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Jodi Schreiber
Chatham University

Theresa Delbert
Chatham University

Laura Huth
Chatham University

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Abstract

High fidelity simulation (HFS) has been used successfully to prepare students in a range of health professions for the acute care setting. HFS consists of three phases, with debriefing identified as most important. Instructor-led debriefing has been the most documented form of providing feedback. This pilot study looked at the relationship between the use of peer debriefing in HFS on graduate occupational therapy students' perceived level of confidence with giving and receiving performance related feedback. Students in an entry-level Master of Occupational Therapy program engaged in both an observational role and an active participation role in HFS followed by peer debriefing. Students completed a Likert scale pre- and post-survey to determine perceived confidence and competence with learning modalities (active participation vs. observation) and with giving and receiving feedback during HFS. Results indicate that students perceived benefit from both active participation and observation during HFS experiences. A separate analysis determined the relationship between the students' perceived confidence with learning modalities and the order of the student roles (observer and doer). Initially, there appeared to be a benefit to the doer role. However, after experiencing both roles, student responses indicated all students perceived value in multimodal learning. The current study presents useful information regarding student perceptions related to learning and feedback within an HFS experience.

Keywords

High fidelity simulation, debriefing, peer instruction, higher education, experiential learning

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High Fidelity Simulation with Peer Debriefing: Influence of Student Observation and Participation Roles on Student Perception of Confidence with Learning and Feedback

Jodi Schreiber, OTD, OTR/L, C/NDT

Theresa Delbert, MS, OTR/L

Laura Huth, OTR/L

Chatham University

United States

ABSTRACT

High fidelity simulation (HFS) has been used successfully to prepare students in a range of health professions for the acute care setting. HFS consists of three phases, with debriefing identified as most important. Instructor-led debriefing has been the most documented form of providing feedback. This pilot study looked at the relationship between the use of peer debriefing in HFS on graduate occupational therapy students' perceived level of confidence with giving and receiving performance related feedback. Students in an entry-level Master of Occupational Therapy program engaged in both an observational role and an active participation role in HFS followed by peer debriefing. Students completed a Likert scale pre- and post-survey to determine perceived confidence and competence with learning modalities (active participation vs. observation) and with giving and receiving feedback during HFS. Results indicate that students perceived benefit from both active participation and observation during HFS experiences. A separate analysis determined the relationship between the students' perceived confidence with learning modalities and the order of the student roles (observer and doer). Initially, there appeared to be a benefit to the doer role. However, after experiencing both roles, student responses indicated all students perceived value in multimodal learning. The current study presents useful information regarding student perceptions related to learning and feedback within an HFS experience.

BACKGROUND

Occupational therapy (OT) educators introduced High Fidelity Simulation (HFS) into an entry-level OT program curriculum for the purpose of increasing student preparedness for real-world clinical environments (Bennett, Rodgers, Fitzgerald, & Gibson, 2017; Sundler, Pettersson, & Berglund, 2015). High Fidelity Simulation allows students to respond to programmable mannequins that simulate real clients offering a training opportunity to practice decision making in high stress environments (Cant & Cooper, 2010). Complex clinical simulations can be presented which can enhance student problem solving (Buckley & Gordon, 2011). Students can repeat tasks as needed to ensure positive outcomes (Alluri, Tsing, Lee, & Napolitano, 2016). High Fidelity Simulation provides a safe environment that allows students the flexibility to learn and develop self-efficacy without risk of injury to client (Buckley & Gordon, 2011). Students engaging in HFS have demonstrated enhanced learning retention through the active engagement of the HFS which results in skill development (Alluri et al., 2016).

In order to prepare students for the needs and demands of entry-level practice, OT educators utilize a variety of teaching methodologies to address clinical skills, problem solving, and decision making; along with professional attitudes, or soft skills such as communication (Coker, 2010; Ozelie, Both, Fricke, & Maddock, 2016). Teaching methodologies based in experiential learning have been shown to improve student performance and confidence regarding clinical skills (Barron, Khosa, & Jones-Bitton, 2017; Koponen, Pyörälä, & Isotalus, 2012). High Fidelity Simulation used within a didactic curriculum can aid OT educators in meeting clinical skill and soft skill student learning objectives (Ozelie et al., 2016). Simulation allows students to practice in a safe environment and receive feedback on performance, which can decrease anxiety and increase self confidence with clinical skills and soft skills (Labrague, McEnroe-Petitte, Bowling, Nwafor, & Tsaras, 2019; Quail, Brundage, Spitalnick, Allen, & Bielby, 2016). A survey of OT educators determined that the most frequently identified goals or student learning outcomes of a simulation experience were: clinical reasoning, problem solving or decision making, intervention and treatment planning, client assessment, communication, client interaction, and therapeutic use of self (Bethea, Castillo, & Harvison, 2014). Specific to communication, educators may be interested in addressing interpersonal communication with clients, other healthcare providers, and peers. While HFS includes an opportunity for students to practice communicating with a simulated client (Quail et al., 2016; Richardson & Claman, 2014), it does not inherently provide an opportunity for students to practice interpersonal communication with peers. Current research indicates that the process of providing feedback about peer performance may facilitate student learning (Li, Liu, & Steckelberg, 2010; Wu, Yang, Shulruf, Yang, Chen, & Lee, 2019). Therefore, the active learning pedagogy of peer debriefing paired with HFS would allow for students to assess and provide feedback on peer performance.

Debriefing requires a higher-level reflection which can aid in the development of soft skills, such as communication and self-awareness, and clinical skills, such as clinical reasoning, necessary for Level II fieldwork and entry-level practice (Bethea et al., 2014; Zimmerman, Byram, Hanson, Stube, Jedlicka, & Fox, 2007). Reflection allows students to think about thought processes, or metacognition, which has been shown to impact

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student confidence (Kisac & Budak, 2014). This current study examines the use of peer debriefing, rather than the traditional instructor-led debriefing, for the purposes of assessing student perception of confidence with learning and performance related feedback during HFS. In addition, inquiry into adult learning pedagogy was explored, specifically around peer teaching and learning.

LITERATURE REVIEW

High Fidelity Simulation

High Fidelity Simulation occurs in three separate phases (see Table 1). The instructor prepares students for the experience by discussing the rationale for the assignment and learning objectives in Phase 1. Learner awareness of assignment rationales and expectations are described as key features in adult learning (Mohr, 2017; Sogunro, 2015). Mohr (2017) emphasizes the importance of preparing the learner prior to engagement in any learning situation.

Students actively engage with the programmable mannequin in Phase 2 of HFS after reviewing assignment expectations. The student actively participates in the assessment and/or intervention with the programmable mannequin. The length of Phase 2 varies depending upon the expectations and skill sets being evaluated by the instructor.

Students begin debriefing in Phase 3 of HFS, upon completion of the assessment and/or intervention with the programmable mannequin. Sabei and Lasater (2016) recognized debriefing as a bridge for student identification of disparities between classroom and clinical practice. Debriefing involves the provision of feedback and reflection on student performance (Sabei & Lasater, 2016).

Table 1

The Phases of High Fidelity Simulation

Phase of HFS	Description
Phase 1	The instructor prepares students for the experience by discussing the rationale for the assignment and learning objectives.
Phase 2	Students actively engage with a simulation experience.
Phase 3	Students engage in debriefing about the simulation experience.

Peer Teaching and Learning

Peer teaching shifts the learning environment from a passive instructor-led transfer of knowledge to a process of active knowledge acquisition. Students learn from and with each other, and in line with constructivist learning theory, students are encouraged to take responsibility for their own learning while working collaboratively towards meeting learning goals and objectives (Kocadere & Ozgen, 2012). Peer teaching and learning has been determined to be either as effective, or more effective, at increasing student critical thinking and learning outcome attainment, in comparison to traditional lecture based, instructor focused methods (Siu, Spence, Laschinger, & Vingilis, 2005; Stone, Cooper, & Cant, 2013; Tiwari, Lai, So, & Yuen, 2006).

In a systematic review of literature, Secomb (2008) reported evidence for students' development of clinical skills as a result of peer teaching. Students develop self-directed learning skills through discussions, activities and feedback within peer teaching (Secomb, 2008). Students also indicated an increase in self-confidence, self-determination, clinical reasoning, and peer collaboration after engaging in peer teaching and learning (Secomb, 2008). Zhang and Henderson (2016) noted that within peer teaching, the instructor's role is to facilitate (not dictate) a process of structured inquiry with all students, allowing adult learners to be self-directed. Peer instruction has been identified as important for improving exam and quiz performance (Crouch & Mazur, 2001; Rao, Collins, & DiCarlo, 2002; Rao & DiCarlo, 2000) and enhancing retention of previously learned material (Cortright, Collins, Rodenbaugh, & DiCarlo, 2003; Perez-Sabater, Montero-Fleta, Perez-Sabater, & Rising, 2011). Cortright, Collins, and DiCarlo (2005) found peer instruction promoted transfer of learned skills from one setting to another. The peer instruction process supports knowledge transfer through practice and peer feedback as students apply existing knowledge and demonstrate skills in novice situations (Cortright et al., 2005). The authors of the current pilot study developed a peer debriefing protocol based on the peer instruction model.

Janesick (2007) reported peer debriefing occurs when a peer provides objective oversight that increases the credibility of a project. Similarly, the authors of this current study define peer debriefing as the process of peer feedback to enhance skills and knowledge. Li, Liu, and Zhou (2012) found peer assessment allows for both objective assessment of student performance and a subjective student reflection. The authors of the current pilot study employed peer debriefing as a form of peer assessment. Students in the current pilot study engaged in and observed the simulated experience, which is supported by adult and experiential learning theories (Kolb, 2015). Students in the active doer (AD) role interacted with the mannequin. Students in the active observer (AO) role viewed and appraised the peer in the AD role. Within Kolb's experiential learning theory, the processing continuum spans from active experimentation (doing) to reflective observation (watching; McLeod, 2017). The AD role aligns with Kolb's active experimentation and the AO role aligns with the reflective observation. Through this process, students appraised peer performance and compared peers' planned and executed decisions while providing overall feedback (debriefing).

Debriefing within High Fidelity Simulation

Debriefing is an interactive process of reflective discussion following participation in experiential learning (Kim & De Gagne, 2018; Sabei & Lasater, 2016; Sawyer, Eppich, Brett-Fleegler, Grant, & Cheng, 2016). It is commonly accepted by researchers and educators that debriefing is the most critical phase within HFS for student learning (Ali & Musallam, 2018; Bednarek, Williamson, & Downey, 2019; Jeffries, 2012; Mayville, 2011; Neill & Wotton, 2011; Shinnick, Woo, Horwich, & Steadman, 2011). An instructor typically facilitates debriefing by encouraging questioning, guided discussion, and reflection following HFS. Instructors promote an environment that fosters privacy, trust, and confidentiality while debriefing (Fanning & Gaba, 2007; Garden, Le Fevre, Waddington, & Weller, 2015). Instructors develop a format for the debriefing session with clear learning objectives provided to the student prior to the HFS (Fanning & Gaba,

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2007; Kim, Park, & Shin, 2016). Traditionally the debriefing process provides instructors opportunity to identify and address potential gaps in knowledge and skills to facilitate sustained learning (Garden et al., 2015). Students then are encouraged to critically reflect on the HFS experience, which is essential for promoting new learning (Garden et al., 2015; Neill & Wotton, 2011).

Garden and colleagues (2015) identified three phases of debriefing within the final phase of HFS. Researchers categorized the three phases of debriefing as emotional reaction, analysis, and generalization (Garden et al., 2015). A visual representation of the relationship between the three phases of debriefing within the final phase of HFS is illustrated in Figure 1. Participants express feelings experienced during the simulation within Phase 1, the emotional reaction phase of debriefing. Students in this phase experience the cooling off period observed when expression of relief and verbalization of satisfaction with the completion of the interaction with the programmable mannequin (Garden et al., 2015). Participants are encouraged to discuss performance and provide rationales for actions during Phase 2, the analysis phase of debriefing. Participants make connections between real-world experiences and the simulation event within Phase 3, the generalization phase of debriefing. Instructors have traditionally been responsible for leading Phase 2 and Phase 3 of debriefing. This current study investigated the novel approach of peer debriefing, in lieu of instructor-led debriefing, in order to assess the value of peer teaching within the occupational therapy curriculum.

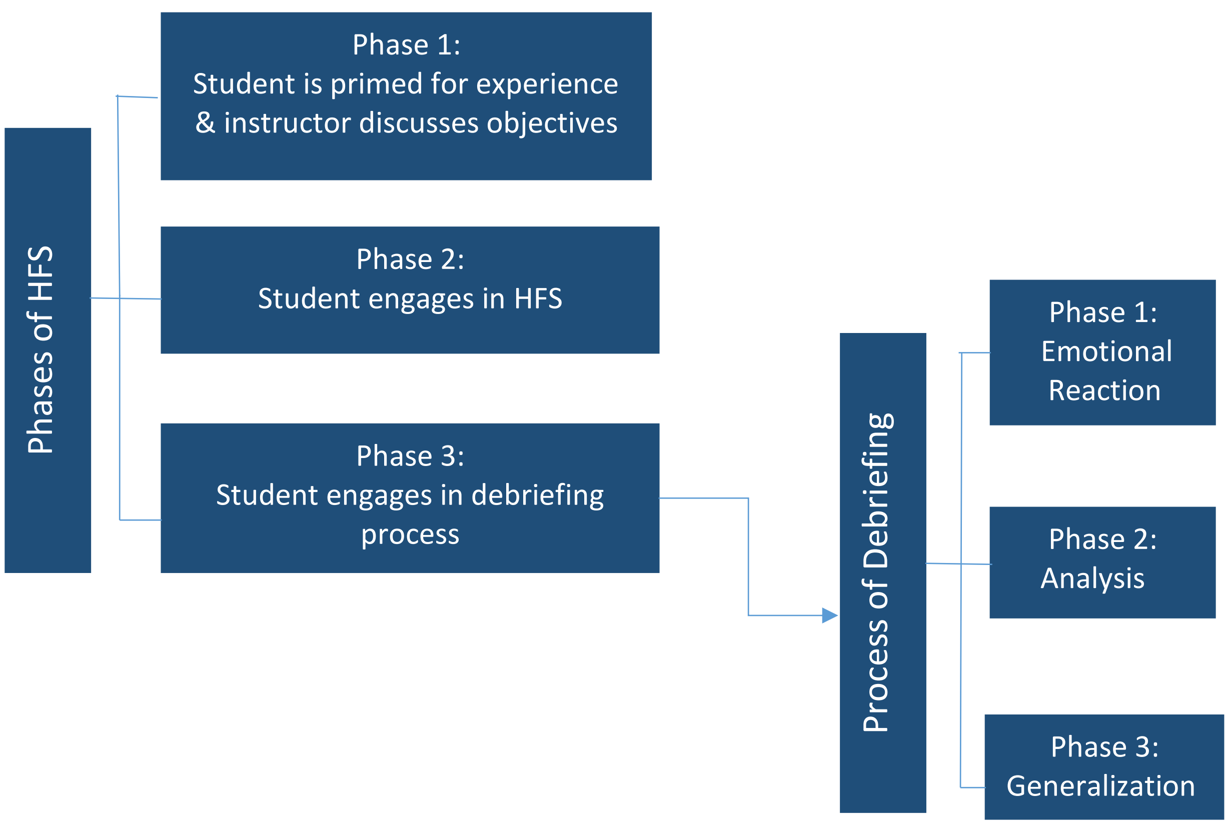

Figure 1. The three phases of debriefing in relation to the three phases of simulation.
Note. Based on Garden et al., 2015; Sabei & Lasater, 2016

High Fidelity Simulation may be used to foster opportunities for peer instruction and learning. While studies indicate debriefing is the most critical stage of HFS (Ali & Musallam, 2018; Bednarek et al., 2019), the effects of peer debriefing on student learning and confidence have not been widely studied. The objective of this current study was to examine the use of peer debriefing for the purposes of assessing student perception of confidence with learning and performance related feedback during HFS.

METHODOLOGY

Outcomes of this pilot study provided data regarding student perception of confidence with learning and performance related feedback during HFS. The pilot study received approval of the University Institutional Review Board.

Participants

Forty Masters of Occupational Therapy (MOT) students participated in acute care HFS as part of a course requirement during the third semester (summer) and fourth semester (fall) of six semesters. Students were not required to complete the pre and/or post surveys as survey completion was not factored into final course grades. The course instructor provided in class instruction in order to identify learning objectives prior to the first HFS. The instructor presented a PowerPoint and led discussion based on current evidence addressing proper methods to provide and interpret feedback. Instructional material content was based on the role and success of structured peer feedback in facilitating learning (Boud & Molloy, 2013; Li et al., 2012).

Investigators randomly assigned students into groups of four using an electronic sorting tool. Each group of four completed a chart review of the fictional patient case. The instructor then randomized assigned student roles within the groups as either the AO or the AD role for the summer session. Students alternated roles in the second HFS in the fall (see Figure 2). The debriefing template utilized by students assigned to the AO role is presented in Table 2. The students in the AD role were allotted 20-25-minutes for assessment and intervention on the preprogrammed mannequin. The AOs then initiated a 15-minute face to face guided debriefing process with the ADs. Instructor guidance was provided to ensure comprehensive reflection of AD performance. Students then completed 15-minutes to one hour of group process time, independent from the instructor, giving students the opportunity to reflect and collaborate in the development of a progress note.

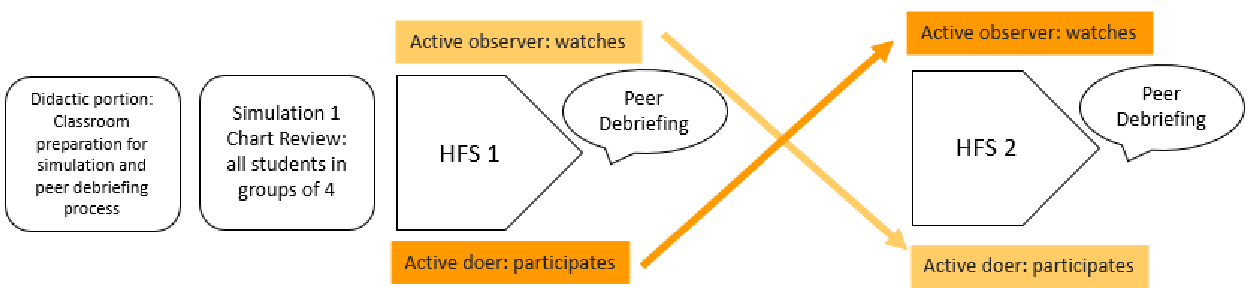

Figure 2. Sequence of participant High Fidelity Simulation experience.

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Table 2

Peer Debriefing Template

Peer Debriefing Template
What to look for during STAR experience as an observer/debriefer: • Was the session organized (flow of the session, too fast/slow)? • During the session was the peer considerate to the client? • How was the communication between the pair of active participants? • Were there any performance gaps (did session go as planned)? Part I post completion of simulation*:* Ask participant to reflect on what went well and what they would have done differently. Explain. Part II post completion of simulation: Reflections of observer. What do you think went well and what would you have done differently? *Please note that the observer is to remain uninvolved during peer’s assessment and intervention with the patient.

Instrument

Students voluntarily completed a pre- and post-survey to determine student perceived confidence and competence with learning modalities (active participation vs. observing) and with giving/receiving feedback during the HFS. Investigators assigned a random number to each student as anonymous survey identifiers. Student consent was implied if the student completed either survey. Data will be kept for five years in accordance with the approved Institutional Review Board (IRB). The first two survey questions focused on learning modalities, and the last four questions related to giving and receiving feedback (see Appendix A). The primary investigator created the six question pre- and post-survey based on current evidence-based adult learning theories (Merriam, Caffarella, & Baumgartner, 2007; Russell, 2006; Rutherford-Hemming, 2012) due to a lack of standardized assessment tools. The Likert-scale survey questions, with values ranging from 1 (Strongly agree) to 7 (Strongly disagree), were vetted by two occupational therapy faculty for the purpose of content validity. The primary investigator electronically administered the Likert-scale survey through Qualtrics software (Qualtrics, version XM).

DATA ANALYSIS

Results were included from thirty-eight students in the first (summer) HFS and thirty-seven students in the second (fall) HFS. Survey data was downloaded from Qualtrics to a Microsoft 12 Excel format to allow naming of variables. Once variable names were identified, data was uploaded to and analyzed using SPSS 24 software (IBM Corp., 2016). Investigators completed statistical analyses from student survey responses. Student confidence with learning modalities and giving/receiving feedback were analyzed in relation to peer debriefing within HFS. A separate analysis determined the relationship between the students' perceived confidence with learning modalities and the order of the student roles (AO and AD).

Inferential statistics were used to identify the mean responses within the context of roles. Mean scores were used to compare post survey results from AO in the summer to AO in the fall, and from AD in the summer to AD in the fall. An Independent t-test was used to analyze the difference in means between the two groups: the AD role compared to the AO role, during the first and second HFS. For results of t-tests, Cohen's d was calculated in order to understand the effect size.

A two-way ANOVA was used to analyze between subject effects for the identified group roles (AO vs. AO; AD vs. AD) to determine if the order of assigned roles (ie. whether the student was assigned to AD or AO first) affected overall student perceptions of confidence and competence. The dependent variable was the survey containing six questions.

RESULTS

Statistical analyses identified a significant difference in scores for two of the questions from the first (summer) HFS: *I only learn by actively participating:* AD role ($M=1.17$) and AO role ($M=1.05$); $t(35)=1.105$, $p=0.025$, $d=0.38$; and *I am confident providing unbiased feedback to my peers:* AD role ($M=1.89$) and AO role ($M=2.47$); $t(35)=-1.695$, $p=0.046$, $d=0.56$. This data represents student perception after one HFS. Table 3 shows the comparison between students in the AD role versus the AO role in the first (summer) HFS.

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Table 3

Comparison of AD versus AO in the First High Fidelity Simulation

	Group 1=AD (n=18) 2=AO (n=19)	Mean	Std Deviation	F Value	P value
I learn by watching others	1	1.33	.594	3.613	.066
	2	1.79	.918		
I only learn by actively participating	1	1.17	.383	5.486	.025*
	2	1.05	.229		
Feedback to peers enhances my learning	1	1.33	.485	1.886	.178
	2	1.63	.761		
Takes peer feedback personally	1	5.39	1.614	1.121	.297
	2	5.00	2.000		
Instructor feedback enhances learning more than peer feedback	1	2.78	1.166	1.364	.251
	2	2.42	1.502		
Confident providing unbiased feedback	1	1.89	.583	4.261	.046*
	2	2.47	1.349		

Note. Range scores based on Likert scale (1= Strongly agree to 7= Strongly disagree). P value set at p =.05.

There was a significant difference in scores for one question from the second (fall) HFS: *The feedback I give to my peer also enhances my learning:* AD role (M=2.10) and AO role (M=1.89); t(36)=.0839, p=0.037, d=0.27. This data represents the changes in perception that occurred after the students have participated in both HFS. Table 4 shows the comparison between students in the AD role versus the AO role in the second (fall) HFS session.

Table 4

Comparison of AD versus AO in the Second High Fidelity Simulation

	Group 1=AD (*n*=19) 2=AO (*n*=18)	Mean	Std Deviation	F Value	P value
I learn by watching others	1	2.15	1.040	.193	.193
	2	1.72	.575		
I only learn by actively participating	1	3.60	1.698	.077	.783
	2	4.33	1.572		
Feedback I give to my peers enhances my learning	1	2.10	.912	4.717	.037*
	2	1.89	.583		
Takes peer feedback personally	1	5.20	1.281	.347	.560
	2	4.83	1.505		
Instructor feedback enhances learning more than peer feedback	1	2.35	1.182	1.108	.300
	2	3.28	1.447		
Confident providing unbiased feedback	1	2.30	.733	.714	.404
	2	2.50	.924		

Note. Range scores based on Likert scale (1= Strongly agree to 7= Strongly disagree). P value set at p =.05.

For the role of AO in the first (summer) HFS and AO in the second (fall) HFS, there was one survey response with significant interaction: *I only learn by actively participating:* F(1,35)=81.075, p=0.000. Table 5 shows the comparison between students in the AO role during the first (summer) HFS versus the AO role in the second (fall) HFS.

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Table 5

Comparison of AO in the First High Fidelity Simulation versus AO in the Second High Fidelity Simulation

	Group 1=AOS (*n*=19) 2=AOF (*n*=18)	Mean	Std Deviation	F Value	P value
I learn by watching others	**1**	**1.79**	**.918**	**.070**	**.792**
	2	**1.72**	**.575**		
I only learn by actively participating	**1**	**1.05**	**.229**	**81.075**	**.000***
	2	**4.33**	**1.572**		
Feedback I give to my peers enhances my learning	**1**	**1.63**	**.761**	**1.322**	**.258**
	2	**1.89**	**.583**		
Takes peer feedback personally	**1**	**5.00**	**2.00**	**.081**	**.777**
	2	**4.83**	**1.505**		
Instructor feedback enhances learning more than peer feedback	**1**	**2.42**	**1/502**	**3.114**	**.086**
	2	**3.28**	**1.447**		
Confident providing unbiased feedback	**1**	**2.47**	**1.349**	**.005**	**.945**
	2	**2.50**	**.924**		
	2	**3.61**	**1.290**		

Note. Range scores based on Likert scale (1= Strongly agree to 7= Strongly disagree). P value set at p =.05.

For the role of AD in the first (fall) HFS and AD in the second (summer) HFS, there were three survey responses with significant interaction: *I can only learn by watching others performing tasks:* F(1, 36)=8.567, p=.006; *I only learn by actively participating:*

F(1,36)=35.243, p=0.000; and *The feedback I give to my peer also enhances my learning:* F(1, 36)=10.124, p=0.003. Table 6 shows the comparison between students in the AD role during the first (summer) HFS versus AD role in the second (fall) HFS.

Table 6

Comparison of AD in First High Fidelity Simulation summer versus AD in the Second High Fidelity Simulation

	Group 1=ADS (n=18) 2=ADF (n=19)	Mean	Std Deviation	F Value	P value
I learn by watching others	1	1.33	.594	8.567	.006*
	2	2.15	1.040		
I only learn by actively participating	1	1.17	.383	35.243	.000*
	2	3.60	1.698		
Feedback to peers enhances my learning	1	1.33	.485	10.124	.003*
	2	2.10	.912		
Takes peer feedback personally	1	5.39	1.614	.61	.690
	2	5.20	1.281		
Instructor feedback enhances learning more than peer feedback	1	2.78	1.166	1.257	.270
	2	2.35	1.182		
Confident providing unbiased feedback	1	1.89	.583	3.608	.066
	2	2.30	.733		
	2	3.00	1.026		

Note. Range scores based on Likert scale (1= Strongly agree to 7= Strongly disagree). P value set at p =.05.

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DISCUSSION

Teaching pedagogy supported by current evidence is warranted because it is incumbent upon OT educators to utilize the most effective and efficient methods during the provision of information (Schwartz & Gurung, 2012). The objective of this study was to examine the use of peer debriefing for the purposes of assessing student perception of confidence with learning and performance related feedback during HFS. The results presented useful information regarding student perceptions related to learning and feedback.

Learning by Participating vs. Learning by Observing

After the first (summer) HFS, there initially appeared to be a benefit to the AD role as responses indicated more favorable answers to 75% of survey questions. Responses regarding learning by observing from those in the AD role indicated a greater perceived benefit than responses from those in the AO role. This finding supports Secomb's (2008) findings that students reported perceived increase in self-confidence after engaging in peer teaching and learning. After the first HFS those who were observing (AO role) agreed with the statement "I only learn by actively participating" ($p=.025$) more than those who were participating (AD role), see Table 3. However, after the second HFS this was no longer a significant difference as it appears responses from both roles indicated a benefit from participation (see Table 4). Brown, Cosgriff, and French (2008) examined learning style preferences among allied health students and found occupational therapy students reported greater preference for kinesthetic learning. The findings from this current pilot study, in which all student responses suggested agreement with learning through hands-on participation, are reflective of the findings from Brown et al. (2008). The results are also congruent with Titiloye and Scott's (2002) work that highlighted the majority of occupational therapy students as convergers, according to Kolb's learning styles, whose dominant learning ability involves active experimentation.

For students who participated in the HFS (AD) in the summer and then observed in the fall (AO), responses from the second HFS indicated less agreement with this statement: "I only learn by actively participating" (see Table 4). This may be representative of students perceiving value in both observation and active participation as instructional methods. Titiloye and Scott (2002) also found assimilators to be another central learning style among occupational therapy students. Therefore, consideration must be taken that other forms of preferred learning have been attributed to health science students and it may be beneficial to expose students to various teaching methodologies within an occupational therapy curriculum. After both simulation experiences in the current study, student responses indicated all students perceived value in multimodal learning.

Giving and Receiving Feedback

Results of data analysis identified the positive relationship between the AD group and confidence in giving feedback after the first HFS. Specifically, the AD group responded more favorably to the statement: “I am confident providing unbiased feedback to peers” (p=.046); see Table 3. This was an unexpected finding given that the AD group did not provide feedback, they received feedback from the AO group. The AD group may have benefited from observing the AO group providing feedback and it may have caused students in the AD group to inflate their own abilities to deliver feedback. When this group of students in the AD group switched roles to the AO group, they reported less confidence in providing unbiased feedback.

Students in the AO role first and then AD role second reported similar ratings after each role in their confidence with providing unbiased feedback. This may indicate that learning by actively doing provided a realistic assessment of skills during their self-evaluation after the AO role. Ultimately, after the second HFS there was no longer a significant difference between the two groups for this question of confidence with providing unbiased feedback (see Table 4).

Other factors may have contributed to the results of this pilot study. An ordering effect may be responsible for favorable responses recorded after the first (summer) HFS aligning with favorable responses to questions after the second (fall) HFS for both roles. The students assigned to the AD role first and the AO role second responded more favorably in the learning and feedback questions after both HFS. This ordering effect occurred with the exception of two questions (questions 4 and 6) related to giving and receiving feedback where the AD role responded more favorably each time. These outcomes are shown in Table 4.

Another set of factors that may have contributed to the student responses include preferred learning styles and student self-awareness of their own strengths and areas for growth. The current findings are contrary to the notion that students’ preconceived opinions that learning only occurs through hands on doing or less learning occurs while observing (Hills, Levett-Jones, Warren-Forward, & Lapkin, 2016; Zoghi et al., 2010). As Table 6 indicates, after completing both roles, all students agreed that they learn by watching others and they learn through the feedback they provide to their peers. The results from this pilot study support the use of observation and the peer feedback process to facilitate learning.

LIMITATIONS

This pilot study involved students experiencing both AO and AD roles. Students were randomly assigned to a role during the first session which pre-determined their role in the second session. Given this, the study design may result in an ordering effect. In order to mitigate this potential order effect bias, all students participated in both roles in an attempt to mimic a modified crossover design (Portney & Watkins, 2009). However, it is unclear if the order effect bias impacted the final results as ultimately all students responded positively to all survey questions.

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The peer debriefing tool used was created by the examiner for the purpose of this study. Thus, psychometrics do not exist for the tool. Instead, literature related to peer learning was reviewed and questions developed based on these sources (Boud & Molloy, 2013; Nicol, Thomson, & Breslin, 2014). Recent literature indicates there is a lack of formal, standardized debriefing tools and suggests the majority of assessment tools related to simulation are from homegrown assessments (Ali & Musallam, 2018). Future iterations of the survey may benefit from a formal exploratory factor analysis to determine the reliability and validity of the survey instrument.

Li et al. (2012) discussed the use of both subjective and objective assessment of student performance within peer assessment. The current pilot study focused solely on subjective assessment with the AO group providing feedback to the AD group. Future iterations of the peer debriefing portion may benefit from inclusion of an objective assessment for the AD group to utilize after Phase 2 of engaging in HFS.

Another limitation to the study was the use of a convenience sample. The student cohort, or convenience sample, was representative of the forty individuals who met the academic and admissions criterion for the university's entry-level occupational therapy program. This may not be representative of the student population as a whole within entry-level OT programs.

The lack of substantive literature particular to the educational experiences of occupational therapy students may be seen as a limitation to the current study. A simple literature query about HFS and allied health education results in a majority of nursing journals, whereas a similar search for occupational therapy resulted in a limited number of publications. This demonstrates the need for additional studies such as this pilot study to contribute to literature about effective evidence-based teaching strategies.

Literature exists stating debriefing should be at least the length of the simulation (Raemer et al., 2011), while other literature indicates no specific set timelines exist for the debriefing process (Sawyer & Deering, 2013). Regardless of the length of debriefing, best practice indicates it should occur immediately after the simulation for continuous student engagement in the learning activity (Neill & Wotton, 2011). Within this pilot study, the time for debriefing was impacted by the use of an external HFS site with an allotted timeframe for the entire class of 40 students to participate. Aside from time, other logistical barriers that academic programs may face include cost of HFS; the location of the simulation center; and the intensive faculty time commitment required for case construction, developing outcomes and debriefing framework, and scheduling the HFS.

Given the few identified limitations to the current study, several final outcomes may have a positive impact on future occupational therapy education. As occupational therapy educators strive to advance curricular design, resolution of limitations and incorporation of positive findings can foster entry-level clinicians to enter the modern day work environments.

Implications for Occupational Therapy Education

Overall findings indicated that after each student participated in both roles (AO and AD), value was found in both observational and active learning. This has implications for occupational therapy education, as the observer role, with structured peer debriefing, could be built into role play scenarios if HFS is not an available option. These results also highlight the benefits to overall learning when students become familiar with the acute care setting prior to their first experience in the setting, which has potential positive implications for fieldwork.

According to Standard C.1.9 in the 2018 Accreditation Council for Occupational Therapy Education (ACOTE) standards, simulation may be used as an instructional method for meeting Level I fieldwork requirements. The standard stipulates that programs need to ensure the simulation enhances the didactic portion of the curriculum, and a formal evaluation is required to evaluate student performance. In markets where Level I fieldwork placements have become more challenging due to saturation or geographic limitations, HFS with peer debriefing may offer alternatives to enhance student experience and learning. Peer debriefing provides one possible effective avenue for this formal evaluation after the simulation experience. Results from this pilot study suggest that students in either action or observation roles benefit from simulation experiences.

Additionally, this Level I fieldwork standard could be met through individual or group participation in the simulation which could influence whether cost is a barrier to this learning pedagogy. Incorporating larger student groups using the peer debriefing model allows for less crowding during the doer phase and also allows for learning among the observers.

CONCLUSION

As an educational strategy used within an entry-level MOT curriculum, students were provided an opportunity to engage in HFS. The effects of peer debriefing on student perception of confidence and competence with giving and receiving feedback during this process were identified. Occupational therapy students' ability to constructively give and receive feedback is an important skillset that should be developed during the didactic portion of the curriculum. This is relevant as students are evaluated on this professional behavior during Level II Fieldwork according to the American Occupational Therapy Association (AOTA) Fieldwork Performance Evaluation (2002).

The use of peer debriefing was shown to be an effective teaching methodology for students after participating in two HFS specific to the acute care setting. The potential exists for occupational therapy educators to infuse new learner focused strategies into curriculum content. As occupational therapy educators continue to incorporate current adult learning theories into curriculum, active learning pedagogies, such as peer debriefing, can be used to supplement HFS to advance student confidence and competence with giving and receiving feedback. These strategies would promote student confidence in providing occupational therapy services in a setting such as the acute care hospital.

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Appendix A
Pre- and Post- Survey

On a scale of 1-7 (1= Strongly agree to 7= Strongly disagree), please respond to the following:

1. I can learn by watching others performing tasks.
2. I only learn by actively participating.
3. The feedback I give to my peer also enhances my learning.
4. I take feedback from my peers personally.
5. Instructor feedback enhances my learning more than peer feedback.
6. I am confident providing unbiased feedback to my peers.

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