understood as a direct experiential indicator of psychological need satisfaction. From a BPNT perspective, autonomy, competence, and relatedness satisfaction mobilize “energy to the self,” supporting not only learning but also sustained engagement and well-being (Vansteenkiste et al., 2023, p. 89). Importantly, SDT distinguishes subjective vitality from short-lived positive affect, positioning it instead as a renewable energy source that supports persistence, and resilience (Ryan & Deci, 2017). In this study, SDT explains that Sim-IPE functioned as a need-supportive learning environment that fostered vitality, helping participants feel both capable and energized to continue engaging in rural emergency care. This suggests Sim-IPE’s value for rural health systems lies not only in what it teaches, but in the motivational energy it generates; energy that helps rural providers continue to show up, care well, and stay, signaling impact beyond education into workforce sustainability.

5.1.3 Making Sense of “Voluntary vs Mandatory”

Qualitatively, all participants endorsed being personally motivated to participate in the

Sim-IPE regardless of the program's voluntary or mandatory status, yet many expressed a productive tension when discussing this conceptually. The narratives reflect an appreciation for choice and self-selection in simulation, and a shared awareness that fear, performance anxiety and self-doubt are barriers for some people. Most participants also felt that mandatory participation could serve as a necessary catalyst for reluctant learners, proposing that once a "reluctant" participant engages in a session and experiences its value, they will want to engage in future sessions. Many participants offered justifications for mandatory programming. A Paramedic G felt, "as a practitioner I wouldn't see any issues with that because I think every practitioner should have a certain sense of responsibility to treat people [to] the best of their abilities. So yeah, it would be easily justifiable" (Paramedic G). A nursing colleague was similarly aligned, stating:

You know, if you mess up, you're not going to kill the patient. So, this is where you need to [make] your mistakes so that in real time you're not going to do it. So I wish these things were mandatory.

Physician S, who personally identified as participating in Sim-IPE, "whether it is mandatory or not", also cautioned, "but people buck at being told what they have to do sometimes". OIT explains the proposed motivational phenomenon based on the positioning of motivational regulators along the autonomy-control continuum. What participants describe as getting reluctant participants "over the hump," with mandatory participation, represents external regulation (I attend Sim-IPE because my manager says I have to). Suggesting participation is a professional responsibility represents introjected regulation (I attend Sim-IPE to set a good example and because my time is paid). Participation driven by seeing the value represents identified regulation (Sim-IPE has personal importance for me and I value it). For the participant who described the

Sim-IPE experience as energizing and transformative, this indicates integrated regulation (Sim-IPE aligns with who I am and energizes me).

Identified and integrated regulation are the most internalized (and autonomous) forms of regulation and predict more sustainable engagement (Pelletier & Rocchi, 2023). Overall, the participants in this study measured very high Identified Regulation for the Sim-IPE experience, suggesting needs for autonomy, competence and relatedness were being supported. Taken together, this suggests that organizational mandates or education policy for rural Sim-IPE could work, but only if it was maintained as a high-value, psychologically safe learning experience that satisfied participants need for autonomy, competence and relatedness. Sustainability, however, depends on shifting the reluctant Sim-IPE participant from ‘I have to do this’ to ‘I want to do this because it makes me a safer, more competent clinician’ (Pelletier & Rocchi, 2023; Ryan & Deci, 2017). While this is conceptually sound, it is also operationally fragile as participants on the more controlled end of the spectrum will be at considerable risk to experience even subtle variability in Sim-IPE design and delivery as needs frustrating, which will make internalization more challenging. This supports (1) the need for a clear, reliable, and reproducible approach to rural Sim-IPE for CPD, with needs-supportive design, delivery, and debriefing structures, and (2) a cautious approach to authority that prioritizes needs-supportive external structures over mandates. This aligns with narratives that explored the external events that influenced the rural Sim-IPE experience and will be considered more in the next section.

5.1.4 Why Rewards Did Not Backfire.

SDT positions that external rewards can undermine autonomy and diminish intrinsic motivation (Reeve, 2023) Low External Regulation (ER) scores in this study, if taken in isolation, suggest that rural providers did not primarily attend Sim-IPE because of external force.

Integration of qualitative data expanded on this finding by illustrating that several external events or conditions, relative to the Sim-IPE, occurred for participants and influenced their motivation to participate. These include differing combinations of paid time, protected scheduling and leadership endorsement. These things could be considered external regulators, yet they were not reflected in the ER scores. Rather, the narratives describe that these elements were experienced by the participants as supportive and enabling of the Sim-IPE. Further, they regarded them as evidence that the health organization valued them and their educational efforts. Cognitive Evaluation Theory (CET) explains this phenomenon. The participants “cognitively evaluat[ed]” the meaning of the external elements as autonomy supportive (Reeve, 2023, p. 37). This process of interpreting the psychological meaning of external influences assigns a “functional significance” to the event and determines if it is experienced as more controlling or autonomous. How it is experienced determines if it diminishes or promotes intrinsic motivation (Reeve, 2023). The functional significance is characterized as predominantly informational (experienced as supporting autonomy and competence) controlling (experienced as intended to pressure or coerce), or amotivating (threatening competence) (Reeve, 2023, p. 37). CET explains the functional significance of the external supports and structures in the Sim-IPE experience as informational and supporting autonomy and competence. Participants framed compensation and backfill as recognition that Sim-IPE was valuable and viewed it as reducing opportunity costs rather than undermining choice. This provides an explanation for the low external regulation scores observed on the SIMS, despite the presence of external elements and rewards. When participants experienced organizational support and Sim-IPE promotion as reducing barriers, providing structure, and offering value without conditionality, it enhanced intrinsic motivation and promoted autonomous engagement. By contrast, rewards and external supports that are

experienced as controlling, in particular performance-contingent rewards, undermine autonomy and diminish intrinsic motivation (Reeve, 2023). This is a key insight of CET; any external event or structure can be autonomy supportive, controlling or amotivating depending on how it is experienced (Reeve, 2023, p. 41). Simply put, is the behavior regulated by the reward, or is it inherently valued for its own sake? It is cautioned, however, that external events or rewards that are contingent on performance will invariably diminish internal motivation by positioning the reward as an endpoint (Ryan & Deci, 2000a). Taken together, the low External Regulation (ER) findings, the rich participant narratives and CET converge to suggest that paid time and organizational endorsement did not crowd out autonomous motivation in this Sim-IPE program. Instead, these supports functioned as informational and enabling. This provides a theoretical explanation of why external rewards and accountability measures in this study were compatible with predominantly autonomous motivational profiles, and why participants viewed such supports as facilitating meaningful engagement in rural Sim-IPE. In rural contexts, where opportunity costs and access barriers are high, CET can help guide the use of rewards and conditions to remove barriers that would otherwise constrain choice and engagement. This was evident in physician narratives where organizational endorsement was experienced as misaligned with clinical realities. Unlike their interprofessional colleagues, physicians did not have a clear mechanism to integrate the Sim-IPE program with their clinical and contractual responsibilities. This often meant the Sim-IPE was scheduled alongside already overloaded clinical days or resulted in significant clinical catch-up. Physician A expressed their “opportunity cost” and frustration of not being able to participate in the Sim-IPE without impacting contracts and clinical time. CET predicts that this autonomy-frustrating condition will decrease intrinsic motivation to participate and highlights the motivational impact of current system barriers to

interprofessional CPD.

5.2 Beyond the Script: Psychological Safety as a Motivational Mechanism.

Psychological safety in the rural Sim-IPE program emerged as a dynamic relational experience co-created by the facilitators and participants and grounded in SDT's basic psychological needs. It was operationalized through skilled prebriefing, case delivery, and debriefing. The facilitators honored autonomy through transparency and choice, supported competence through optimal challenge and constructive feedback, and nurtured relatedness through humility and inclusiveness. SDT explains that these conditions support the internalization of the Sim-IPE as valuable and identity-affirming, making participation more autonomous and more likely to be sustained in the future (Ryan and Deci, 2017). This reframes psychological safety as a socio-contextual mechanism that enables autonomy, competence, and relatedness, and moves us beyond the script 'this is a safe space' to embodied praxis.

Psychological safety in healthcare simulation pedagogy functions simultaneously as a foundational condition and an aspirational ideal. This apparent contradiction underscores a more contemporary understanding of psychological safety as a relational construct that cannot be unilaterally imposed or guaranteed. Rather, it must be co-created through deliberate, responsive facilitator practices, learner agency and engagement (Gormley & Nestel, 2025; Purdy et al., 2022; Rudolph et al., 2014). Building on Edmondson's (1999) seminal definition of psychological safety as "a shared belief held by members of a team that the team is safe for interpersonal risk taking" (p. 354), contemporary simulation scholarship reframes this from facilitators *creating* safety to facilitators and learners actively *co-creating* it through intentional communication and practices. (Gormley & Nestel, 2025). This concept of co-construction through specific prebriefing and facilitation practices aligns closely with Self-Determination

Theory's (SDT) three basic psychological needs: autonomy, competence, and relatedness (Davies, 2024; Deci & Ryan, 2000). Explicitly linking SDT and healthcare simulation can connect the “psychologically safe learning environment” to an intentional “needs-supportive learning environment,” in which psychological safety functions as a motivational mechanism with meaning rather than as a script. Participant narratives from the rural Sim-IPE program highlight how facilitator behaviors operationalize psychological safety principles. Physician S described how facilitators, “put yourselves at our level and like make it as if everybody's just like colleagues, there's no hierarchy”, exemplifying relatedness-support. Participants emphasized facilitator humility and vulnerability. They noticed when facilitators admitted mistakes and identified as learners in the rural space. This is an example of what Somerville et al. (2023) term "intellectual candour," where educators authentically share their own vulnerabilities to build trust and model that not-knowing is acceptable (p. 1354). This contrasts with psychologically unsafe environments, characterized by judgment and condescension, that actively defy relatedness and trigger defensive behaviors. (Rudolph et al., 2014; Rudolph, Simon, Rivard, et al., 2007). Participants noted facilitator patience despite language barriers and how they sought everyone's input in the debriefing. This demonstrated autonomy-support through equitable voice and leader inclusiveness (Edmondson, 2011; Edmondson & Lei, 2014). Other healthcare simulation researchers have cited facilitator competencies as critical moderators of psychological safety and learning (Kolbe et al., 2020; Rudolph et al., 2014).

5.2.1 Psychological Safety and Culture: A Recursive Loop in Rural Sim-IPE

Consistent with Edmondson's conceptualization, psychological safety in rural Sim-IPE was experienced as a team-level climate that supported engagement and vulnerability (Edmondson 2018). It emerged from shared norms around feedback, facilitator behaviors that

modeled humility, and organizational signals that valued learning, collectively shaping how participants interpreted interpersonal risk within the rural Sim-IPE experience. These shared norms and expectations reflect the groups culture (Schein and Schein, 2017). This positions that psychological safety and rural culture emerged in this study not as separate constructs, but as dynamically intertwined processes. Participants' narratives referencing local learning culture, organizational norms, team communication patterns, and rural practice realities suggest that Sim-IPE functioned within a broader cultural ecology that shaped how interpersonal risk-taking was perceived and enacted. These findings suggest a recursive relationship. Rural cultural norms influenced the degree to which participants felt safe to speak, question, and stretch, *and* psychologically safe Sim-IPE experiences simultaneously reinforced and shaped those cultural norms. In rural settings characterized by close interpersonal relationships, professional overlap, and limited anonymity, interpersonal risk carries heightened stakes. Participants described fears of losing credibility or carrying simulation missteps into real-world collegial relationships. Yet when facilitators explicitly modeled humility, flattened hierarchy, and structured debriefs using collective language, participants experienced what Rudolph et al. (2014) describe as a "safe container" (p. 339). These experiences did more than protect learners; they actively modeled alternative cultural scripts around error, feedback, and interprofessional communication and collaboration. In this sense, psychologically safe Sim-IPE did not simply occur within rural culture; it participated in its ongoing construction. According to Schein and Schein (2017) any group with a shared history inevitably develops a culture, and that culture becomes stronger when the group has existed longer, has relatively stable membership, and has gone through intense shared experiences together. Applied to the rural ecology in this study, this could explain why small rural ED teams often have strong, specific local cultures. They tend to have

long-standing staff, relatively small and stable rosters, and a history of emotionally intense clinical events (rare but high-stakes cases, community tragedies, resource-limited crises) that are lived through together. These conditions magnify both the protective aspects of culture (loyalty, mutual support) and the potential constraints (powerful norms about who speaks, how error is handled, and what is considered acceptable performance).

From an SDT perspective, a psychologically safe team climate provided contextual support for relatedness and autonomy, reducing defensiveness, and enabling authentic engagement. In turn, repeated experiences of need-supportive simulation reinforced emerging norms of collegial respect, shared learning, and distributed expertise within rural teams. Psychological safety thus operated both as a product of culture and as a mechanism through which culture was incrementally reshaped. Further, psychologically safe Sim-IPE operated as a mediating condition linking rural culture to motivational quality. It enabled autonomy to be experienced as voice rather than exposure, competence development to be framed as growth rather than evaluation, and relatedness to extend across professional boundaries. In this way, rural Sim-IPE reflected and actively shaped the motivational climate of the rural emergency care environment. These recursive loops may be particularly salient in rural contexts, where smaller teams and tighter relational networks amplify both the risks and the rewards of interpersonal vulnerability. Designing rural Sim-IPE with this recursive loop in mind suggests preemptively exploring site specific culture and considering how it will underpin prebriefing, case selection, and debriefing delivery.

5.2.2 Interprofessional and Collaborative Competence as an Expression of SDT Need

Satisfaction

Organismic Integration Theory (OIT) explains that people will inherently self-regulate

their behavior based on the social practices around them, and if that socializing context is experienced as need supportive, they will internalize those behaviors (Pelletier & Rocchi, 2023, pp. 56–57). The rural Sim-IPE program created an interprofessional social context and paired it with interprofessional facilitation skills that promoted interprofessional and collaborative competencies as case objectives. Participant narratives highlighted respectful, inclusive communication, perspective taking, and non-hierarchical understandings of interprofessional work as embedded in their Sim-IPE experience. This explicit socialization of interprofessional competencies was combined with high-acuity emergency cases that enabled mastery of personal skills, and opportunities to observe and experience other professionals' knowledge and skills in action toward the shared care of a simulated patient. This socialized interprofessional collaboration created the context for interdependent success, explicitly acknowledging professional identity. Taken together, this environment promoted self-regulation and internalization of interprofessional and collaborative competencies, because they were experienced as supporting autonomy, competency, and relatedness (Pelletier & Rocchi, 2023). OIT also predicts that the participants who internalized interprofessional and collaborative competencies are more likely to share them with others in future interactions, since internalization makes them more a part of the self, predicting that the participants in this study will bring those interprofessional skills to their future team interactions (Pelletier & Rocchi, 2023). This could have a significant impact on rural learning and collaborative culture. To summarize, by creating spaces where team members experienced shared purpose, mutual trust, and psychologically safe participation, Sim-IPE met participants basic need for relatedness at the individual and team levels. This enhanced motivation to participate, willingness to speak up, and the likelihood that collaborative behaviors will transfer to future learning experiences and

clinical practice.

Beyond improvements in collaborative competence, there were also findings that suggested the Sim-IPE addressed deeper relational barriers to interprofessional collaboration by reducing professional stereotypes. The productive tension for the physician participant who surfaced and faced their assumptions about simulation potentially being easier for nurses than physicians was a powerful example of challenging the traditional hierarchical framing of interprofessional work. This potential for simulation to reduce professional stereotypes is also supported in the simulation literature. Liaw et al. (2014) demonstrated that an interprofessional simulation-based education program focusing on nurse-physician communication produced significant improvements in attitudes toward collaboration. Both medical and nursing students exhibited reduced stereotype perceptions and more positive attitudes toward nurse-physician collaboration after participating in realistic deteriorating-patient scenarios. Their findings revealed that the experiential, high-pressure nature of simulation allowed students to witness first-hand the competencies and contributions of other professions, thereby challenging preconceived notions about professional roles and hierarchies (Liaw et al., 2014). This supports the notion that the shared experience of managing complex clinical scenarios together fostered appreciation for interprofessional competencies that might otherwise remain invisible in siloed education and practice. Physician A's reflection demonstrates the kind of cognitive disruption and perspective-shifting that Liaw et al. (2014) identified as central to the effectiveness of simulation in reducing professional stereotypes. By recognizing and appreciating that nurses had *different* stressors and responsibilities, Physician A moved from a hierarchical framing to a more collaborative awareness of professional responsibilities across collaborative teams. This reflective moment illustrates how needs-supportive Sim-IPE created conditions for

transformative learning. Transformative learning describes the process through which individuals critically examine their assumptions, recognize the inadequacy of existing frameworks, and construct a more inclusive and nuanced understanding (Mezirow, 2000). Self-Determination Theory explains this as experiencing need-supportive learning conditions that foster openness, perspective-taking, and internalization (Ryan & Deci, 2017). Basic Psychological Needs Theory (BPNT) emphasizes that relatedness; that experience of mutual respect, care, and belonging, is a prerequisite for openness to others' perspectives (Vansteenkiste et al., 2023). Participants' descriptions of psychologically safe prebriefing and debriefing that acknowledged and explored interprofessional perspectives suggest that the rural Sim-IPE supported relatedness across professional boundaries, enabling more genuine engagement with others' expertise. Cognitive Evaluation Theory (CET) further explains what enabled these transformative shifts (Reeve, 2023). The Sim-IPE experience made competence visible across professional roles under authentic, high-pressure conditions. This furthered satisfied a sense of team competence and created the conditions to counter stereotypes that often persist in routine clinical environments where expertise is unevenly observed. When combined with autonomy-supportive facilitation and structured debriefing, these conditions enabled the kind of cognitive dissonance associated with transformative learning to be engaged in reflectively rather than defensively (Reeve, 2023). Taken together, these findings suggest that rural Sim-IPE can do more than improve collaborative skills. It can be used as a strategy to create the motivational and relational conditions that support the internalization of interprofessional respect, shared identity, and collaborative practice. This is particularly salient in rural settings where professional isolation may otherwise allow stereotypes to persist unchallenged.

5.3 Sustainability Through Internalization and Needs-Supportive System Integration

Self Determination Theory (SDT) explains the sustainability of rural Sim-IPE for CPD as a direct function of participants' internalization of its value (Ryan & Deci, 2017). “Internalization is the process of taking in values, beliefs, or behavioral regulations from external sources and transforming them into one’s own” (Ryan & Deci, 2017, p. 182). More simply put, it shifts the driver of a behavior from ‘because I have to’ to ‘because it fits with who I am’. More internalized regulations are more autonomous and reliably predict greater persistence and sustained engagement over time, extending motivation beyond a single episode (Pelletier & Rocchi, 2023). This contrasts with controlled motivation that is externally regulated and experienced as separate from the self, making them more fragile and easier to abandon (Deci & Ryan, 2000). The high IR [Integrated Regulation] and IM [Internal Motivation] scores in this study indicate that participants have largely internalized the value of Sim-IPE and are self-determined in their attendance. When participants consistently experience facilitators who actively support autonomy, competence, and relatedness, psychological safety shifts from a momentary feeling into an internalized trust in the learning environment itself. From an SDT perspective, this motivational profile is expected to sustain attendance in future sessions, provided the programming continues to nourish participants basic psychological needs.

5.3.1 Individual Internalization to System Integration

The participant narratives make the sustainability of rural Sim-IPE visible at two levels. At the individual CPD level, the majority report clear intentions to attend future sessions because these sessions help them feel more confident, less anxious, more connected to their team, and better prepared to care for rural emergency patients. At the system level, some participants connected the rural Sim-IPE to the sustainability of their rural emergency practice. Physician S commented on the impact of the Sim-IPE and its sustainability for them:

I just think the more exposure, the more experience, the more listening to people's experiences, the more of that, the better. And the [happier]I am to show up for a shift and excited I am to try to navigate challenges and stuff like that, you know. And the less terrified I am every day.

They followed with reflections on how organizational support for quality education at rural sites is particularly important “to help people feel confident and not afraid when they go to work all the time. Confident that they're gonna be able to do the task that's being asked of them” (Physician S), and that this could help keep them rural. This shifted the analysis from sustaining motivation for Sim-IPE to considering how needs-supportive rural Sim-IPE contributes to sustaining the rural workforce.

5.3.2 Rural Sim-IPE as a Health Human Resources (HHR) Strategy

Multiple participants expressed that their rural Sim-IPE experiences strengthened their confidence and comfort level in continuing to work in a rural emergency department. This surfaced a connection between quality Continuing Professional Development (CPD) and the retention of rural healthcare workers. While rural retention was not specifically measured in this study, the signal is noteworthy given the chronic staffing vulnerabilities and pressures on rural providers, which make retention increasingly precarious. Connections between continuing education and sustaining a rural health workforce do exist in the literature. Liu & Mao, (2020) completed a cross-sectional survey of over 4000 rural healthcare workers from 11 different provinces in China. They examined how exposure to continuing education relates to work engagement and commitment and demonstrated that access to meaningful continuing medical education is strongly linked to rural providers' commitment to remain in their rural jobs. This provided empirical evidence that CPD is significantly and positively associated with rural

healthcare workers' work commitment and lower turnover intention. Their work positioned CPD as a workforce strategy, not just a competency requirement, demonstrating that rural workers with adequate access continuing education feel greater pride, and dedication to their work and are significantly less likely to consider leaving (Liu & Mao, 2020). The qualitative findings among rural healthcare workers in Nova Scotia line up closely with Liu and Mao's (2020) quantitative model. Importantly, Liu and Mao (2020) also highlight that rural healthcare workers continuing education needs differ from those of their urban colleagues, and supported models for distributed, rural-relevant CPD systems. This place-based conviction was unanimous among rural Sim-IPE participants, who described rural practice as fundamentally different from urban practice, particularly in terms of resources and exposure patterns. Schram et al (2023, 2025) provided empirical evidence linking simulation-based CPD to wellness. They conducted a cohort study and controlled follow-up and found that simulation-based team training was associated with statistically significant reductions in sick leave. The proposed mechanism involved strengthening collegial relationships and creating supportive work environments that buffered against chronic stress. While this is a promising alignment, it is fragile without a broader system commitment.

5.3.3 Needs Supportive Rural CPD and Rural Motivational Ecology

The work of Liu and Mao (2020) and this study illustrate that rural CPD is unique. Participants in the Sim-IPE repeatedly emphasized that rural emergency practice feels fundamentally different from urban practice. They describe the looming trepidation of infrequent but high-acuity events, delays in transport, limited backup, and pronounced skill decay without practice. Physicians further noted the access barriers to traditional CPD, highlighting the realities of arranging coverage and the increasing difficulty of finding locums. Within this unique

environment, the rural Sim-IPE was partially embedded into local schedules and functioned as a needs-supportive system intervention. Needs support for autonomy (by respecting rural realities and reducing CPD burden), competence (by rehearsing exactly the kinds of rare, stressful events they face with the resources they actually have), and relatedness (by strengthening the real teams who respond together) were context dependent. This predicts that if organizational structures are aligned with these needs, Sim-IPE would not only support individuals and teams but also becomes part of rural service-delivery planning. This integration could support motivation for CPD, and the commitment to rural practice. Framing rural Sim-IPE as a driver of health service delivery also aligns this project with broader calls to re-position CPD as a core health-system function (Arnold Rehring et al., 2025). Price (2023) argues that CPD is uniquely placed to help clinicians and organizations respond to complex, evolving healthcare problems when it is deliberately designed to be practice-based, collaborative, and embedded within local systems of care. Extending this systems lens, Arnold Rehring et al. (2025) demonstrate how intentionally integrating CPD, continuing education, and quality improvement within a single organizational framework can align learning activities with concrete service priorities. This creates feedback loops between frontline experience, educational design, and measurable changes in care processes. In this study, rural providers described the Sim-IPE as a mechanism to rehearse rare, high-acuity events, strengthen team relationships, and surface system gaps that directly shape patient care. Rural Sim-IPE is well-positioned to be a theory informed, systems-integrated CPD strategy, where simulation cases are explicitly chosen to address local risks and feed back into workflow and policy changes. This aligns with evolving principles of translational simulation that recognize simulation as part of the learning health system infrastructure, directly linking to QI and local data (Brazil, 2017; Brazil & Reedy, 2024). Brazil & Reedy (2024) define

translational simulation as simulation deliberately designed to diagnose and improve real clinical systems with an explicit expectation that insights will be translated into concrete changes in practice, policy, or the care environment. When viewed alongside systems-integrated CPD frameworks that call for education to be directly linked to organizational priorities and quality improvement, rural in situ Sim-IPE offers a practical mechanism. (Arnold Rehring et al., 2025; Price, 2023; Price et al., 2021).

5.4: Rurality as a Unique Motivational Ecology

In this study, rural place consistently surfaced as contextually relevant with unique geographical, continuing education and emergency care delivery considerations. Rather than being the backdrop of the Sim-IPE experience, it emerged as needs- relevant. Contextual realities like smaller interdependent teams with broader scopes, geographic isolation, community embedment, and limited resources that could have been needs- frustrating were instead validated by context-matched education. As a result, the rural context emerged as needs- relevant, and served to amplify the experience of autonomy, competence, and relatedness support. Rather than inhibiting motivation, contextual realities heightened the relevance, immediacy, and interpersonal stakes of the Sim-IPE experience, thereby amplifying core SDT motivational processes.

5.4.1 Rural-Based Autonomy

Participants consistently described in-situ Sim-IPE as autonomy-supportive precisely because it was embedded within their clinical environments and shaped by local realities. In this study, autonomy was supported when teams recognized themselves and their environment in the simulation scenarios. Practicing in their own emergency departments, with their own equipment and workflows, allowed participants to experience the learning as *with us* rather than *to us*. The

opportunity for teams to influence case selection, adapt roles realistically, and work within the actual constraints they face daily reinforced a sense of ownership over both the learning process and its outcomes. This local tailoring contrasts with generic, externally designed education that may feel imposed or misaligned with rural practice. In this way, rural in-situ delivery functioned as an autonomy-supportive structure by aligning educational goals with participants lived professional realities.

5.4.2 Rural-Based Competence

Competence was supported by engaging in evidence based simulated emergency medicine patient cases embedded in realistic rural constraints that accounted for limited staff, equipment, and overlapping roles. Participants repeatedly emphasized that contextual alignment made learning feel authentic and worthwhile. Simulation allowed them to “build muscles” (Physician S) for situations they knew they could face, supporting a sense of mastery that was both credible and transferable. SDT explains that competence is enhanced when challenges are optimally matched to the learner’s context and skill level. In rural Sim-IPE, the alignment between scenario demands and actual practice conditions created this optimal challenge. The experience of successfully navigating complexity together reinforced participants belief that they could manage future emergencies in their setting. This collective sense of readiness extended beyond individual skill acquisition to a shared confidence in team capability.

5.4.3 Rural-Based Relatedness

Relatedness was particularly amplified by the rural context, where professional relationships are often long-standing, overlapping, and embedded in small communities. Participants emphasized the value of practicing in their rural teams, noting that working through high-stakes scenarios with familiar colleagues deepened trust, rapport, and mutual

understanding. Participant narratives described a shared emotional journey of anticipation, stress, reflection, and accomplishment that fostered a sense of collective identity and cohesion. The rural in-situ Sim-IPE leveraged existing relational networks and extended them across sites. This created an interesting dynamic where psychological safety was both more fragile and more powerful. The risk of embarrassment or loss of credibility was higher, but so was the potential for meaningful connection. This was supported through autonomy-supportive facilitation and embodied principles of psychologically, and reinforced participants sense of belonging and commitment to one another. Beyond individual and team learning, participants described Sim-IPE revealing system-level issues that were difficult to surface through other mechanisms. Equipment incompatibilities, unclear role expectations, and fragile workarounds became visible during simulation and could be addressed collectively. In this sense, simulation functioned as an educational and translational strategy providing actionable feedback on how their rural emergency systems actually functioned under pressure (Brazil & Reedy, 2024). This systems-level insight further supported motivation by connecting learning to meaningful change. Participants experienced Sim-IPE not only as an opportunity to improve themselves, but as a way to improve the system they worked in. From an SDT lens, and more specifically Cognitive Evaluation Theory (CET) and Goal Contents Theory (GCT), this explains the high measure of and strengthens participants identified regulation and self-determination for the Sim-IPE experience (Bradshaw, 2023; Ryan & Deci, 2017). Participants endorsed Sim-IPE participation because it aligned with their professional values around patient safety, teamwork, as well as professional identity and professional aspirations. Participants also positioned rural Sim-IPE as a form of rural workforce support and recognition. The effort to bring the Sim-IPE to rural sites was interpreted as organizational recognition of the challenges and importance of rural

emergency care. This recognition, combined with protected time, compensation, and leadership endorsement, communicated that rural providers and their development mattered. This supported relatedness within teams, and between providers and the organization itself. Importantly, some participants suggested that these experiences could influence decisions about staying in rural practice. While this study did not measure retention outcomes, the narratives indicate that need-supportive, place-based educational experiences may help tether providers to rural roles by strengthening confidence, a sense of belonging, and professional identity.

5.4.4 A Theoretical Contribution: SDT Through Place

Taken together, these findings suggest that Self Determination Theory (SDT) processes are contextually intensified in rural settings. The rural context sharpened the relevance of autonomy, competence, and relatedness by increasing the stakes of practice, the visibility of interdependence, and the consequences of system failure. Rather than deter intrinsic motivation, rural constraints made need satisfaction more meaningful. This work contributes a contextualized application of Basic Psychological Needs Theory by demonstrating that while needs are universal, the rural context amplified the salience of the autonomy, competence, and relatedness satisfaction. This suggests that motivation was not just subject to context but actually worked through it.

5.5 Conclusion

This study set out to address a linguistically simple but theoretically underexplored question in healthcare simulation and continuing professional development: Why do rural healthcare workers come? Situated within a rural emergency care context and interpreted through the lens of Self-Determination Theory, the findings suggest that sustained participation in Sim-IPE is about the internalization of its value in a need-supportive, autonomous learning

environment. Across quantitative and qualitative findings, autonomous motivational profiles predominated. SDT provided a useful framework for understanding participation and its sustainability and explained how autonomy, competence, and relatedness were supported through locally delivered, contextually relevant, and psychologically safe simulation experiences. In this way, Sim-IPE functioned not only as an educational intervention but as a professional practice, reinforcing and aligning with participants' identities as rural emergency care providers. The rural context was central to this interpretation and emerged as holding particular motivational significance.

This study answers the call for theory-informed approaches to healthcare simulation research and demonstrates how SDT can be used to understand participation in rural Sim-IPE. By foregrounding motivation quality rather than participation data alone, this work responds to calls to move simulation research beyond justification toward deeper understanding. This allowed a shift in focus from if rural Sim-IPE is effective to how it is effective, allowing us to better understand its current and future application. For educators, leaders, and policymakers, these findings underscore: (1) the relevance of Self-Determination Theory and autonomous motivation in Healthcare Simulation research and application (2) the potential for in situ Sim-IPE to bridge interprofessional education, collaborative practice and workplace learning (3) the potential to leverage rural Sim-IPE to establish and sustain autonomous learning environments that naturally extend into autonomous rural health learning systems.

5.51 Knowledge Dissemination and Implications for Rural Practice

Findings from this study suggest that rural healthcare workers in Northeastern Nova Scotia are autonomously motivated to participate in rural Sim-IPE. Immediate next steps include publishing this work in a reputable simulation and/or IPE [Interprofessional Education] journal

and extending the study and motivational inquiry provincially to map the broader motivational profile. This would further support knowledge translation and inform scale-up. Other opportunities in this space include expanding participation into facilitation, thereby building local capacity for Sim-IPE leadership. Nurse J, for example, described her rural Sim-IPE experience as driving her choice to register for simulation facilitation training. This self-sustaining, simulation facilitation capacity building approach can directly support autonomy, competence, and relatedness provided organizations resource and legitimize these new facilitator roles. To that end, this project builds on work underway within the health organization to embed Sim-IPE as part of rural system planning. Presenting these findings to provincial practice and quality leadership councils supports ongoing efforts to position Sim-IPE as a strategic tool for rural quality and safety. Beyond the immediate findings, this work also suggests creative avenues for mobilizing Sim-IPE within rural health systems. Existing simulation days could be more intentionally linked to structured leadership development, using debriefs not only to review clinical care but also to rehearse shared leadership, escalation pathways, and difficult conversations about system gaps with managers and medical leadership present. This would provide more direct feedback of the educational experience to support translation to practice. There is also an opportunity to embed short, lower-resource, visually enhanced tabletop scenarios into routine workflows, including shift-based team huddles and post-event reviews, to extend the reach of Sim-IPE and normalize team reflection between larger formal events (Queensland Health, 2024). Finally, expanding the rural Sim-IPE across sites through regional networks and cross-site learning collaboratives would build on the current model and strengthen rural-to-rural knowledge exchange. Taken together, these strategies position rural in-situ Sim-IPE not only as an effective educational intervention, but as a practical lever for building

motivated rural teams and a more learning-oriented health system.

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Appendices

Appendix A: Situational Motivation Scale

Appendix B: Invitation to Participate

Appendix C: Consent Form

Appendix D: Interview Guide

Appendix E: St. FX REB Approval Letter

Appendix F: NS Health Ethics Approval Letter

Appendix G: Healthcare Simulation Standards of Best Practice

Appendix A: Situational Motivation Scale

Directions: Read each item carefully. Using the scale below, please circle the number that best describes the reason why you are currently engaged in this activity. Answer each item according to the following scale: 1: *corresponds not all*; 2: *corresponds a very little*; 3: *corresponds a little*; 4: *corresponds moderately*; 5: *corresponds enough*; 6: *corresponds a lot*; 7: *corresponds exactly*.

Why are you currently engaged in this activity?

- | | |
|---|---------------|
| 1. Because I think that this activity is interesting. | 1 2 3 4 5 6 7 |
| 2. Because I am doing it for my own good. | 1 2 3 4 5 6 7 |
| 3. Because I am supposed to do it. | 1 2 3 4 5 6 7 |
| 4. There may be good reasons to do this activity, but personally I don't see any. | 1 2 3 4 5 6 7 |
| 5. Because I think that this activity is pleasant. | 1 2 3 4 5 6 7 |
| 6. Because I think that this activity is good for me. | 1 2 3 4 5 6 7 |
| 7. Because it is something that I have to do. | 1 2 3 4 5 6 7 |
| 8. I do this activity but I am not sure if it is worth it. | 1 2 3 4 5 6 7 |
| 9. Because this activity is fun. | 1 2 3 4 5 6 7 |
| 10. By personal decision. | 1 2 3 4 5 6 7 |
| 11. Because I don't have any choice. | 1 2 3 4 5 6 7 |
| 12. I don't know; I don't see what this activity brings me. | 1 2 3 4 5 6 7 |
| 13. Because I feel good when doing this activity. | 1 2 3 4 5 6 7 |
| 14. Because I believe that this activity is important for me. | 1 2 3 4 5 6 7 |
| 15. Because I feel that I have to do it. | 1 2 3 4 5 6 7 |
| 16. I do this activity, but I am not sure it is a good thing to pursue it. | 1 2 3 4 5 6 7 |

Coding: Intrinsic motivation (IM): Items 1, 5, 9, 13, Identified regulation (IR): Items 2, 6, 10, 14
 External regulation (ER): Items 3,7, 11, 15 Amotivation (AM): Items 4, 8, 12, 16
Self-Determination Index (SDI) = (2 x IM) + IR – ER – (2 x AM)

Appendix B: Invitation to Participate

(To be sent to individuals via email by researcher).

Study: Why Do They Come? Exploring Rural Healthcare Workers Engagement in Simulation-Based Interprofessional Education: A Mixed Methods Case Study

Researcher Name: Tania Sullivan,
Graduate Student, Department of Adult Education, St. Francis Xavier University.

Dear Participant,

I am inviting you to participate in a study exploring the factors that influence rural healthcare professionals' motivation to participate in simulation-based education for continuing professional development. Specifically, I am interested to know more about the factors that influenced your decision to take part in the mobile simulation learning being offered at your rural emergency department. Your perspective as a participant is unique and tremendously valuable. This study is undertaken as part of a Master's Degree in Adult Education at St. Francis Xavier University, Nova Scotia

Who can Participate?

Participation in the study will be offered to all healthcare workers who sign up to participate in the Mobile Rural Simulation (Mobile Rural EM Sim-IPE) Program being delivered to rural Emergency Departments across Northeastern Nova Scotia and who:

- Are a healthcare professional currently working (full-time or part-time) in the rural emergency department hosting the Mobile Rural EM Sim-IPE experience and
- Have participated in at least one other Mobile Rural EM Sim-IPE session in the past.

What is the Study About?

The goal of this study is to understand what motivates rural emergency care workers who choose to participate in simulation-based education as part of their ongoing professional development. A main component of the study will focus on how the decision to participate is linked to the different elements of psychological safety and individual motivation. A better understanding of what influences engagement in this type of education will be critical to how we might use it as a strategy for our healthcare workers and teams into the future

What will I be expected to do?

If you agree to participate in this research study, you will:

1. Completing a short online tool that you will receive by email, the night before your scheduled Mobile Rural Sim-IPE experience.
2. Within 4 weeks of your Mobile Rural Sim-IPE experience, you will participate in a one-to-one online interview with the researcher. This will be scheduled at a time that is convenient for you. You will be asked questions about your profession, gender identity, and your experience with simulation-based education. We will discuss the reasons you chose to participate in the Mobile Rural Sim-IPE experience and how the experience influenced your likelihood to participate again in the future. The interview is intended to feel like an informal conversation.

The interview will be audio and video recorded. After the interview, I will transcribe it verbatim and provide you with a transcript so you could verify if it captured your thoughts and words accurately.

Following your interview, you will receive a \$50 Amazon gift card along with my sincere gratitude for your time.

How Much Time Will It Take?

The online tool is anticipated to take less than 3 minutes to complete. The interview will take approximately 45-60 minutes.

Will Anyone Know What I Said?

This study values your confidentiality. The online tool is anonymous and submitted through Microsoft Forms. Regarding the interviews, I will be the only person who knows what you said. All participants' names will be replaced with pseudonyms (fake names), and your identity will be kept confidential. Interview recordings and transcripts will be kept on a password-protected computer, and the OneDrive cloud service. Any hard copies produced will be kept under lock and key in my home office for two years after completion of this graduate research, after which time they will be destroyed.

What if I change my mind and want to withdraw?

It is my priority to ensure that your participation in this study is by choice. You are also free to withdraw at any time and without explanation and all the information you provided will be destroyed. There will be no negative consequences if you withdraw. Specifically, your participation in the Mobile Rural Sim-IPE is NOT impacted.

What are the Potential Benefits and Harms Associated with Participation in the Study?

I openly acknowledge my formal leadership positions in Simulation and Emergency Medicine and that while they are important in my overall identity, I come to this work as the student-researcher, hoping to engage you as the knowledge holder. There are no anticipated benefits or risks to your employment or positioning within Nova Scotia Health.

Participating in this study may benefit you by providing an opportunity to reflect on your experience and practice as they relate to your Mobile Rural Sim-IPE experience. You may also benefit from knowing that your perspective and the information you provide will contribute to the broader understanding of simulation-based continuing professional development (CPD) and the factors that shape rural practitioners' choice to participate. I estimate the risk to you in participating in this study is low, however, recognize that there exists the possibility of risk we are not yet aware of.

There are no known harms associated with participation in this study. However, there may be harms related to unintended breaches in confidentiality relative to the nature of the information you provide in the interviews, however, you will be given an opportunity to review the interview script for accuracy and inclusion prior to data analysis.

Where Do I Get Questions Answered? I would be very happy to answer any questions you have and will regularly monitor both listed emails.

Researcher: Tania Sullivan, Graduate Student, Dept. Adult Education, St. Francis Xavier University,

Supervisor: Dr. Carole Roy, Department of Adult Education, St. Francis Xavier University

Chair Research Ethics Board: Dr Christine Lomore

Appendix C: Consent Form

I have received a copy of the “Invitation to Participate” for the research project titled:

“Why Do They Come? Exploring Rural Healthcare Workers Engagement in Simulation-Based Interprofessional Education: A Mixed Methods Case Study”

I have read the information provided and understand it. The researcher answered all the questions I had. I understand that my identity will be protected by the processes outlined in the Invitation to Participate and that I can leave the study at any time without explanation or consequence.

I understand that I will have the opportunity to review and validate my interview script and that any shared data will be de-identified and/or anonymized.

I _____ voluntarily agree to participate in this research project.
(print name)

Participant Signature _____

Date: _____

Address:

Phone:

Email:

Researcher: Tania Sullivan
Graduate Student, Department of Adult Education, St. Francis Xavier University.

*Two copies are provided. Please sign and return one to me and keep the other for your records.

Appendix D: Interview Guide

The interview format is semi-structured with scripting support.

Introduction script/ setting the stage: 5 mins

I want to take a moment to thank you for taking the time to meet with me today. I want to start by positioning us to the goals of this research project- namely to explore what motivates rural healthcare workers across Eastern Zone that are participating in simulation-based interprofessional education- specifically the mobile rural Emergency simulation program.

We are seeking a better understanding of the factors that influence participants decision to participate so that we can best situate simulation as a strategy for the continuing education of our teams.

I am interested in the things that influenced your decision to participate and your experience participating in the Mobile Rural Simulation Session that was completed on ___ <date> ___.

This research is centered around the simulation participant, and what motivates you as a practising HC practitioner to participate in simulation-based interprofessional education. It is not evaluating me or any other creators of the simulation program- the program is simply the vehicle to help us explore how participants experience and connect with simulation as continuing education.

I truly value the unique perspective and experience that you bring to this space. The interview should take less than an hour. I will be recording the session to ensure I don't miss any of the valuable insights you have to offer. I am the only person who will know your responses are yours, as your interview will be assigned to a fake name here-forward. This is to ensure that any results we report do not identify you as the respondent.

Please remember that you are not obliged to answer any question you are not comfortable with, you are free to ask any clarifying questions you need, and you can choose to end the interview at any point. Do you have any questions before we start?

Section 1: Background/demographics (3-5 mins)

- Which hospital site do you primarily work at?
- What is your professional background/ role in your rural Emergency Department?
- How long have you been a physician/ nurse?
- How long have you worked in the emergency department?
- Do you identify as Male, Female, Nonbinary, or another identifier you wish to name, or do you prefer not to identify?
- Alias name preference

Section 2: Your approach to CPD (Continuing professional development) (5 mins)

- How would you describe your approach to continuing professional development or continuing education?
- What strategies do you currently use to meet your CPD requirements?
- What role do you think your employer/ healthcare organization should play in your continuing professional development?
- What are things that motivate you to participate in a continuing education opportunity?
Potential probing if needed: Related to the content? The method- hands on, virtual, team or individual? The location? The timing?
- How do you think continuing professional development is unique or different for rural professionals?

Section 3: Simulation Based Education (10 mins)

Next, I would like to better understand your experience with simulation-based education. (10 Mins)

- How much experience do you have as a participant in a healthcare simulation? Less than 5 previous sim experiences, 5-10, or more than 10.
- Was simulation a mandatory part of your undergraduate/ degree program? If so, how does your simulation as a practicing clinician compare to your experience as a student?
- Have your previous simulation experiences been mainly interprofessional (members of more than one profession participating and facilitating) or have they been mainly with members of the same profession? Which do you prefer and why?
- How many times have you participated in the Mobile Rural Sim-IPE sessions?
- Please tell me about your experience in the Mobile Rural Sim-IPE sessions- acknowledging that I am one of the creators of the course, and that could influence your comfort to express your feelings, I wish to openly state that the authenticity of experience and your comfort to share that is the most valuable element of this work. I invite you to see me in this space as the researcher looking to collect the information that rings true to the participants – and not to me the course developer.
- Did you feel the experience reflected real life?
- Are there any pieces that stand out? And why?
- Are there things that you took away from the simulation experience that have changed how you practise in your rural emergency department?
- Are you planning to go to future Mobile Rural Sim-IPE sessions when offered?

- What elements of your experience impacted your decision to participate again? /not to participate again?

Section 4: Dimensions of motivation (10 mins)

In its simplest form, motivation can be described as the reason someone does something. A simple definition but a complex topic! The next phase of our conversation will focus on the different factors that influenced your motivation to participate in the Mobile Rural Sim-IPE sessions.

- Do you feel your decision to participate in the Mobile Rural Sim-IPE session was voluntary? Can you explain what that means to you?
- Did you feel any pressure to participate?
- What motivated you to take part?
- What things supported your participation?
- What things were barriers to your participation?
- What did you see as the value of the simulation session for you?
- Did you experience any fun or joy associated with the sim experience? Describe.
- Did your experience in the simulation impact how you see yourself as a nurse/ physician/ other?

Abbreviated Form

Section 5: Dimensions of Psych Safety (10mins)

Psychological Safety was defined by Amy Edmondson as “the belief that one will not be punished or humiliated for speaking up with ideas, questions, concerns, or mistakes, and the team is safe for interpersonal risk-taking”

Focusing on your experience in the Mobile Rural Sim-IPE sessions:

- Can you tell me about the interactions you had with the other participants? Did you feel it was a psychologically safe learning environment? why?
- Were there any elements of the team dynamic that stood out for you during the scenario? What about during the debrief?
- How did the team environment impact your confidence in filling your role?
- Did you have any opportunities where you felt you took risks or spoke up? Can you tell me about that?
- Were there any factors that prevented or discouraged you from speaking up?

Section 6: Recommendations/ Summary: (5mins)

- Based on your experiences, what do you see as the key factors that influence healthcare workers motivation to participate in the Mobile Rural Sim-IPE sessions?
- What role do you think simulation- based interprofessional education has in the continuing professional development of rural healthcare workers?
- Based on your experiences, what recommendations or changes would you suggest to improve the Mobile Rural Sim-IPE sessions?

Closing

- Ask the participant if they would like to share any additional insights, they think are relevant to the study.
- Thank them for their participation and reiterate the importance of their input.

Appendix E: Research Ethics Board Approval (St. Francis Xavier University)



February 02, 2026

Dr. Tania Sullivan (Principal Investigator)
Faculty of Education\Adult Education
St. Francis Xavier University

ROMEO File #: 27274

Project Title: Why Do They Come? Exploring Rural Healthcare Workers Engagement in Simulation-Based Interprofessional Education: A Mixed Methods Case Study

Dear Tania Sullivan,

The Research Ethics Board (REB) Chair has cleared the above cited proposed research project for ethics compliance with the Tri-Council Guidelines (TCPS) and St. Francis Xavier University's ethics policies. In accordance with the Tri-Council Guidelines, your project has been cleared for one year. At the end of each year, the REB will ask if your project has been completed and, if not, what changes have occurred or will occur in the next year. This will be required each year following approval until the project is reported to be completed, up to a maximum of five years.

Renewal Due-2026/08/14

You are reminded of your obligation to advise the REB of any adverse event(s) that occur during this one-year period. An adverse event includes, but is not limited to, a complaint, a change or unexpected event that alters the level of risk for the researcher or participants or situation that requires a substantial change in approach to a participant(s).

If there is funding attached to your research, please contact and inform her of your ethics approval.

You are also reminded that all changes that might affect human participants must be cleared by the REB. For example, you must report changes in study procedures or implementations of new aspects in the study procedures. These changes must be sent to the undersigned prior to implementation.

On behalf of the Research Ethics Board, I wish you continued success in your research.

Sincerely

Dr. Christine Lomore
Professor and Chair
STFX Research Ethics Board

Appendix F: Research Ethics Board Approval (Nova Scotia Health)

Nova Scotia Health Research Ethics Board
Centre for Clinical Research, Room 117
5790 University Avenue
Halifax, Nova Scotia, Canada B3H 1V7

October 31, 2025

Dr. Tania Sullivan
Medicine\Emergency Medicine

Dear Dr. Sullivan:

RE: Why Do They Come? Exploring Rural Healthcare Workers Engagement in Simulation-Based Interprofessional Education: A Mixed Methods Case Study

REB FILE #: 1030991

Your request for Annual Approval has been reviewed by an assigned Co-Chair and on behalf of the Nova Scotia Health Research Ethics Board. I am pleased to confirm the Board's approval to continue this project up to the expiry date, November 01, 2026.

Reminder: *Please be advised that adherence to the NS Health Human Research Protection Program (HRPP) [Standard Operating Procedures](#) (SOPs) is a mandatory requirement for all research conducted and approved at Nova Scotia Health. The Research Quality team will actively monitor compliance starting March 1, 2026, to ensure that research activities align with these SOPs.*

Sincerely,

Dr. Chris MacKnight, Executive Chair
This statement is in lieu of Health Canada's Research Ethics Board Attestation:

Appendix G: Healthcare Simulation Standards of Best Practice

Citation with live links to all the Healthcare Simulation Standards of Best Practice Documents:

INACSL Standards Committee, Persico, L., Wilson-Keates, B., DiGregorio, H., Decker, S., & Xavier, N. (2025). Preamble: Grounded in Excellence: The Cornerstone Healthcare Simulation Standards of Best Practice®. *Clinical Simulation in Nursing*, 105, 101774. <https://doi.org/10.1016/j.ecns.2025.101774>

INACSL Standards Committee, Hallmark, B., Brown, M., Peterson, D., Fey, M., Decker, S., Wells-Beede, E., Britt, T., Hardie, L., Shum, C., Arantes, H., Charnetski, M., & Morse, C. (2021). Healthcare Simulation Standards of Best Practice® Professional Development. *Clinical Simulation in Nursing*, 58, 5-8. <https://doi.org/10.1016/j.ecns.2021.08.007>

INACSL Standards Committee, Persico, L., Ramakrishnan, S., Wilson-Keates, B., Catena, R., Charnetski, M., Fogg, N., Jones, M. C., Ludlow, J., MacLean, H., Simmons, V. C., Smeltzer, S., & Wilk, A. (2025). Healthcare Simulation Standard of Best Practice® Prebriefing Preparation and briefing. *Clinical Simulation in Nursing*, 105, 101777. <https://doi.org/10.1016/j.ecns.2025.101777>

INACSL Standards Committee, Watts, P.I., McDermott, D.S., Alinier, G., Charnetski, M., Ludlow, J., Horsley, E., Meakim, C., & Nawathe, P. (2021). Healthcare Simulation Standards of Best Practice® Simulation Design. *Clinical Simulation in Nursing*, 58, 14-21. <https://doi.org/10.1016/j.ecns.2021.08.009>

INACSL Standards Committee, DiGregorio, H., Todd, A., Blackwell, B., Brennan, B. A., Repsha, C., Shelton, C. M., Vaughn, J., Wands, L., Wruble, E., & Yeager, C. (2025). Healthcare Simulation Standards of Best Practice® Facilitation. *Clinical Simulation in Nursing*, 105, 101776. <https://doi.org/10.1016/j.ecns.2025.101776>

INACSL Standards Committee, Decker, S., Sapp, A., Bibin, L., Chidume, T., Crawford, S. B., Fayyaz, J., Johnson, B. K., & Szydlowski, J. (2025). Healthcare Simulation Standards of Best Practice® The Debriefing Process. *Clinical Simulation in Nursing*, 105, 101775. <https://doi.org/10.1016/j.ecns.2025.101775>

INACSL Standards Committee, Charnetski, M., & Jarvill, M. (2021). Healthcare Simulation Standards of Best Practice® Operations. *Clinical Simulation in Nursing*, 58, 33-39. <https://doi.org/10.1016/j.ecns.2021.08.012>

INACSL Standards Committee, Miller, C., Deckers, C., Jones, M., Wells-Beede, E., & McGee, E. (2021). Healthcare Simulation Standards of Best Practice® Outcomes and Objectives. *Clinical Simulation in Nursing*, 58, 40-

44. <https://doi.org/10.1016/j.ecns.2021.08.013>

INACSL Standards Committee, Xavier, N., Quinn, J., Amidon, B., Barnes, R., Bronson, S., & Dunning, L. (2025). Healthcare Simulation Standards of Best Practice® Professional Integrity. *Clinical Simulation in*

Nursing, 105, 101778. <https://doi.org/10.1016/j.ecns.2025.101778>

INACSL Standards Committee, Rossler, K., Molloy, M., Pastva, A., Brown, M., & Xavier, N. (2021). Healthcare Simulation Standards of Best Practice® Simulation-Enhanced Interprofessional Education. *Clinical Simulation in Nursing*, 58, 49-

53. <https://doi.org/10.1016/j.ecns.2021.08.015>

INACSL Standards Committee, McMahon, E., Jimenez, F. A., Lawrence, K., & Victor, J. (2021). Healthcare Simulation Standards of Best Practice® Evaluation of Learning and Performance. *Clinical Simulation in Nursing*, 58, 54-

56. <https://doi.org/10.1016/j.ecns.2021.08.016>

INACSL Standards Committee, Molloy, M., Holt, J., Charnetski, M., & Rossler, K. (2021). Healthcare Simulation Standards of Best Practice® Simulation Glossary. *Clinical Simulation in Nursing*, 58, 57-65. <https://doi.org/10.1016/j.ecns.2021.08.017>

INACSL Standards Committee. (2021). Healthcare Simulation Standards of Best Practice®. *Clinical Simulation in Nursing*, 56, 66. <https://doi.org/10.1016/j.ecns.2021.08.018>