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RESEARCH REPORT

Watch vs do: A randomized crossover design evaluating modified simulated patients and video learning for novice speech–language therapy students

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Abstract

Background: Simulated learning activities are an effective tool for reducing speech–language therapy (SLT) students' anxiety and improving their confidence for clinical placements. Such activities include interacting with patients who are actors, clinical educators or peers and are known to decrease anxiety and increase confidence in SLT students. Screen-simulated patients using video are another alternative, which has not yet been fully evaluated in the education of SLT students.

Aims: To compare the effectiveness of (1) modified simulated patient and (2) video simulated learning for increasing self-reported (a) confidence and (b) preparedness and (c) decreasing self-reported anxiety.

Methods & Procedures: This study used a randomized crossover design with 127 first-year graduate-entry master's SLT student participants. Students participated in two activities related to a clinical interaction with a paediatric client's carer: (1) a 1-hr modified simulated patient experience with clinical staff as the simulated patient; and (2) a video-learning task, with two videos of a clinician–carer interaction and an accompanying worksheet. Students were randomly allocated to a group of four students and the groups randomly allocated to receive modified simulated patient or video-learning first. Students were not blinded to the activities. The students completed a 19-item questionnaire at three time points: before either activity, after the first activity and after the second activity, to evaluate their self-reported confidence, clinical preparedness and anxiety.

Outcomes & Results: A total of 62 students completed modified simulated patient first and 63 completed video-learning first. After either single activity the students had significantly increased confidence and preparedness scores, while only the modified simulated patient significantly reduced student anxiety scores. As a second activity, modified simulated patient resulted in further significant improvements in confidence, preparedness and anxiety; however, adding video learning as a second activity resulted in no significant benefit.

Conclusions & Implications: This study demonstrates the effectiveness of two low-resource clinical-learning activities for novice SLT students that can be applied in a range of settings. Of the two activities, modified simulated patient had greater effectiveness, as it was the only activity to decrease anxiety. An investigation of the pedagogical principles within the activities revealed that modified simulated patient activity had more opportunities for peer learning, supervisor feedback and verbal reflection in comparison with video learning that may explain the increased benefits.

KEYWORDS
allied health, clinical education, health professional education, simulation, speech–language pathology, video learning

What This Paper Adds

What is already known on the subject

- Simulated learning activities are an effective teaching tool for SLT students, increasing confidence and decreasing anxiety in preparation for placement. Simulated patients require more resources than video simulation. Both simulated patients and video simulation provide a safe learning environment, where students can learn without risk to clients.

What this paper adds to existing knowledge

- This study is among the first to investigate a modified version of simulated patients; our modification involves a clinical educator performing the role of both the simulated patient and simulation facilitator. It is the first to evaluate simulation via video learning for SLT students. The paper demonstrates the effectiveness of these two activities, and the slight advantage of modified simulated patient, for increasing novice students' confidence and preparedness and decreasing their anxiety about clinic. It also unpacks the pedagogical principles used in each activity to explain the reasons that modified simulated patient had greater effectiveness.

What are the potential or actual clinical implications of this work?

- The two educational activities required no specialist equipment and can be applied in a range of pre-clinical and clinical settings by university staff and/or community clinical educators. Increasing confidence and preparedness, and decreasing anxiety will help ensure that student learning on scarce clinical placements is maximized.

INTRODUCTION

Clinical placement is a well-documented source of anxiety for health students. The transition between academic learning and the first clinical placement is a particular period of high stress and anxiety (Poncelet & O'Brien, 2008; Surmon et al., 2016).

Challenges perceived by novice students in their clinical placements are many. They lack the confidence to manage clients, solve problems and provide effective care (Sarikaya et al., 2006), feel a disconnection between theory and practice (Surmon et al., 2016), fear making mistakes, particularly in front of supervisors or patients, and worry about being assessed (Surmon et al., 2016). High

levels of anxiety negatively affect placement performance (Brumfitt & Freeman, 2007; Chesser-Smyth, 2005). On placement, students need to incorporate knowledge while simultaneously becoming familiar with the setting and learning processes (Liang et al., 2019; Sarikaya et al., 2006) and develop professional behaviours and communication (Gibson et al., 2015). Novice students' perceptions of preparedness for these aspects is low which also contributes to their anxiety (Surmon et al., 2016).

A need to innovate

Speech and language therapy (SLT) placements are in short supply internationally, largely due to an increase in SLT programmes. The scarcity of placements has created a need to maximize student learning within each placement (e.g., via verbal reflective groups; Tillard et al., 2018), increase placement efficiency (e.g., via multiple students on placement; Bhagwat et al., 2018), and explore educational innovations to supplement traditional clinical placements such as simulation learning (e.g., Hill et al., 2021; Peker & Rosa-Linga, 2021).

Clinical simulation

Simulation-based learning activities are recognized as one innovation that, when well designed with clear objectives, can expedite students' development of specific skill sets (Becker et al., 2006; Peker & Rosa-Lugo, 2021; INACSL Standards Committee, 2017), knowledge (Bartlett et al., 2021), preparedness for placement (Atherley et al., 2019; Hill et al., 2021), and, in some cases, even substitute for a portion of clinical placement (Hill et al., 2021). Simulated learning activities include interacting with standardized patients (or simulated patients) who may be actors, speech pathologists, clinical educators or peers (Hewat et al., 2020; Zraick, 2020). Other types of simulated learning activities are role-play with peers, hybrid simulation with two or more types of simulated learning activities and screen-simulated activities with videos or computers (Hewat et al., 2020). The most commonly used simulated learning activity in SLT training programmes is standardized patients (Dudding & Nottingham, 2018) conducted within high-fidelity simulated hospital wards (Hill et al., 2021; Zraick, 2020).

Simulated patient-learning activities

Simulated patient-learning activities use simulated patients who are individuals trained to consistently perform a scripted role (INACSL Standards Committee, 2017). Within a traditional simulated patient activity, a person, frequently an actor, is trained to reproduce the emotional, biographical and physical manifestation of a case from a given scenario (Hill et al., 2010). This enables the educator to select scenarios that meet students' specific learning needs and to ensure that all students receive standardized learning opportunities. A separate simulation facilitator is typically present during the simulated patient interaction to prepare the student for the interaction, 'pause' the interaction as required for teaching purposes, provide feedback and facilitate student and peer reflection (Syder, 1996).

The use of simulated patients provides a safe and controlled environment for students to focus on learning from the experience rather than worrying about being evaluated or the consequences of making mistakes (Dearmon et al., 2013). Like higher tech simulation activities, simulated patient activities increase students' skills, knowledge and self-awareness (Hughes et al., 2016; Quail et al., 2016; Syder, 1996). Working with a simulated patient before clinical placement has been shown to decrease students' anxiety and stress, and increase self-confidence in expected behaviours and procedures (Dearmon et al., 2013; Hill et al., 2013; Ross & Carney, 2017). Although the resources required for a simulated patient are lower than for a high-tech simulation such as in a simulated hospital ward, a typical simulated patient experience requires a trained simulated patient and a simulation facilitator. It is not currently known if a modified version of a simulated patient, where a facilitator also performs the simulated patient, would be effective.

Video simulation learning

Another simulated learning activity that has been studied is video simulation learning. Video simulation learning was first conceptualized in psychology by Delaney (1969) as a type of simulation where students are able to learn from the depiction of clinical skills shown on a video, rather than live, as is the case with most simulation activities. Video-learning approaches can assist nursing and allied health students in self-directed and deeper learning, and a better transition to practice compared with traditional in-class teaching alone (Gonzalez-Caminal et al., 2021; Holland et al., 2013; Maloney et al., 2013; Zraick, 2020). Videos provide a visual representation and help manage medical student expectations particularly in novel situations (Barratt, 2010). Best-exemplar video modelling demonstrates specific clinical skills in realistic settings that may be used by student nurses for revision and to measure their own performance (Holland et al., 2013; Kelly et al., 2009). The authentic environment and interaction

TABLE 1 Participant demographics

Group	English L1	Not English L1	Total *n*
mSP → VID	50	12	62
VID → mSP	47	16	63

Note: L1, first language; *n*, number of participants.

in the video help students contextualize learning and take the responsibility of client care seriously (Holland et al., 2013). Nursing and medicine students have reported videos to help them learn both procedural and cognitive clinical skills, increase their confidence in presentation and communication skills, and reduce anxiety (Forbes et al., 2016; Hibbert et al., 2013; Holland et al., 2013). There are few published reports of video learning being used for the development of clinical skills within SLT (Zraick, 2020).

The benefits of simulated learning activities on learning and confidence, and on decreasing anxiety in students, are widely known (Dearmon et al., 2013; Hill et al., 2010, 2013; Ross & Carney, 2017). Many of these learning activity investigations used paid actors as the simulated patients and were conducted in simulation suites such as in a hospital ward. There are, however, economic challenges for training programmes to provide technology simulation suites that mimic the patient care environment and hire actors for simulated patient activities (Hagan et al., 2020). In order to examine a lower cost simulated patient-learning activity using videos, we compared a video simulation learning activity with a face-to-face interaction with a simulated patient played by a trained clinical educator in a low technology outpatient clinical room for self-reported measures of confidence, clinical preparedness and anxiety in novice SLT students.

Aims:

- To compare the efficacy of modified simulated patient (mSP) and video simulation (VID)-learning activities for increasing perceived confidence and preparedness and reducing perceived anxiety in novice SLT students.
- To determine whether two learning activities (mSP and VID) produce greater change in perceived confidence, preparedness and anxiety than either mSP or VID alone.

METHOD

Study design and ethical approval

We used a randomized crossover design with two educational simulated learning activities, mSP and VID. A crossover design ensured that all students received the same learning experience, as they had mSP followed by VID, or VID followed by mSP. We employed blocked randomization within each of five student cohorts across a two-year period. Within each cohort, students were randomly allocated to a group of four students, and these groups were randomly allocated to receive mSP or VID first using a random number generator by the first author. Ethical approval for the study was obtained (University of Sydney HREC 2019/903).

Participants

A convenience sample of all first-year graduate-level SLT students ($n = 127$) attending a general paediatric placement at the university's on-campus clinic during the two-year study period participated as part of the routine clinic orientation programme. See Table 1 for demographic information. In accordance with the ethical approval for the study, students were not required to provide written consent because the educational activities were provided as part of business-as-usual clinical education; however, students were able to opt out of having their data included in the analysis. Data for 112 students (88%) were included in the analysis, with full data available for 109 and partial data (baseline and one post-learning-activity questionnaire) for the remaining three participants (Figure 1). A total of 15 students were excluded: two because they repeated the subject and completed the activities previously, and 13 because they returned only a baseline questionnaire. This research project was situated at the start of the participants' second clinical unit, in semester 2 of their first year. Data were collected in the university's on-campus speech pathology clinic. Before this clinical unit, students' only prior clinical experience was the administration of a standardized language assessment and collection of language sample in a school setting without the carer present.

Simulated learning activities

To ensure high fidelity of the simulated learning activities several pedagogical frameworks were used in the design and delivery of both the simulated learning activities. First, the simulated learning activities were designed and delivered using two frameworks for best practice for simulated learning activities. These were Hewat et al.'s (2020) framework to support the development of quality

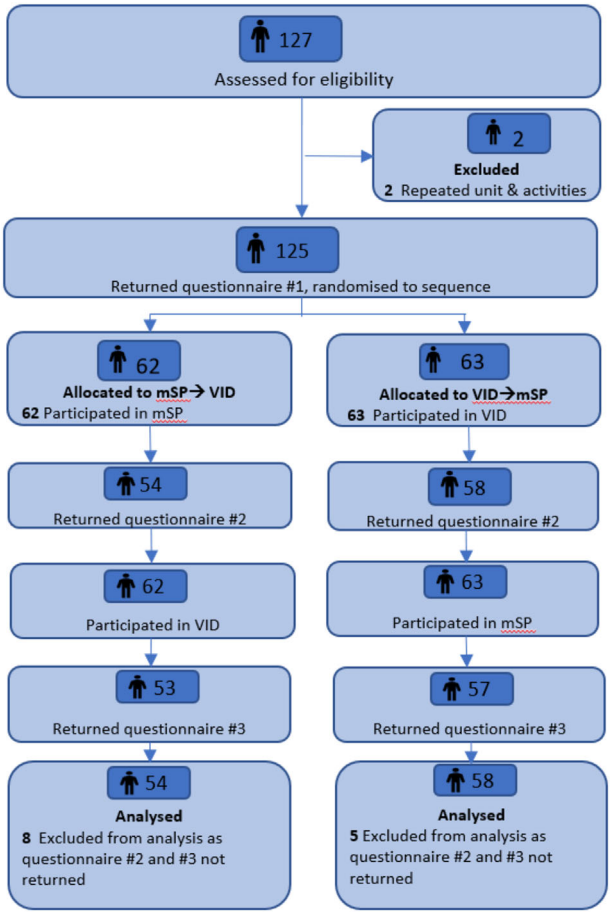

FIGURE 1 Participant flow chart [Colour figure can be viewed at wileyonlinelibrary.com]

simulation-based learning programmes in SLT and the International Nursing Association for Clinical Simulation and Learning Standards (INACSL Standards Committee, 2017). Second, the Supporting Clinical Education Excellence Development (SuCEED) model of Clinical Learning (Chan et al., 2021) was applied to ensure that the simulated learning activities adhered to sound pedagogical principles. The SuCEED model (Chan et al., 2021) describes four quadrants of clinical learning: socialization to the environment, peer learning, supervisor input and self-development (Figure 2). A positive start to clinical placement has been linked with opportunities to be exposed to the placement site and processes, collaborative learning among peers, supportive educator feedback, and the development of reflective skills within simulated patient activities (Dearmon et al., 2013; Jeffries, 2005; Ross & Carney, 2017).

msP learning activity

The SP was performed by one of 12 supervisors. The supervisors had between 5 and 30 years of experience as speech pathologists and between 2 and 18 years of experience as clinical educators/supervisors. Before this activity, three supervisors had worked as simulation facilitators with SLT students in a simulated hospital ward. In the week before the activity, the supervisors attended a 1-hr training session. The training covered the structure of the activity (pre-briefing, simulation activities with cycles of simulated patient, debriefing and reset, then summary), the debriefing format (adapted from Advocacy Inquiry, Rudolph et al., 2008; and Plus/Delta, Helminski & Koberna, 1995), and teaching opportunities via Time Out–Time In (Edwards & Rose, 2008) (see Table 2 for details).

Supervisors were given a two-page case synopsis for each of the four cases. Each of the simulated patient cases was a paediatric client's carer attending their first consultation. The key details of each case are reproduced in Table 3. In turn, each student interacted with the SP, by greeting the SP, escorting them to clinic room, discussing the carer's concerns/treatment priorities, and explaining therapy consent forms. Students completed the mSP activity in groups of four across 1 h. As needed, the SP came out of role, paused to implement time-out to teach the student, then resumed with SP role. Following each SP interaction, there was a cycle of debrief and reset. A summary was conducted at the end of the mSP activity (Table 2). The activity was modified from a more traditional simulated patient activity (Hill et al., 2010; Syder, 1996) in that the supervisor (1) performed both the simulated patient and simulation facilitator roles and (2) performed more than one simulated patient within the activity.

VID-learning activity

Two 5-min videos of an initial meeting between clinician and client's carer were created, reflecting different clinical communication styles. One of the videos depicted strong clinical and interpersonal communication skills and one depicted relatively weaker skills. In the sample with weaker communication skills, the clinician used limited facial expression and vocal intonation, had extended pauses before responding, used limited eye contact, used jargon and did not consistently respond to requests for clarification by the carer. This video provided opportunities for students to note common pitfalls for novice students, and the video with stronger skills provided an exemplar. Students watched the videos individually at a designated time during their orientation programme and were free to pause and rewatch sections if desired. While watching the videos, students completed a 17-question worksheet, with questions related to the interaction

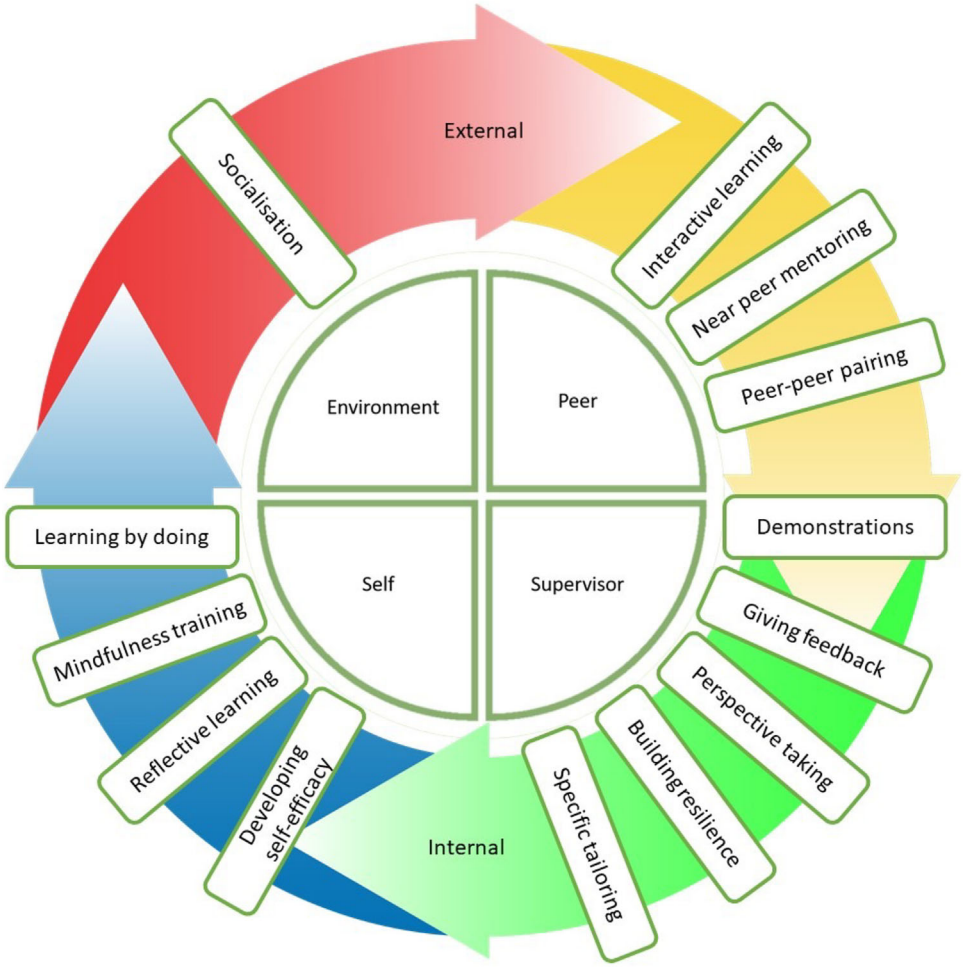

FIGURE 2 SuCEED (supporting clinical education excellence development) model of clinical learning Source: Chan et al. (2021) [Colour figure can be viewed at wileyonlinelibrary.com]

and reflection for action. See the additional supporting information for an example worksheet.

Outcome measures

Questionnaires were collected at three time points: (1) before either learning activity, (2) after the first learning activity and (3) after the second learning activity. The questionnaire was adapted from Penman et al. (2020) and contained 19 five-point Likert scale questions: 17 questions measured confidence with clinical activities (10 measured confidence in foundation skills such as approaching a carer, four measured confidence in establishing carer's priorities such as using active listening skills, and three measured confidence in interaction with others such as providing feedback to student peers), one question measured perception of preparedness, and one question measured perception of anxiety. Students completed the mSP and VID activities and associated questionnaires on the same day, in the week immediately before their second semester of study.

Data preparation and analysis

Data preparation

Likert scales were converted to numerical data, with values of 1–5 representing 'not' to 'extremely' confident/prepared/anxious. Where participants marked midway between two ratings, a number midway between the two was entered.

Statistical analysis

To answer our first question about comparing the efficacy of mSP and VID, we analysed the data across time points for the intervention order groups (mSP → VID; VID →

TABLE 2 Procedure for mSP activity

Time	Activity	Clinical supervisor task
X:00	Pre-brief (5 min)	Explain the purpose of structure of activity, use of Time Out–Time In, student roles when interacting with SP and observing
X:05	Simulation activities (43 min)	Perform SP1. Be collected from clinic waiting room and escorted to clinic room by student 1, answer questions about priorities for therapy block, listen to explanation of clinic forms. Use Time Out–Time In, as required, for student teaching purposed
X:12		Facilitate debrief with student 1 and peers Phase 1: Reactions: Student 1, then peers, then own reaction Phase 2: Analysis Positives: Student 1, then peers, then own observations Things to improve: Student 1, then peers, then own thoughts
X:16		Reset. Return to waiting room as SP2
X:17		Perform SP2. As for SP1, but interacting with Student 2
X:24		Facilitate debrief with student 2 and peers, as per previous debrief
X:28		Reset. Return to waiting room as SP3
X:29		Perform SP3. As for SP1, but interacting with Student 3
X:36		Facilitate debrief with student 3 and peers, as per previous debrief
X:40		Reset. Return to waiting room as SP4
X:41		Perform SP4. As for SP1, but interacting with Student 4
X:48		Facilitate debrief with student 4 and peers, as per previous debrief
X:53 x:58	Debrief (5 min)	Lead all four students in overall activity debrief Phase 1: Reactions: Student 1, then peers, then own reaction Phase 2: Analysis Positives: Student 1, then peers, then own observations Things to improve: Student 1, then peers, then own thoughts

mSP). This allowed us to evaluate the effect of the first learning activity (either mSP or VID), the second learning activity (either VID or mSP), and the combined effect of both mSP and VID on the variables of interest. Means for the six variables (confidence in foundation skills, 10 items; confidence in establishing carer's priorities, four items; confidence in interaction skills, three items; confidence overall, the previous 17 items; preparedness, one item; anxiety, one item) were compared using three paired sample *t*-tests: (1) baseline versus after one activity, (2) after one activity versus after two activities and (3) baseline versus after two activities. In each case, $p = 0.01$ was set as the threshold for determining significance, considering the multiple comparisons performed. Effect sizes were calculated using Cohen's *d* (Cohen, 2013) and the mean score of each variable for the two groups at each time point were graphed (Figure 3).

Post-hoc analyses

To investigate whether VID and mSP was superior to mSP alone, we conducted post-hoc analyses using paired samples *t*-tests to compare the means for mSP → VID at time point 2 (after one activity, the mSP) to VID → mSP at time point 3 (after both activities) for all six variables (the three confidence subscores, confidence overall, preparedness and anxiety). This enabled an indirect inference about the impact of the video activity before the standardized patient, with significance level set at 0.01.

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TABLE 3 Summary of mSP cases

SP	Child's name and age	Previous involvement with SLT	Family details	Presenting concerns	SLT style
Alex's parent[a], Chris Thompson and Astrid Black	Alex, 5;5	No prior therapy; assessment only	Parents are allied health professionals	DLD, mild SSD. Parent only wants to work on speech production	Asks lots of questions. Wants detailed explanations
Edwin's parent[a], Jess or Min Xu	Edwin, 8;4	Had three prior blocks of therapy	Edwin speaks Mandarin with his parents. Edwin's parent speaks English confidently but may occasionally ask for clarification if the speaker is fast	DLD, mild inconsistent difficulty with 'th' and 'r'. Wants to know when Edwin will be 'done' with speech therapy	Is very familiar with the consent forms and does not want detailed explanation
Georgia's parent[a], David and Sarah Smith	Georgia, 8;4	Had two prior blocks of therapy	Georgia lives alternate weeks with each of her parents. Both parents have literacy difficulties	DLD, impaired phonological awareness	Feels that they may be to blame for Georgia's difficulties
Raj's parent[a], Kutty and Tim Sharma	Raj, 6;3	Had two prior blocks of therapy	Raj's parent has difficulty understanding English	Severe SSD, reading difficulties, mild breathy voice. Parent presents new concern of a stutter	Flustered and rushed. Had trouble parking

Notes: SP, simulated patient; SLT, speech–language therapy; DLD, developmental language disorder, SSD, speech sound disorder.

[a]The gender of the parent matched the gender of the person performing the SP (i.e., a male CE was a male parent, a female CE was a female parent).

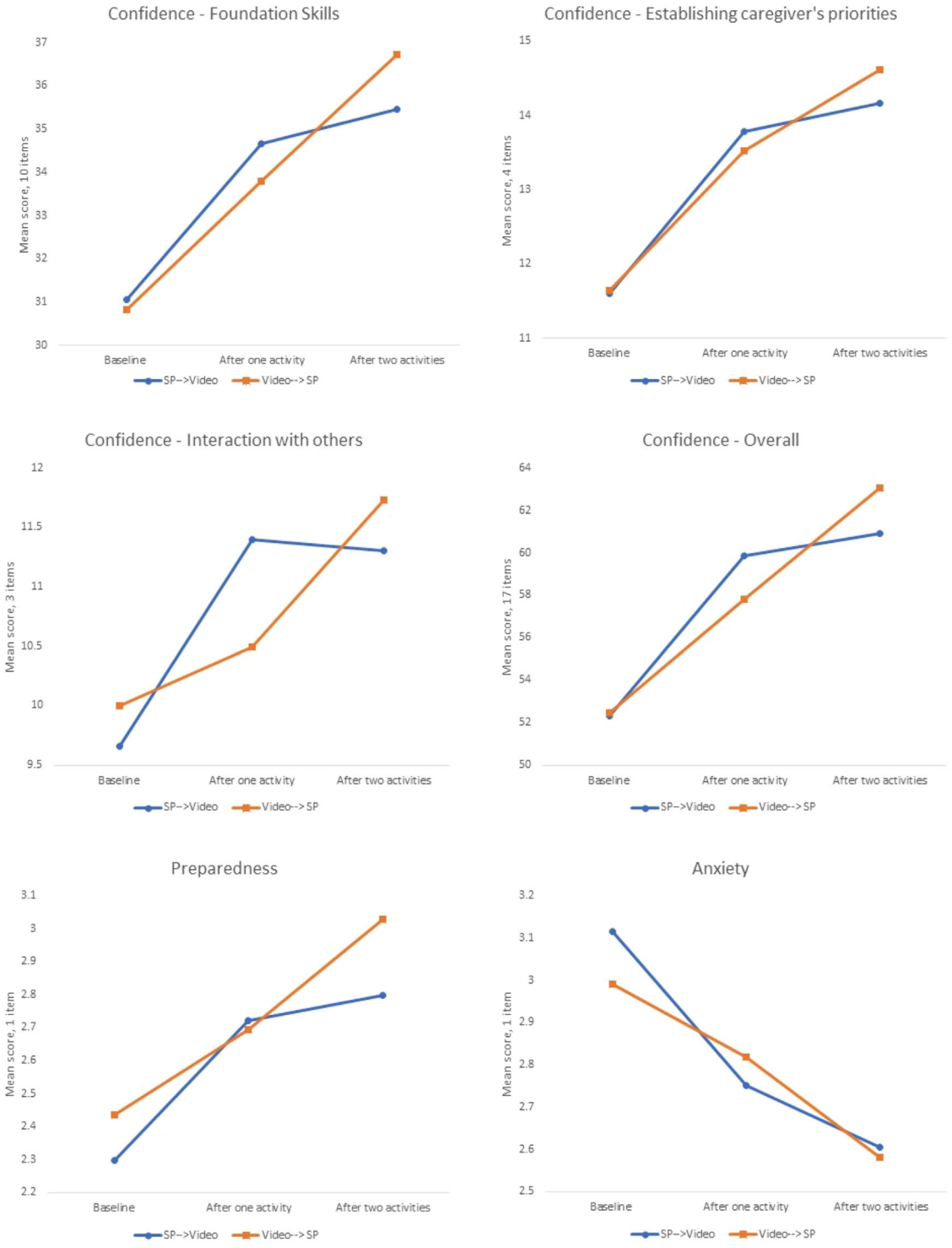

FIGURE 3 Change in mean score over time for mSP → VID and VID → mSP groups [Colour figure can be viewed at wileyonlinelibrary.com]

RESULTS

This study with 112 novice SLT students compared the efficacy two interactive learning activities, mSP and VID, for increasing perceptions of confidence and preparedness, and decreasing perceptions of anxiety

Differences in variables across time points

The mSP → VID group significantly increased their scores for the three confidence subscores, confidence overall and preparedness, and significantly reduced their anxiety scores from baseline to after one activity. The effect

size (ES) was medium (d = 0.502–0.734) for five of six variables and large (d = 0.805) for confidence in interacting with others (Figure 3 and Table 4). This indicated that participating in mSP increased students' perception of confidence and preparedness and decreased their perception of anxiety. Between activities 1 and 2, this group did not have a significant change in confidence measures, nor preparedness or anxiety. This indicated that, for participants who had already completed mSP, there was no further benefit from participating in VID. Between baseline and the two activities, the mSP → VID group had significant increases in all confidence measures and preparedness, and a significant reduction in the anxiety measure, with ES medium for five of six variables (d = 0.700–0.784) and large (d = 0.822) for confidence—overall.

The VID → mSP group significantly improved on two of the three confidence subscores (foundation skills and establishing carer's priorities), confidence—overall, and preparedness between baseline to after one learning activity. This group did not significantly change their confidence subskill of interacting with others or their anxiety following the first learning activity, VID. For the four variables with significant change, there was a small ES (d = 0.397) for preparedness and medium ESs (d = 0.577–0.622) for two confidence subskills (foundation skills and establishing carer's priorities) and confidence—overall. This indicates that participating in the video-learning activity produced significant improvements in many but not all variables. This group had a significant change in all variables between the first and second learning activities because of the mSP. This indicates that for participants who had already completed the VID, there were further increases following the SP for all confidence measures and preparedness, and further reduction in anxiety. The mSP activity produced small ESs (d = 0.303–0.465) for anxiety and confidence in establishing carer's priorities, medium ESs (d = 0.505–0.660) for preparedness and the remaining confidence subscores and confidence—overall. The group also had significant changes to all variables between baseline and after participating in two learning activities, with medium ES (d = 0.513) for anxiety, and large ESs (d = 0.823–1.22) for the other five variables.

Post-hoc analysis

There was only one significant difference (p = 0.005) between the mSP → VID group after one activity, and the VID → mSP group after both activities. The VID → mSP group had significantly higher scores than the mSP → VID group for feelings of preparedness (Table 5). This indirect inference indicates that, apart from feelings of preparedness, VID and mSP was not superior to mSP alone.

DISCUSSION

This study compared the efficacy two interactive learning activities, mSP and VID, for increasing perceptions of preparedness and confidence, and decreasing perceptions of anxiety in novice SLT students. We sought to determine whether one activity was superior to the other, and if two learning activities yielded greater benefits than one. Both mSP and VID were effective in increasing student preparedness and overall confidence for their clinical placement. The mSP also decreased student anxiety and increased confidence in interactions with others. In terms of whether two activities were better than one, completing the mSP after the VID, produced additional benefits in confidence, preparedness and anxiety, but completing the VID after the mSP had negligible benefit. Although simulated patients have shown similar effectiveness to video learning in occupational therapy and physiotherapy students (Liu et al., 1997), this is the second investigation of video learning for SLT clinical education and one of the first to compare it to use a modified version of simulated patients.

The finding that mSP was effective for increasing student confidence and preparedness and decreasing anxiety was not unexpected (Hill et al., 2013; Quail et al., 2016; Syder, 1996). However, our finding extends this previously known advantage of SP due to our use of a modification of SP, wherein the one person performed the role of SP and simulation facilitator, was effective. This is noteworthy as some of the key features of simulation (Hewat et al., 2020; Hill et al., 2010), such as the SP not being known to the students and the authenticity achieved via a SP staying in character throughout the interaction or wearing a high-quality silicone face mask to hide their identity (Bissett et al., 2021), were absent from our mSP. Rather, our mSP bore some resemblance to role play (Lane & Rollnick, 2007) as the students were aware the clinical educator was playing the role of several simulated patients within the activity. Role play is considered to be as effective for clinical learning as SP (Bosse et al., 2010; Taylor et al., 2018), so similarity to role play is not a limitation. Our mSP had some key differences from role play; our mSPs were given specific case descriptions, trained, not previously known to the students, and used their experience as SLTs and clinical supervisors to portray the affective elements of the given case. Unlike a traditional role play between student peers (Bosse et al., 2010), our supervisors provided teaching *in-situ*, immediate feedback, and opportunities

TABLE 4 Evaluation of differences within variables across time for the two groups

Group	Variable	Baseline to after one activity			After one activity to after both activities			Baseline to after two activities		
		t	d.f.	*p* *d*	*t*	d.f.	*p* *d*	*t*	d.f.	*p* *d*
mSP → VID $n = 54$	Confidence: Foundation skills	5.357	53	< 0.001** $d = 0.667$	0.985	52	0.329 $d = 0.125$	6.890	52	< 0.001** $d = 0.765$
	Confidence: Establish carer's priorities	4.244	53	< 0.001** $d = 0.602$	1.048	52	0.30 $d = 0.138$	1.048	52	< 0.001** $d = 0.784$
	Confidence: Interaction with others	5.355	53	< 0.001** $d = 0.805$	0.248	52	0.778 $d = 0.044$	5.448	53	< 0.001** $d = 0.7$
	Confidence: Overall	5.688	53	< 0.001** $d = 0.734$	0.785	52	0.436 $d = 0.102$	7.012	52	< 0.001** $d = 0.822$
	Preparedness	4.414	52	< 0.001** $d = 0.596$	1.071	52	0.289 $d = 0.132$	5.002	51	< 0.001** $d = 0.702$
	Anxiety	3.545	52	0.001** $d = 0.502$	1.842	52	0.071 $d = 0.243$	5.503	51	< 0.001** $d = 0.716$
VID → mSP $n = 58$	Confidence: Foundation skills	5.053	56	< 0.001** $d = 0.577$	4.343	54	< 0.001** $d = 0.593$	7.516	54	< 0.001** $d = 1.157$
	Confidence: Establish carer's priorities	5.192	56	< 0.001** $d = 0.672$	3.976	54	< 0.001** $d = 0.465$	6.954	54	< 0.001** $d = 1.085$
	Confidence: Interaction with others	2.227	56	0.030 $d = 0.26$	6.053	54	< 0.001** $d = 0.66$	5.657	54	< 0.001** 0.823
	Confidence: Overall	5.699	56	< 0.001** $d = 0.597$	5.423	54	< 0.001** $d = 0.633$	8.373	54	< 0.001** $d = 1.22$
	Preparedness	3.466	55	0.001** $d = 0.397$	2.886	54	0.006** $d = 0.505$	5.925	54	0.006** $d = 0.963$
	Anxiety	2.238	56	0.029 $d = 0.256$	3.229	53	0.002** $d = 0.303$	4.547	54	< 0.001** $d = 0.513$

Notes: *t*, *t*-statistic; d.f., degrees of freedom, *p*, probability; *d*, Cohen's effect size measure; mSP, modified simulated patient.
*Significant at 0.01; **significant at 0.001.

TABLE 5 Post-hoc analyses of mSP → VID group at time point 2 (after one activity) versus VID → mSP group at time point 3 (after two activities) across all variables

Variable	*t*	d.f.	*p*
Confidence: Foundation Skills	2.028	107	0.045
Confidence: Establishing carer's priorities	1.551	107	0.124
Confidence: Interacting with others	0.720	107	0.473
Confidence: Overall	1.806	107	0.074
Preparedness	2.857	107	0.005*
Anxiety	1.245	107	0.216

Notes: *t*, *t*-statistic; d.f., degrees of freedom; *p*, probability; mSP, modified simulated patient.
*Significant at 0.01.

for verbal reflection, in a way that is not possible between students, more akin to the role of simulation facilitator in traditional simulated patient or the masked facilitator (Hill et al., Reid-Searl et al., 2014).

The pedagogical principles within mSP and VID

To explore the effective components of SP and VID learning in preparing novice students for clinical placement, we applied the Supporting Clinical Education Excellence Development (SuCEED) model of Clinical Learning (Chan et al., 2021). The quadrants of the SuCEED model were used to compare and contrast mSP and VID.

Environment

Both activities socialized students to the clinical environment, one physically the other through VID observation. Socialization to the site and culture of the workplace is an important component of clinical placement preparation and the student's sense of belonging (Atherley et al., 2019; Surmon et al., 2016). Socialization to the clinical environment is particularly important for novice students who report feeling lost or unwelcomed in new clinical settings (Barrett et al., 2017).

Peer

Peer groups were used during the activities, formally within mSP and informally for the VID activity. Peer involvement allowed for interactive and active learning (Atherley et al., 2019; Liang et al., 2019). During the mSP task, students practised interaction skills directly while in VID learning, they critiqued interaction behaviours through observation and written evaluation. In this study, direct practice increased students' confidence interacting with others, confirming that some skills may be learnt more effectively by doing rather than watching. We hypothesize that the mSP group session resulted in the snowball effect of accumulative learning, where students increased their knowledge through iterations of similar but different simulated scenarios from one peer to another. These elements were less present in the VID activity.

Supervisor

For both learning activities, facilitation by a supervisor provided a guided and structured learning experience, which is helpful in early practice (e.g., Chesser-Smyth, 2005). In this study, the supervisor took the role of the SP during the activity, then gave feedback and modelled professional interaction during a short debrief with the student. This cycle of feedback and practice allowed students to observe and feed-forward to their own performance at their turn. Within the VID-learning activity, the only input from the supervisor was the provision of questions for consideration while watching the VIDs.

Self

The development of internal resources comes from students' self-learning. Both activities had elements of reflective learning and learning by doing. Again, the mSP activity used these principles to a greater degree compared with the VID activity. This was achieved by an active discussion of the students' performance, their prior experiences and their individual goals for future placements. These discussions may have contributed to the growth of students' confidence and self-efficacy and the significant decrease in anxiety levels (Dearmon et al., 2013; Ross et al., 2016; Ross & Carney, 2017).

Watch, do, or watch and do?

Learning by watching a VID enabled students to review, pause and replay for deeper learning, supporting students to be self-learners (Kelly et al., 2009; Maloney et al., 2013). However, when VID was the only learning activity, students missed formal opportunities for peer learning and verbal self-reflection, as well as to ask questions, discuss and problem solve.

Learning by doing using mSP involved more clinical pedagogical elements and learning opportunities, compared with the VID, which may have contributed to students feeling more confident and prepared, and less anxious. The mSP was a group activity facilitated by the supervisor, reaping benefits from all quadrants of the SuCEED model (Chan et al., 2021). SP activities are flexible and can be individually tailored by the supervisor for specific learning needs. In an ideal setting, blended learning activities using a variety of modalities such as VID would be provided before mSP.

However, there may be circumstances for implementing only one type of learning activity. mSP activities may not be suitable for large cohorts due to availability (cost, personnel and time). A mSP activity is appropriate for smaller settings such as a specific clinic or department, where fewer students attend placement simultaneously and where the practice of interaction skills is essential to students starting well. While VIDs may have an initial high cost, they can be used numerous times for multiple groups of students. Large university programmes such as a university on-campus clinic may benefit from VID activities. VID activities that embed observation, critique and evaluation, peer discussion, and self-reflection during or after may also facilitate learning and preparedness. Given that communication skills are essential in all health professionals, VID activities could potentially be used across disciplines and in interdisciplinary cohorts, further saving resources.

Regardless of the choice of modality, both learning activities should be well planned, well-constructed and suited to the context. VID activities must be scripted well and planned ahead as once recorded, they cannot be changed. Best exemplar of practice may be demonstrated for clear expectations. In addition, there may be benefits to having a fair exemplar with elements of good and poor behaviours that students can critically observe, evaluate, and make alternative clinical decisions.

Limitations

In this study, we used a crossover design but did not include a control group where neither simulation nor VID was used. Therefore, we could not be certain that the learning activities were specifically responsible for the change. Although it is possible that carryover effects from one intervention to the other were present, the absence of significant change following VID for the mSP → VID group provides some evidence that this was not the case. Further, we measured feelings of confidence, preparedness, and anxiety via students' report. It is unknown if these learning activities impact on actual performance during a clinical session as we did not objectively measure the students' interaction behaviours. The lack of verbal self-reflection, discussion and problem solving in VID may have contributed to the relative strength of mSP in comparison with VID. Our participants were students from one programme at one university which may limit the ability to generalize the results. Finally, the paper reports only quantitative data. Qualitative data would yield different information which is equally important to consider.

Future directions

This is one of the few studies conducted on the comparisons of educational activities in allied health and among the first for SLT students. As the participants in our study were novice-level it is unknown if a cohort with more advanced clinical skills would benefit from one or both types of learning. While mSP increased perceptions of confidence and preparedness, and decreased anxiety, it may have been challenging for the supervisors to perform the role of simulated patient and simulation facilitator within the same session. One option to explore could be the use of peer simulated patients (Dalwood et al., 2020), potentially enhancing opportunities for peer learning.

Conclusions

This study demonstrates the effectiveness of both mSP and VID for increasing confidence, student preparedness, and decreasing anxiety. These are two low-resource clinical-learning activities that can be applied in a range of settings. While mSP had greater effectiveness as it was the only activity to decrease anxiety, there was benefit to doing both activities; VID first, then mSP. The mSP-learning activity had more opportunities for peer learning, clinical educator feedback and verbal reflection in comparison with the video-learning activity that may explain the increased benefits. In conclusion, for novice students on a clinical placement, they would ideally watch then do, or just do.

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CONFLICT OF INTEREST

The authors have no financial or other interests to disclose.

DATA AVAILABILITY STATEMENT

The data are available for this study upon reasonable request from the author.

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