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Original Article

The impact of interprofessional simulation experiences in occupational and physical therapy education: a qualitative study[1]

O impacto da experiência de simulação interprofissional na formação da terapia ocupacional e da fisioterapia: um estudo qualitativo

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Abstract

Interprofessional experiences are an essential part of preparing occupational and physical therapy students for clinical practice. Simulation has been used to help students achieve clinical competencies, including interprofessional competencies. The following study aimed to explore the students' perceptions of an interprofessional simulation experience, identify opportunities for the integration of interprofessional experiences across the curriculum, and document the design elements that positively influenced the outcomes of the interprofessional simulation experience. An exploratory case study design was used to examine the study aims. Focus groups were used to collect qualitative data from 85 graduate-level occupational and physical therapy students. Thematic analysis was completed on the focus group transcripts. Results from the students indicated that they perceived the interprofessional simulation experience to be beneficial to the development of affective skills and role identity. The students identified a desire for increased exposure to interprofessional education experiences throughout the curriculum. The design and implementation of the interprofessional simulation were positively received by students due to the emphasis on creating a realistic experience and despite initial student anxiety related to the experience. Interprofessional simulation is a valuable and appropriate method for engaging students in interprofessional education and developing interprofessional skills based on the results of the current study. Documenting the process of designing and implementing an interprofessional simulation may assist other programs in developing interprofessional simulation opportunities for healthcare students.

[1]This study was approved by the IRB at the University of St. Augustine for Health Sciences.

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Keywords: Interprofessional Education, Simulation Design, Students, Occupational Therapy, Physical Therapy.

Resumo

As experiências interprofissionais são uma parte essencial da preparação dos alunos de fisioterapia e terapia ocupacional para a prática clínica. A simulação tem sido usada para ajudar os alunos a alcançar competências clínicas, incluindo competências interprofissionais. O estudo teve como objetivo explorar as percepções dos alunos de uma experiência de simulação interprofissional, identificar oportunidades para a integração de experiências interprofissionais em todo o currículo e documentar o processo de concepção e implementação de uma experiência de simulação interprofissional. Grupos focais foram usados para coletar dados qualitativos de 85 estudantes de graduação em fisioterapia e terapia ocupacional. A análise temática foi concluída nas transcrições dos grupos focais. Os resultados indicaram que os alunos perceberam a experiência da simulação interprofissional como benéfica para o desenvolvimento de habilidades afetivas e identidade de papel profissional. Os alunos identificaram um desejo de maior exposição às experiências de educação interprofissional ao longo do currículo. O projeto e a implementação da simulação interprofissional foram recebidos positivamente pelos alunos devido à ênfase na criação de uma experiência realista, apesar da ansiedade inicial do aluno relacionada à experiência. Conclui-se que a simulação interprofissional é um método valioso e apropriado para envolver os alunos na educação interprofissional e desenvolver habilidades interprofissionais. Documentar o processo de concepção e implementação de uma simulação interprofissional pode ajudar outros programas no desenvolvimento de oportunidades de simulação interprofissional para estudantes da área de saúde.

Palavras-chave: Educação Interprofissional, Simulação, Estudantes, Terapia Ocupacional, Fisioterapia.

Introduction

According to the World Health Organization (2010), interprofessional education (IPE) is essential to developing healthcare practitioners who can effectively collaborate and practice in increasingly complex healthcare situations. Healthcare professionals often lack adequate practice and training with authentic interprofessional collaboration (IPC) during the didactic portion of their education. IPC experiences can be provided through experiential learning sessions (Coker, 2010) during which students effectively transform their knowledge and understanding of a concept by moving through Kolbs' stages of experiential learning towards an ability to apply their ideas to the world around them in practical situations (Kolb et al., 2001).

Simulation based learning (SBL) provides healthcare professionals with the opportunity for active, hands-on engagement with realistic clients in a safe environment that reduces the safety-risk associated with clinical care (Gordon et al., 2001). The authentic environment of a SBL experience deepens the meaning of the interaction for learners and provides similar benefits to other types of experiential learning activities (Gibbs et al., 2017). Because of the realistic, but controlled nature of SBL experiences, students are

allowed to practice skills associated with the core competencies for interprofessional practice established by the Interprofessional Education Collaborative, or IPEC (Nichols et al., 2019).

Interprofessional Education Collaborative (2016) published a set of core competencies for IPC practice, providing health professionals with actionable strategies for improving the patient experience, improving the health of populations, and reducing the per capita cost of health care by engaging in IPC. The four competencies include:

- Values/ethics for interprofessional practice- working with others while demonstrating mutual respect;
- Roles/responsibilities- address the needs of individuals and populations by recognizing the unique roles of all health professions, including one's own;
- Interprofessional communication- communicating with others and using a team approach to care;
- Teams and teamwork- provide care in a safe and effective manner by developing relationships with other team members and working together to provide care.

The goal of IPEC is to gather representation from health professions to develop consistent competency recommendations that could be used to guide curriculum development. Overtime, the initial competencies have been revised to reflect current evidence, incorporate a growing body of involved health profession organizations, and expand the focus of care to include population health outcomes (Interprofessional Education Collaborative, 2016). IPEC's widely disseminated competencies helped frame the purpose and design of this research study to develop curriculum content to further the growth of IPC among students.

The current healthcare system places increased demands on entry-level clinicians to possess higher-level skills in an interdisciplinary team (Coker, 2010). In recent years, a significant amount of literature has been published on the benefits of IPE for allied health professionals; a variety of studies have examined the effectiveness of simulation as a means for improving interprofessional education (Collins et al., 2020; Costello et al., 2018; Olson & Bialocerkowski, 2014). These investigations have focused on the clinical practice outcomes of simulation experiences, the feasibility, and design of interprofessional simulation experiences, and the students' reactions to the simulation experience (Collins et al., 2020; Nichols et al., 2019; Olson & Bialocerkowski, 2014; Shoemaker et al., 2011; Titzer et al., 2012). Many of these studies were quantitative and did not explore the students' reactions and perceptions to the experience through qualitative means (Nichols et al., 2019; Olson & Bialocerkowski, 2014; Titzer et al., 2012).

While IP SBL has been established as a potentially valuable educational opportunity, there continues to be limited research exploring what the students perceive as personal and professional outcomes from their participation in IP SBL (Collins et al., 2020). The purposes of the current qualitative study were:

1. To explore the perceptions of occupational and physical therapy students who participated in an IP SBL experience;
2. Identify potential opportunities for integration of IP SBL in PT and OT curriculums;

3. Document the design elements of an IP SBL that positively influence the outcomes of the experience.

Literature Review

SBL has been extensively investigated in recent years with an emphasis on the benefits of integrating SBL in healthcare education (Collins et al., 2020; George & Quatrara, 2018; Roberts & Goodhand, 2018). Several studies have focused on the use of SBL to impact healthcare students' interprofessional competency (Collins et al., 2020; Roberts & Goodhand, 2018; Sergakis et al., 2016). Many studies have focused on quantifiable changes in students interprofessional competency, and the preliminary data indicates a positive change in student's interprofessional competency (Collins et al., 2020; Olson & Bialocerkowski, 2014). The variety of approaches to integrating IP SBL in curriculums and the lack of understanding regarding the students' perceptions of IP SBL experiences makes the current literature difficult to generalize to all healthcare students and difficult to replicate because of the lack of information on designing IP SBL (Collins et al., 2020; Roberts & Goodhand, 2018). This literature review will explore the current research on the impact of IP SBL on healthcare student's interprofessional competency, students' perceptions of the impact of IP SBL on their interprofessional competency, and the challenges and opportunities for designing IP SBL experiences in healthcare curriculums.

The use of SBL to positively impact the development of the four competencies set forth by Interprofessional Education Collaborative (2016) by focusing on the development of necessary psychomotor skills, communication skills, and attitudes is emerging in the literature (Chown & Horn, 2017; Collins et al., 2019; Gellis et al., 2019; Robertson & Bandali, 2008; Shoemaker et al., 2011). What has been less frequently studied is the impact of using a collaborative IP approach with SBL to intentionally facilitate the development of the Interprofessional Education Collaborative (2016) competencies by bringing together physical and occupational therapy students. The intentional design of IP experiences that allow students to learn from one another in real-time creates a deeper and more meaningful learning experience than teaching the same skills to different disciplines separately (Hammick et al., 2009; Wamsley et al., 2012).

Collins et al. (2020) conducted a mixed- methods study examining the students' perceptions of an IP SBL. After analyzing the qualitative data, the researchers identified that students perceived the IP SBL experience as beneficial to their learning with respect to their professional roles, responsibilities, and identity because of the collaboration and communication among students. The study pointed out the lack of literature qualitatively exploring the perceptions of physical and occupational therapy students' experiences in IP SBL and the need to further investigate this topic in additional cohorts of students (Collins et al., 2020).

Simulation-based IP education, combined with other forms of multidisciplinary education, has been shown to improve attitudes towards healthcare teams, increase commitment to improving IP communication skills, and enhance IPC (Gellis et al., 2019). High fidelity simulated learning (HFS) between nurses and resident physicians has been shown to improve knowledge acquisition and teamwork skills (George & Quatrara, 2018).

Sergakis et al. (2016, p. 1) found an interprofessional SBL experience involving students from eight different disciplines improved "[...] teamwork, communication, preparation and confidence, and professional identity". With the literature pointing towards the positive implications of adopting IP SBL for healthcare educational purposes, it is vital to investigate the perceptions and reactions of students who engage in these experiences. This investigation could help determine the nuances that support or inhibit student learning and are not easily identified in quantitative literature.

Roberts & Goodhand (2018) investigated the reactions of healthcare students in Scotland using focus group qualitative research methods to explore their reactions to a single, forty-five-minute, simulated IP experience. Participants included students in adult nursing, diagnostic radiography, occupational therapy, physiotherapy, dietetics, and pharmacy. The researchers identified the following themes: reality of interactions between professionals and clients, the reality of the situation (reflecting the physical environment of the simulation), enhanced understanding of the roles of other professions, a respect for the priorities of other professions in relation to patient care and each other's roles, and the importance of good communication. According to the healthcare students, the IP SBL provided a positive learning experience despite their short exposure to the learning experience (Roberts & Goodhand, 2018). While other studies have indicated a high level of IP SBL exposure is necessary to see effects, this study demonstrated an impact on students' perceived benefits of IP SBL even with short-term exposure. Achieving a positive impact on student learning with fewer resources and class time may increase the feasibility and sustainability of IP SBL experiences for healthcare programs. Roberts & Goodhand's (2018) results supported the need for continued investigation of the benefits of short-term exposure to IP SBL for students

While an abundance of literature points to the utility of SBL to develop IPE competencies, the experience of the students has been less frequently documented through qualitative means (Collins et al., 2020; Olson & Bialocerkowski, 2014).

Understanding student perceptions and lived experience of participation in the IP SBL will inform the integration of IPE within the curriculum. Understanding the students' perceptions will also assist instructors in designing IP SBL experiences to meet the needs of the learners and allow institutions to understand the intricacies of implementing IP SBL to positively impact the student experience. A few recent studies have begun to fill the gap of understanding the effectiveness of IP SBL through qualitative methodology (Collins et al., 2020; Costello et al., 2018). However, further investigation is needed to replicate preliminary findings and to determine the generalizability of current findings to broader cohorts of students.

Designing and executing an IP SBL is time-consuming and resource-intensive (Gough et al., 2012). Understanding what components of the IP SBL students perceive as being the most and least beneficial is important to help instructors prioritize components of the learning experience. Balancing an understanding of students' perceptions through qualitative analysis with quantitative data to support the impact on student learning and competency achievement is an essential complementary task. This study aimed to define the students' perceptions of an IP SBL experience in OT and PT education and to identify opportunities for sustainable and feasible IP SBL development and curricular integration by further exploring the design elements that positively influenced the student's experience.

Methods

This exploratory case study was conducted at a health science graduate institution over two trimesters with approval from the University's institutional review board (IRB). The simulation scenario was designed by the occupational and physical therapy faculty who taught the two courses in which the IP SBL experience would occur. All four-faculty involved in this simulation, henceforth referred to as researchers, were trained and experienced in best- practices for simulation design and implementation, including professional development in debriefing skills. This study was conducted with students in the 2nd year of their respective programs and enrolled in the occupational or physical therapy course addressing adult/older adult care in an inpatient setting. For both physical and occupational therapy students, these courses occurred directly before their field experiences and approximately three-quarters of the way through the course.

Development of the IP SBL

The initial step of the research study was to develop a simulation scenario. The researchers developed a simulation scenario detailing an interprofessional interaction with a client who had experienced a stroke and was being seen in an inpatient hospital. The scenario development included writing primary learning objectives aligned with the scenario and the course and program learning objectives. The objectives of this scenario were:

1. Learners will collaborate to achieve inter and intra-professional goals while performing a cohesive treatment experience for the simulated patient;
2. Learners will articulate the roles of the profession and rationale for co-treatment to a simulated patient and caregiver;
3. Learners will demonstrate appreciation for the other discipline verbally and non-verbally, before, during, and after care.

The researchers also developed a detailed plan of the learners' expected actions, a student pre-brief, a description of the simulation room setup and equipment needs, and mock patient charts. Additionally, scripting and training of the simulated actors took place to ensure the most realistic experience possible. Debriefing questions were developed using the Plus/Delta model of debriefing (Cheng et al., 2021). This model encourages students to actively self-assess the performance of things that went well, and things that could have been improved (Cheng et al., 2021).

Recruitment procedures

Two weeks before the simulation experience, the researchers posted a notice in the online learning management system for the course alerting students of the opportunity to participate in a research study in connection with the required IP simulation. In the online and in-person announcement, the researchers explained that all students would participate in the IP simulation as part of the course. The researchers explained that students who wished to participate in the research study would also engage in a 45- minute focus group interview after the IP simulation scenarios were completed. One week before the IP simulation scenario, students were provided with the informed consent documents in the

lab class, after the researchers explained the study. The researchers left the room and provided an envelope where students could return the signed informed consent documents to mitigate students feeling pressured to agree to participation in the study.

A total of 85 students enrolled in the two courses during both trimesters in which the simulation study took place. All students were required to participate in the IP simulation experience; however, only students who elected to participate in the research study and signed an informed consent document took part in the focus groups. Each trimester all students enrolled in the courses were randomly divided into three separate simulation experiences to be conducted consecutively on one day. The simulation scenarios lasted approximately 15 minutes, with 30 minutes allotted for debriefing and a 5-minute gap between groups for resetting the scenario. Students were informed not to discuss the simulation experience until all groups had completed the simulation.

Implementation of the IP SBL

At the onset of each simulation experience, one physical therapy, and one occupational therapy student were randomly selected to be the participants in the simulation scenario. The entire class was provided with the pre-brief information about the client, and the two active participants were provided a chart with the same information in a written format. The two active participants were directed to a small meeting room where they had five minutes to discuss their plan for working with the client, while the other students actively observed their interaction through synchronous video. After five minutes, a researcher walked the students to the simulated treatment room, and the students engaged in the simulation experience. Present in the simulation room were two standardized participants, one of whom played the patient and one who played the patient's family member. The students were instructed to introduce themselves to the client and perform a functional co-treatment activity. Observing students could see and hear both the initial conference between the students and the subsequent treatment session. After approximately 15 minutes, a researcher ended the simulation scenario. After the simulation scenario, the students participated in a 30-minute facilitated debriefing to discuss the simulation experience.

Focus groups

Students who agreed to participate in the research study were randomly assigned to one of four focus groups, each led by one of the researchers. Students were randomly assigned, so there could be a mix of students who were part of each simulation experience to mitigate any concerns about the impact of the success of the simulation on student feedback. Each investigator used the same focus group questions to facilitate the sessions, which took place concurrently for 45 minutes in separate rooms. The researchers agreed upon the focus group questions before the sessions and discussed best practices in conducting a focus group to ensure consistency and credibility. The focus group sessions were audio-recorded and stored on password-protected computers for future transcription and coding.

Focus groups were used in this study because research suggests they are appropriate when researchers want to understand the student experience concerning a particular teaching intervention (Breen, 2006). Additionally, the use of the focus group allowed the

students to have a dominating role in the discussion of the educational experience rather than the investigator (Krueger & Casey, 2015). Further, the researchers planned to analyze students' experiences related to the IP SBL experience to determine avenues for future research (Stewart et al., 2009). In designing the focus groups, the researchers limited group size to approximately 15 students. While it is optimal to have less than 10- 12 students in a focus group (Breen, 2006), the researchers felt it necessary to have slightly larger group sizes to accommodate all students in concurrently running focus group sessions. Larger group sizes ensured that all students participated in the research for an equal amount of time and prevented a small group of students from delayed focus group participation following the IP simulation experience. A total of 124 students participated in the research study over the course of the two trimesters.

Every attempt was made to ensure the students felt comfortable and at ease before the focus group started (Breen, 2006). Researchers did acknowledge the potential bias they may have had by being faculty members invested in the students' learning experiences. Though the researchers who conducted the focus groups were faculty for the courses in which the simulation occurred, their involvement in the course varied from very little interaction with the students to being the lead faculty of the course. Also, the researchers only taught within their respective program and had no authority over students of the other discipline. Frequent conversations among the faculty members to ensure their personal biases, assumptions, and values were not unduly influencing how the researchers conducted or analyzed the data were held to ensure trustworthiness and demonstrate reflexivity. Reflexivity is the acknowledgement of the researchers that they are active participants in the research process and may have influence over the engagement of participants, and that the researcher's biases may influence the data analysis (Curtin & Fossey, 2007).

Credibility, or the internal validity of the student was established by confirming the accuracy of the focus group transcripts (Curtin & Fossey, 2007). Accuracy was established by having each researcher review a different audio recording for a focus group they did not lead and review the transcript for accuracy. Credibility of the data analysis was completed through member-checking when the accuracy of the themes developed from the data analysis were confirmed with ten students who participated in the focus groups. Member checking is a strategy to ensure credibility by ensuring the data is congruent with the experiences of the participants (Curtin & Fossey, 2007). Researcher triangulation was used to ensure credibility. Researcher triangulation is the use of more than one skilled researcher to analyze the data (Curtin & Fossey, 2007). A limitation of the study was the lack of participant demographic data collected. The lack of demographic data influences the transferability of the data, though the number of participants, their enrollment in a graduate physical or occupational therapy program, and their course of study within the curriculum for each program was documented and should allow for some transferability to other physical and occupational therapy graduate programs.

The focus groups started with the investigator restating the purpose of the focus group and research study, which was to investigate student perceptions of the IP SBL experience, identify opportunities for IP SBL integration within the curriculum, and evaluate the process of developing and implementing an IP SBL experience. The researchers assured the students they were free to speak about the experience candidly and honestly. The researchers reinforced no names or identifying information would be collected from them.

The students were told the focus groups would last approximately 45 minutes, an audio recording was taking place, and researchers were there to facilitate the conversation, but students should feel free to share their thoughts and ideas in a casual manner. Focus group questions were developed based on a lengthy review of the literature and identification of gaps in previous research that this research intended to fill (Costello et al., 2018; Nichols et al., 2019; Roberts & Goodhand, 2018; Shoemaker et al., 2011). The questions used in the focus group were as follows:

1. How did you feel during the simulation experience?
2. What did you think about completing the simulation experience with another profession?
3. What did you like best about the interprofessional simulation experience?
4. What would you do differently for future interprofessional simulation experiences?
5. How did the interprofessional simulation experience compare to previous interprofessional experiences?
6. Any other comments you would like to make about the simulation experience?

The researchers agreed to minimize their involvement in the focus group conversation by providing only the questions listed above, queuing students to contribute or move on from a topic as needed to keep pace and attention, and to provide little to no utterances of approval or disapproval throughout the focus group through both verbal and non- verbal communication. After the completion of the focus group, the audio recording was turned off. The investigator thanked the students for their time and ended the session.

Data analysis

All audio recordings were transcribed verbatim and shared between the four researchers. Thematic analysis was used to develop themes based on the data. In the first iteration of the study, each investigator analyzed all four transcripts independently of the other researchers using a general inductive coding approach where the findings arose directly from the analysis of the raw data (Thomas, 2006). Data cleaning was performed then each researcher read through the transcripts to gain a better sense of the data and develop a comprehensive set of codes (Thomas, 2006). The researchers then went through the transcripts again, line by line, to code each statement. The researchers attempted to categorize their codes to identify prominent themes (Thomas, 2006). Once each researcher developed their themes, they came together to discuss and examine the themes for congruences among the codes. This type of coding is reflexive thematic analysis using multiple researchers where the goal of the multiple researchers is not consensus development around themes but is used to enhance the trustworthiness of the data analysis process (Braun & Clarke, 2006). An examination of any outlier codes and quotes which may not align with the other data or other researchers' themes was conducted. From this discussion, five prominent themes arose and were agreed upon by all four researchers based on the data. See Table 1 for a description of the themes identified.

Table 1. Themes and thematic descriptions identified in the first set of focus group data analysis.

Theme	Description
Development of affective skills	The students' development of teamwork, collaboration, and improved patient and colleague communication.
Role Identity	The interprofessional knowledge, intraprofessional knowledge, and personal development that occurs as a result of the session.
Appreciation for Realism	The student's belief that it was important to require them to adapt to the clinical scenario in real-time.
Increased Interprofessional Education	The student's desire for increased IPE curricular threading and case complexity.
Emotional Reaction to Simulation	The student's opinion that this experience helped them transition from a state of anxiety to enhanced confidence in their abilities.

Since it is optimal to run multiple focus groups to ensure data saturation, the researchers conducted the IP simulation and focus groups, in the same manner, the following trimester.

In the second iteration of the study, thematic analysis was used to analyze the second set of focus group transcripts. This time, each of the four researchers used deductive coding based on the themes previously developed. Again, the researchers read the transcripts to get a general feel for the data, then coded the transcripts line by line using the existing themes. They identified any potential gaps or incongruencies with the themes previously identified. After each researcher coded their transcripts, they again met to discuss the codes and the need to refine existing themes or develop new themes. Based on the discussion, the researchers agreed they had a good representation of participant opinions, and data saturation had been met.

Results and Discussion

Through thematic analysis of the qualitative data derived from the focus groups, the researchers were able to identify five key themes to address the research aim of investigating student perceptions of IP SBL in occupational and physical therapy curriculum to increase IPC. The five themes identified included the development of affective skills, role identity, appreciation for realism, emotional reaction to simulation, and increased interprofessional education. See Table 1 for the description of each theme. Each theme will be detailed in the following sections.

Development of affective skills

One of the identified themes described the student's self-reflection regarding participation in an IP simulation experience and the opportunity it provided to develop their skills in teamwork, collaboration, and communication. These are essential soft skills that prove challenging to teach in a more traditional didactic setting and are often relegated to

clinical experiences (Donlan, 2018). In many OT and PT curriculums, clinical experiences occur later in the program, and with the lack of available level I fieldwork sites the pressure is put on level II fieldwork sites and physical therapy internship sites to fill the gap in addressing students' soft skills. Student's inability to collaborate or communicate effectively is a frequent reason for dismissal from clinical placements and is therefore essential to address within the program (Nicola-Richmond et al., 2017; Silberman et al., 2018).

Student comments indicated that IP simulation experiences might be an opportunity to address affective skills. One student stated,

> *I thought the simulation gave both the OTs and PTs a chance to problem-solve together. It is different trying to figure out what we can do together that addresses both PT and OT goals. You could see they were trying to figure out what their role was during certain parts of the treatment and how to put it together with the other person*.

The student's statement illustrates the collaboration and teamwork components of the affective skill set developing using an IP simulation.

Another student specifically commented on soft skills stating,

> *I feel like it took a while to get to the treatment because we are new and we're trying not to step on each other's toes. Half of it was introducing yourself and getting over the awkwardness of how to work together. They need to be confident in what they do, and you need to be confident in what you do so it helps practice those soft skills we will develop as therapists*.

Overall, the students expressed a positive impact on the development of affective skills through the IP simulation experience. Many of them pointed out their desire to perform better in affective skills but acknowledged a lack of opportunity to practice and gain feedback before going out to the clinic.

Role identity

Second, researchers noted a change in student Role Identity after participation in the IP SBL. The researchers defined Role Identity as interprofessional knowledge, intraprofessional knowledge, and personal development occurring because of the session. This development is essential for future practice as professional identity supports positive IPC in practice and allows novice professionals to move beyond an idealized understanding of their profession to a more refined, practice-ready concept, helping them integrate into the workplace more easily (Adams et al., 2006). A recent study found that most professionals believe role identity cannot be taught in the formal sense but must be learned through experience in a realistic context (Joynes, 2018). The current SBL provided an experience to address role identity in a simulated authentic context.

Students also expressed surprise about how little they knew about the other profession. One student described the participants in their simulation as continually questioning the role of the other professionals in specific tasks. The student stated during the focus group, "I think it is good to know our role and their role; even though we are working together, there are different roles we both have." Students seemed to be unaware of how novice their

understanding of their professional role and the role of other professionals were in an authentic practice situation. One student explained, "I thought it was good to be exposed to both disciplines. I learned a lot more and didn't realize how much I didn't know." Role identity continues to develop as students enter the clinical field, but exposure to other professions in an authentic, simulated context can begin the process of role identity development.

Appreciation for realism

As part of the focus group questions, the researchers investigated what made the simulation effective, according to the students. One of the themes emerging from this study was the concept of an appreciation for realism. The students expressed the importance of experiencing a real-time scenario, requiring them to adapt quickly to the changing clinical scenario. The students also expressed anxiety about being placed in an authentic experience; however, they believed the authenticity was an essential factor in making it a more valuable learning experience. Research supports authentic experiences to enhance student self-efficacy and self-perceived knowledge following a simulation experience (Gibbs et al., 2017). While this simulation utilized limited technology resources, the simulation's fidelity compared to a real-world interprofessional experience was high because of the use of an authentic environment and standardized participants to produce a realistic experience.

The thematic analysis of the focus group data revealed that students felt the use of standardized participants instead of familiar people was an important factor in making the experience more real. A student said,

> *I think it was good they had an actual actor because we are used to working with students, or the teacher, so they know what we are supposed to be doing. The actors didn't know who we were or what we were going to do, so it was a more realistic experience*.

The environment set up also provided them with feelings of realism. According to one student, "I thought it was really exciting to see the whole makeshift hospital." The details around the patient scenario added to the positive experience as well. Students commented explicitly on the patient's lines, the comorbidities the patient was experiencing, and the presence of a caregiver, as making the experience feel more real. Creating a realistic experience may help the students retain the learning experience and help them feel more confident engaging in future interprofessional experiences.

Increased interprofessional education

Repeatedly throughout the focus groups, students commented they wished they had more interprofessional opportunities throughout their curriculum. They enjoyed the learning experience and felt it was beneficial for their future practice. Increased interprofessional education was a theme identified through coding the focus group data and indicated the student's desire for increased IPE curricular threading and case complexity. A student commented, "I just liked the experience in general because we haven't had a lot of interprofessional practice with the OTs. I wish we had more of it

because it is so important in real life in the field." Another student similarly stated they wished it was more integrated into the curriculum because they knew the value of having these experiences before going into the field.

Research supports what the students inherently knew and expressed regarding the value of IPE for their readiness to practice. A study by Kim et al. (2019) demonstrated that even brief IPE sessions integrated into the curriculum could positively impact students' perceived readiness to work interprofessionally. Students in this research study expressed a desire to have IPE be a more integral component of the curriculum and even provided specific suggestions on how they could envision IPE being infused in their programs. One student suggested they hoped this experience would not be a one- time exposure to the other profession. They suggested it would be more beneficial to engage in faculty-led IPE case scenarios as a continuation of this simulation from different perspectives with the integration of other professionals as well.

Overwhelmingly, the students expressed an appreciation for interprofessional education opportunities and desire to have them occur more frequently throughout their curriculums.

Emotional reaction to stimulus

Many students reported an emotional reaction in response to the IP simulation experience. The response varied from positive to negative, with students most often reporting a continuum of negative to positive reactions throughout the simulation. The theme of an emotional reaction to the stimulus, or simulation experience, was identified in all the focus groups. The researchers identified this theme as the student's opinion that this experience helped them transition from a state of anxiety to enhanced confidence in their abilities. Most students initially reported anxiety, stress, and concern about their participation in the simulation experience. However, they self-identified the simulation was worth the initial negative reaction, and their emotional response was positive by the end of the simulation. For example, one student detailed their emotional experience by stating they internally panicked thinking

> [...] *oh my gosh, we are working with the OTs for the first time. We have to make goals for this patient for this new case; this is a patient we have never seen before; their caregiver is there. It was really stressful.*

The student said they would have wanted time to get their emotions under control so they could perform in a way that better demonstrated their clinical knowledge. This student was randomly chosen to participate in the simulation as a therapist, so their emotional response may have been higher than a student who was viewing the experience. Student observers also reported high anxiety when viewing the simulation. Several students commented on how nervous they felt for the student participants. One student reported, "I was so nervous for them. I kept thinking in my head about how it would feel to be in there and what I would do. I was tense the whole time." Both student observers and student participants recognized the emotional reaction to being part of an authentic clinical experience.

Anxiety as a response to simulation is not unique to IP SBL experiences. Studies have shown students tend to feel moderate to high levels of anxiety in response to a high- fidelity

simulation experience, but the initial stress does not dissipate the positive learning experience associated with the simulation (Cantrell et al., 2017). One student commented they recalled their first experience with IPE in the program and how nervous they were. Reflecting on this most recent IPE experience, they felt more prepared for future practice even though their anxiety was still present. The student indicated their anxiety was noticeably less than it was during the first IP experience, and they felt more capable of engaging in IPC. The student's comments may indicate repeated exposure to simulation experiences, and IPE would decrease student's anxiety associated with the learning experiences and increase their feelings of self-efficacy.

Coding the focus group data revealed that students had similar opinions and views about the interprofessional experience and the opportunity to participate in a high-fidelity IP simulation. The students' positive comments led the researchers to believe this was a beneficial learning opportunity that helped develop students' affective skills and role identity. The best practices in carrying out this type of IP simulation involve creating a realistic experience, integrating IPE within the curriculum, and helping students to process their emotional reactions to the simulation experience.

Literature supports IP SBL as an appropriate method for educating OT and PT students in clinical practice skills while focusing on developing IP competencies (Collins et al., 2020; Costello et al., 2018; Olson & Bialocerkowski, 2014). This study's results echo the recent study by Collins et al. (2020), which indicated that students perceived the IP SBL to improve their collaboration and understanding of each profession's roles. The development of affective skills theme identified by the researchers of the current study incorporates the concept of appreciating collaboration between team members. Role identity development has been frequently cited as a benefit of IP SBL. Supporting the findings of Costello et al. (2018) and Sergakis et al. (2016), this study also identified students' perceptions that the experience not only helped them identify the other team members' roles but allowed them to further define themselves as professionals and explore their own professional identity.

Similar to previous studies, this study established student's appreciation of realism of simulated experiences (Gibbs et al., 2017). The use of the standardized patient and the high-fidelity environment increased their perceptions that this scenario mimicked real-world clinical practice, and therefore held more significance. One student commented

> *I really appreciated having a live patient who is acting. I really thought that was helpful because when we are speaking to our colleagues, we know that they already know what we are doing so we don't have to put out as much effort.*

Another student commented, "I liked that it didn't go as planned because that is how it is going to be in real life". Students further commented on how the realistic nature of the environment and working with an unknown person gave them more confidence and felt more beneficial than traditional classroom practice. While time-consuming and resource-intensive, instructors must consider how the IP SBL's context and environment change the student's perceptions of the effectiveness (Gough et al., 2012) of the learning experience. Careful planning of the scenario, detailing the environmental layout and equipment, and training the standardized

patients appear to have a positive impact on student's perceived learning and satisfaction with the simulation experience.

Several studies have illustrated a preference by students for academic programs to integrate more IP SBL in curriculums (Collins et al., 2020; Costello et al., 2018). Students value the IP experience and see a disparity in how they are typically taught IP in the classroom versus their experience in the simulation environment. Exploration of opportunities to further integrate IP educational activities that add value to student learning is important. The use of IP SBL is one method of adding IPE to healthcare programs. High-fidelity simulation experiences may not be feasible to integrate frequently in programs with large cohorts or lack of faculty resources. Judicious use of high-fidelity simulations with strategically planned curricular threading should be investigated by programs developing IP SIMs as an integrated IPE method. Developing multiple modes for threading IP in healthcare programs may be a preferable option. The timing of the IP SBL and the balance of other methods of IPE should be investigated.

One unique theme identified in this study is the concept of the student's emotional reaction to simulation. The students in this study indicated high levels of anxiety associated with anticipating the simulation experience and feelings of relief post- simulation. The use of simulation as an educational tool was newer for these cohorts of students, which may have resulted in more anxiety than future cohorts might experience. Additionally, the students who participated in this simulation were in the last term before clinical experiences, which may have made them feel more pressure to perform in a practice-ready manner, despite the novelty of the IP SBL experience. Consideration for the readiness of students to participate in an IP SBL should be considered when designing future IP SBLs.

Interestingly, the student's expressed relief as their emotional reaction to the completion of the SBL, regardless of whether they were observers or participants. This type of emotional reaction indicated the observers were just as invested in the SBL as the participants. While it is demonstrated that observers and participants benefit from engagement in simulation, there is variability in student's perceptions of the role of an observer during a simulation (O'Regan et al., 2016). O'Regan et al. (2016) reported a significant factor influencing the benefits simulation observers to receive from their participation hinges on their investment in the simulation. The researchers acknowledged that emotional engagement was partially related to the relevance of the simulation scenario (O'Regan et al., 2016), which reinforces the need for high-fidelity simulations that are well-timed during the curriculum.

Additionally, O'Regan et al. (2016) emphasized the need for active engagement of observers in the debriefing component of simulation as a significant opportunity for stress decompression and a positive influence on the observers learning. The IP SBL designed for this study included a debriefing strategy to actively engage the observers, which may have influenced the expressions of emotional arousal and decompression. When all students cannot be participants in the SBL, the observing students must invest similarly to receive the same benefits as their participating counterparts (O'Regan et al., 2016; Reime et al., 2017). Based on the students' emotional reaction to observing this IP SBL, it would appear that all students were able to achieve the needed level of engagement to make the simulation meaningful.

Limitations

The researchers acknowledge their participation as both instructors in the courses and the primary researchers in the study could have influenced the student's statements during the focus groups. While attempts were made to mitigate this by randomly assigning students of different professions to each researcher, and all researchers coding the transcripts independently, the active role of the researchers in the students' classes may have influenced the results of the study. Additionally, this study only incorporated physical and occupational therapy students in their second year of study. With new professions represented or incorporating students from more novice cohorts, there may have been differences in the perceived effectiveness of the IP SBL. Future studies should examine student perceptions of IP SBL using students from multiple professions and at varying stages of education. Further exploration of the impact of IP SBL on interprofessional role identity is warranted to determine whether this perceived change influences the student's preparedness and success on clinical rotations. Examining multiple methods for including IPE in feasible, sustainable, and practical ways would provide educators with a variety of opportunities to meet both IP competencies and address students' desires for increased IP exposure.

Conclusions and Implications for Occupational and Physical Therapy Education

This study will inform occupational and physical therapy educators about the perceived benefits of IP SBL on student learning and IP development. Reinforcing previous studies, this research indicates that IP SBL is a viable option for developing students' IPC skills and professional identity. It further provides evidence that the context and environment provided within a high-fidelity simulation positively impacts the student's perceptions of the IP SBL. Intentionally designing the simulation experience to closely resemble a real clinical setting may also increase the connection between the SBL observers and SBL participants, leading to a more beneficial educational experience for all. As occupational and physical therapy programs adapt to changes in healthcare systems that limit the availability of short-term clinical experiences, at the same time future healthcare employers increase expectations for practice-ready entry-level clinicians, it becomes necessary to explore alternative options to better prepare students for the clinic. This project supports previous research demonstrating SBL's positive effect on student's perceived self- efficacy for clinical practice.

By providing the details of the IP SBL design and implementation, the researchers hope other programs will develop feasible and sustainable models for integrating IP SBL in their curriculums. By having a model for IP SBL design and implementation, faculty may reduce some of the time and resources associated with planning the IP SBL experience. Additionally, while IP SBL experiences may take more coordination than traditional lab or classroom activities, the benefits to students can be seen even with limited exposure, encouraging programs to start small when integrating IP SBL. Finally, this study demonstrated another opportunity for IPE integration in OT and PT curriculums that may provide students with increased program satisfaction and possibly improved student outcomes related to the IPEC competencies. The importance of IPE for OT and PT students is apparent; IP SBL appears to be one method for providing students with an opportunity to learn IP skills in a feasible and sustainable manner.

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Author's Contributions

All authors contributed equally to the research project. Data was collected by all authors, independently coded and then the authors met to agree on codes. All authors met to discuss the layout and the flow of the article. Kayla Collins was the primary author who guided the rest of the authors in the writing of the article. Kayla Collins wrote the majority of the Methods, Results, and limitations section with contributions, feedback, and edits from Kelly Chamberlain Layne, Catherine Andrea, and Lindsay Alicia Perry. Kelly Chamberlain Layne was the author who contributed the next significant portion of the article. She wrote the majority of the Introduction and Literature review sections with contributions, feedback, and edits from Kayla Collins, Catherine Andrea, and Lindsay Alicia Perry. Kayla Collin, Kelly Chamberlain Layne, Lindsay Alicia Perry, and Catherine Andrea contributed to the Abstract, Discussion, and Implications for occupational therapy education sections in a live document format commenting and editing synchronously and asynchronously. All authors approved the final version of the text.

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