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Simulation-based Learning Experiences in Stuttering Management Delivered Online: What Do Students, Clinical Educators and Simulated Patients Think?

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Abstract

Speech pathology students are required to demonstrate competency across a range of practice areas. There are, however, limited opportunities for students to access clinical placements in the area of stuttering. Simulation-based learning (SBL) activities have proven to be effective in increasing students' clinical experience in this area. Due to the COVID-19 pandemic, the delivery of in-person SBL programs was not feasible, resulting in a shift to online provision. The aim of this study was to investigate the perceptions of students, clinical educators and simulated patients who participated in an online adult stuttering SBL experience. Ten first-year graduate entry Masters program speech pathology students participated in the study alongside four clinical educators and four simulated patients. The experience involved two online SBL sessions and one online tutorial via videoconferencing from separate locations. Each participant group engaged in focus group interviews exploring their perceptions of the online SBL activity. Thematic network analysis of the focus group interview data was conducted. Overall interpretation of the data from the perspectives of students, clinical educators and simulated patients revealed an overarching global theme that online SBL offers a positive, comfortable and comparable experience to enable students to build client-centred, clinical and telepractice skills. The positive outcomes of this study suggest that together with in-person clinical experiences, online SBL has an important role in the education of speech pathology students.

Keywords: ***online learning; simulation-based learning; speech pathology; stuttering; telepractice***

Introduction

For health professional students, practice-based learning encourages the development of skills and knowledge, problem-solving, autonomy, collaboration, and motivation within authentic clinical contexts

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(Hmelo-Silver, 2004). The incorporation of practice-based learning methodologies within and alongside academic coursework promotes student integration of theoretical and application-based knowledge (Maidment, 2010), facilitating their transition into professional practice (Jones et al., 2015). Importantly, practice-based learning has also been reported to support the acquisition of work-readiness attributes and subsequently to enhance employability (Smith et al., 2014).

Speech pathology is a practice-based profession that supports people with communication and swallowing difficulties across the lifespan. The importance of practice-based learning has been acknowledged by both the profession as a whole and by students, who report clinical placements as valuable experiences that increase an understanding of professional role, improve clinical skills, and guide career choices (Speech Pathology Australia [SPA], 2018). However, providing students with opportunities for clinical placements within the full range of speech pathology practice areas presents challenges.

The practice area of fluency or stuttering management in Australia receives very little public funding and as such, a small proportion of clinicians are experienced in managing clients who stutter (Cardell & Hill, 2013). This, alongside an expanding scope of speech pathology practice and increasing student numbers, may be responsible for limited student placement capacity within this practice area (Yaruss & Quesal, 2002). Evidence suggests that clinical learning experiences greatly influence healthcare students' decisions surrounding their early career (Maidment, 2010). Therefore, without exposure to fluency within clinical placements, students may be less inclined to practise in this area post-graduation, further jeopardising the development of a skilled fluency clinician workforce. Furthermore, it has been reported that many speech pathology students and clinicians maintain negative attitudes and a sense of discomfort towards working with people who stutter, potentially due to limited experience in the area (Yaruss & Quesal, 2002). Simulation-based learning (SBL) involving the replication of real-world healthcare scenarios offers a solution to limited clinical placement opportunities in the practice area of fluency.

SBL aims to facilitate the development of students' knowledge and skills using a simulated learning environment and patient (Ker & Bradley, 2014). A simulated patient is a person who is trained to present an illness or condition typically encountered in clinical practice in a standardised and authentic manner (Barrows, 1993). Research suggests that speech pathology students find SBL valuable to increase confidence, improve knowledge, enhance preparation for practice (Larue et al., 2015) and reduce levels of anxiety related to practice (Penman et al., 2020; Shorland et al., 2018). Notably, SBL experiences have been shown to contribute to development of student competency, knowledge acquisition, critical thinking, and self-confidence (Hill et al., 2020). This evidence supports the use of SBL as a viable alternative to clinical placements (Hill et al., 2020; Larue et al., 2015).

The delivery of in-person SBL was impacted by the global COVID-19 pandemic when, in order to prevent the spread of the virus, the World Health Organisation (WHO) recommend physical distancing (WHO, 2020). Consequently, students were prohibited from gathering in learning spaces and tertiary education largely transitioned to an online format (Rose, 2020). These unprecedented circumstances required educators and students within the field of health to rapidly adapt to new models of learning, including videoconferencing (Cleland et al., 2020).

In speech pathology clinical practice, telepractice became the expected model of service delivery during the pandemic (Tohidast et al., 2020). Telepractice is defined as the provision of "clinical services at a distance by linking clinician to client, caregiver, or any person(s) responsible for delivering care to the client, for the purposes of assessment, intervention, consultation and/or supervision." (Speech Pathology Australia, 2014, p. 4). Student placements in telepractice contexts were also more prevalent with speech pathology students perceiving these to be beneficial for both clients and for their own learning (Bridgman et al., 2018). Similarly, online SBL received particular attention as it had the potential to provide educators with a means of continuing clinical development for students (Tabatabai, 2020).

The use of online SBL has already proven to be effective across a number of health disciplines, including dietetics, exercise physiology, physiotherapy, occupational therapy, and nursing (e.g., O'Shea et al., 2019; Randall et al., 2016). In the field of speech pathology, to the authors' knowledge, only one study has reported the use of online SBL (Howells et al., 2019). Howells and colleagues (2019) reported that

students perceived increased confidence following an online SBL experience focussed on working with adults requiring alternative and augmentative communication devices to support complex communication needs.

The COVID-19 pandemic is ongoing and as such the development, evaluation and subsequent sustainability of online SBL is critical (Contreas et al., 2020). This is particularly important in the practice area of fluency, where alternative clinical experiences are not readily available. Therefore, the current study aimed to investigate the perceptions of students, clinical educators and simulated patients who participated in an online adult stuttering SBL experience.

Method

Study Design

This study used a qualitative descriptive design. Qualitative research involves collecting and interpreting material derived from conversations or observations. Using a qualitative descriptive approach allows researchers to provide an overview of the key ideas described by participants (Sandelowski, 2000). Prior to commencing the study, ethical clearance was received from The University of Queensland (UQ) Human Research Ethics Committee (approval number 2020001460).

Participants

Three stakeholder groups who were involved in the online SBL experience were invited to participate in this study: (1) students, (2) clinical educators, and (3) simulated patients. Participants provided written consent and were informed that their decision regarding involvement would not impact their relationship with the university. Anonymity throughout the study was assured.

Participant group 1

Speech pathology students (n=33) enrolled in the first year of a 2.5 year graduate entry Masters program were invited to participate in the study. A total of 10 students, 90% of whom were female, agreed to participate. Students' ages ranged from 22–51 years (M = 29.5 years). All students had previous experience with SBL, however, only five students had prior experience using telepractice. Prior to their involvement in the simulation, students completed academic coursework to facilitate their theoretical understanding of fluency disorders, assessment and intervention within their first year of the speech pathology program. The online SBL experience aimed to provide students with an opportunity to apply their theoretical knowledge and develop clinical skills in the area of fluency. Regardless of study consent, the online SBL experience was an assessed component within the speech pathology academic program.

Participant group 2

All clinical educators (n=4) involved in the online fluency SBL experience consented to being involved in the study. The clinical educator's role was to facilitate students' learning and provide them with support throughout the experience. Participants were all female and had a range of experience as a clinical educator (1.5–25 years, M = 13.6 years). Three clinical educators (75%) had previous experience in the use of telepractice. Whilst three of the clinical educators had previous experience in SBL, only one had experience in online SBL. Two clinical educators had recently remotely supervised students in a telepractice clinical placement. Within this remote supervision model, the student, clinical educator, and client were in three separate locations, connected via a videoconferencing platform.

Participant group 3

All four trained simulated patients (two female, two male) who participated in the online SBL experience consented to participate in the study. The simulated patients portrayed the role of a person who stutters. On average, the participants had been working as a simulated patient for 9 years (range 4–16 years). Three participants had participated in online SBL prior to their involvement in this study.

Procedure

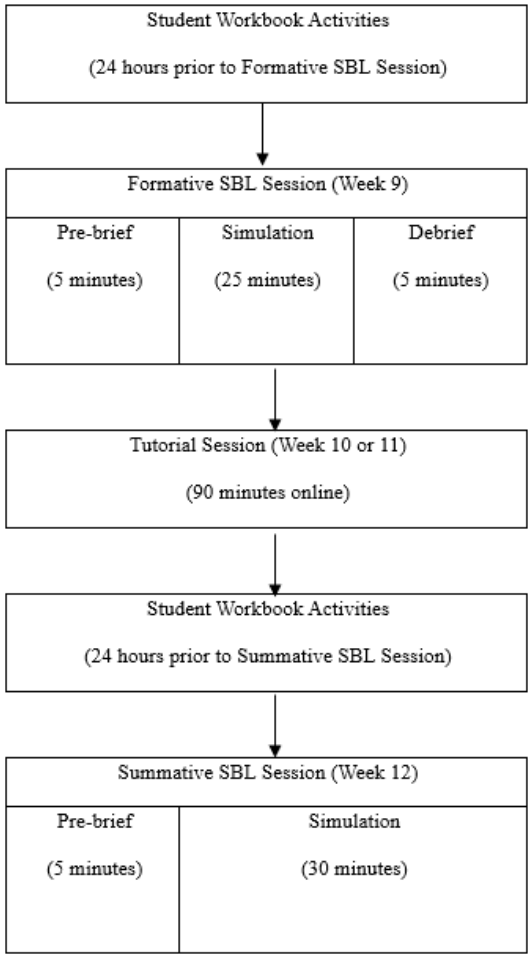
All consenting participants completed a demographic questionnaire which gathered information about participants' age, gender and previous experience with simulation and telepractice. All participants took part in the online SBL activity in their private home or on the university campus via the cloud-based videoconferencing platform, Zoom (version 5.0).

Simulation-based learning program

This online SBL program replicated an in-person SBL program (Penman et al., 2021) that is completed as part of the speech pathology standard curriculum. The original in-person SBL program was based on the simulation framework developed by Hewat and colleagues (2020). This framework incorporated key components of evidence-based simulation design and implementation (International Nursing Association for Clinical Simulation and Learning [INACSL] Standards Committee, 2016).

Figure 1

Schematic representation of the online simulation-based learning (SBL) program



Learning experiences were identical but the SBL program was transferred to an online modality. Students worked in pairs in two online SBL sessions (week 9 and 12 of academic semester) and an online small group tutorial (week 10 or 11 of academic semester) to apply their fluency-related theoretical knowledge. A simulation co-ordinator oversaw the implementation of the program. The first SBL session was 'formative,' meaning students were assessed but their grade was not considered as part of their overall achievement in the course (Figure 1). This allowed students to practise their skills and receive feedback

from the clinical educators about their performance. This feedback assisted in the following 'summative' SBL session where students' assessment results contributed to their overall course achievement. Between the SBL sessions, students attended a 90 minute online small group tutorial session (between 10–12 students) with a clinical educator. Students practised components of the SBL session and received verbal feedback from the clinical educator on their clinical performance.

Twenty-four hours before the SBL sessions, students were provided with a workbook including details of their simulated patient and a plan for the session. Each session consisted of a pre-brief (five minutes) and debrief (five minutes), as well as the SBL activity (25–30 minutes). Within the activity students conducted tasks typically undertaken with a client who stutters, including an assessment to identify the stuttering behaviours observed in the simulated patient's speech, determining an appropriate fluency severity rating, and obtaining a speech rate measure of syllables per minute. Students then guided simulated patients through a speech restructuring technique in order to modify their speech to decrease the severity of stuttering.

Data Collection

Semi-structured focus group interviews were conducted with each participant group separately, following the completion of both online SBL experiences. An interview guide was developed based on review of literature relating to simulation and online learning and researcher knowledge of the SBL activity. Participants were asked to reflect on their formative and summative experiences in the online SBL program. These focus groups were hosted via Zoom by a member of the research team who was not involved in the delivery of the online SBL experience. Focus groups aim to gather information about individual experiences, perceptions, and attitudes within a controlled interaction (Nyumba et al., 2018). In the current study, participants were asked to share their perspectives surrounding the online SBL experience. All focus groups were video and audio-recorded and then transcribed verbatim. The duration of focus groups ranged from 51–61 minutes (M = 57 minutes).

Data Analysis

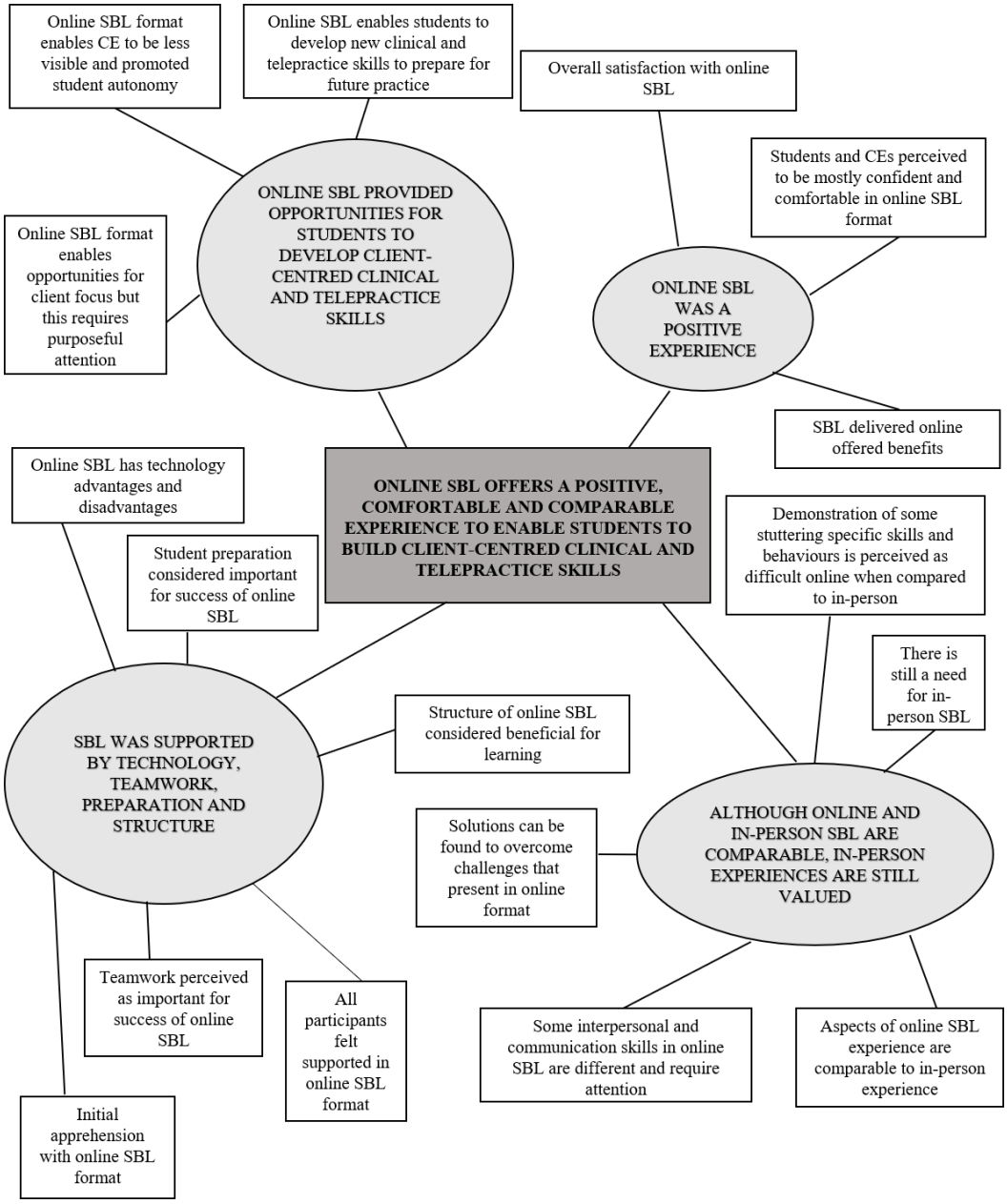
Data obtained from the student, clinical educator and simulated patient focus groups were analysed using thematic networks analysis, following the six-step process outlined by Attride-Stirling (2001). Thematic networks analysis uses the process of thematic analysis, however, is a means of organising this analysis into a network that depict the relationship between themes (Attride-Stirling, 2001). In step one, initial focus group data from one participant group were coded to produce a coding framework. Application and extension of this framework was conducted through the analysis of each subsequent focus group transcript. The codes from all data were then collated and categorised to develop basic themes in the second step. Step three involved construction of the thematic network. Basic themes were grouped together to produce organising themes. The main concepts from each of the organising themes were summarised to develop the overall global theme. Remaining steps of the thematic network analysis involved exploring and describing the network to generate a summary of the data to enable interpretation of the results. Steps one and two of the analysis were conducted by authors AP, MW and TL. To ensure rigour, another member of the research team (AH) reviewed codes and themes. Authors AP, MW, TL and AH were involved in steps 3 to 6. The thematic network was sent to participants for member checking to determine if the themes reflected their views as expressed in the focus groups (Cresswell, 2014).

Results

Analysis revealed 17 basic themes that were grouped to create four organising themes (Figure 2). The organising themes were then summarised to reveal the overarching global theme: online simulation offers a positive, comfortable, and comparable experience to in-person SBL to enable students to build client-centred clinical and telepractice skills.

Figure 2

Visual representation of thematic networks analysis of global theme (dark grey), organising themes (light grey), and basic themes for online simulation-based learning (SBL)



The four organising themes, with illustrative quotes are described below.

1. Online SBL provided opportunities for students to develop client-centred clinical and telepractice skills

Clinical educator and student groups reflected that the online SBL enabled students to gain new skills "I think it's a great opportunity for the students to really embrace the technologies that are going to be required of them moving forward" (Clinical Educator2 [CE2]). In addition to giving them more exposure to fluency-specific clinical skills, students particularly highlighted the importance of learning telepractice

skills to prepare them for future practice; “I think it's a central tool, central skills for us to graduate with” (Student3 [St3]).

Participants reported that the Zoom and its capacity to hide participant images enabled students to present more autonomously in sessions and focus on their performance with less pressure. Students perceived that “being able to put the person [clinical educator] hidden, it definitely felt we were more in control” (St3) with clinical educators reiterating this. This benefit enabled students to take the lead in sessions and focus more on their client; “I liked that the educator did turn off their screen during the session… so you don’t have another face looking at you or you can focus on your client more” (St7), an outcome also reported by simulated patients.

2. ***SBL was supported by technology, teamwork, preparation and structure***

Critical factors were identified by participants as contributing to the success of the online SBL. Whilst teamwork, the structure of the online experience and student preparation were facilitators, technology presented both advantages and disadvantages. Technology was reported to work well as it was streamlined and “was incredibly efficient” (CE4). The videoconferencing platform enabled identical and thus equitable prompts to all students regarding timekeeping; “they [prompts] were just really nice little cues for the students that really helped them” (CE2). In contrast, online SBL was perceived to be slower due to audio delays in message transmission and screen sharing “the reason it was taking a little longer than it would in person is because of all those waits in Zoom of ‘Are you finished? Is it my turn?’” (SP4). Students reported that lack of technical support at home and their reduced technical competency could impact on their performance; “I think the technology can be a bit more of a problem at home. If you're at university you can go to people and check” (St6).

Students and clinical educators valued the teamwork fostered by the online SBL. Students felt working in pairs was a positive experience and they were purposeful in ensuring equal contributions; “We respected each other's choices for what we were going to do and made sure that we had it pretty even” (St6).

Clinical educators reflected on “the collegiality and the teamwork” (CE4). Clinical educators and simulated patients reported feeling supported in the SBL online experience through direct contact with each other and the simulation co-ordinator, allowing for immediate feedback and response to questions; “You could get a lot more support perhaps when things weren't going as well” (CE4). Students felt supported in knowing that their clinical educator, whilst unseen at times, was available for assistance as needed.

Overall, students were perceived by clinical educators to be prepared for the SBL sessions. Clinical educators perceived that students had practised together prior to the online SBL experience, however, some clinical educators noted that the online SBL session allowed students to have access to scripts more readily “the students were being a bit more scripty; it's because they were on a computer” (CE1). Simulated patients also perceived students to be relying on a script during the session; “I have one student who it felt like was reading from a list a bit and it felt a bit like I was a vending machine” (Simulated Patient1, [SP1]), although students appreciated the opportunity to refer to their clinical notes and script. By the ‘summative’ SBL session, students reported less dependence on the written scripts; “I didn't need to look or feel that I had the script there as much” (St6). Students also reported a feeling of preparedness due to opportunities to observe exemplar video recordings of the session prior to the SBL sessions during their academic coursework.

Key components of the online SBL were considered to be beneficial for student learning. The structure of the SBL program - formative session, tutorial and then summative session - allowed the students to reflect, rehearse, apply their learning based on feedback received by the clinical educators, and ultimately improve their confidence levels; “It was nice that the first time it didn't really matter if you made mistakes or something, because it was just a learning experience” (St7). Clinical educators also reported increased confidence following further exposure in the online modality of the SBL program following initial apprehension; “because it was new” (CE1).

Self-reflection was valued by students and was facilitated in the time between each online SBL session and tutorial. Some students commented on the need for more time in the formative SBL session to manage complications such as screen sharing and delay in message transmissions with the clients. Students appreciated the inclusion of pre-briefing and debriefing opportunities and feedback from the clinical educators "her [the clinical educator] feedback was very direct and specific and accurate" (St8). Clinical educators were silent observers in the online SBL sessions and could freely take notes without disrupting the session, enabling richer feedback to students; "The students have had really good opportunities to get very specific direct feedback across a variety of different modalities" (CE1). Simulated patients also appreciated receiving feedback regularly from the clinical educator and simulation co-ordinator on the accuracy of their performance; "We were able to get feedback really quickly about how we should adjust our roles, our characters" (SP4).

3. Online SBL was a positive experience

Students and clinical educators were perceived to be mostly confident in the online SBL format. Despite some students reporting that they felt daunted initially with aspects of online delivery such as screen sharing, other students felt and clinical educators perceived that students appeared prepared and confident; "I felt very prepared going in" (St4) and "all of my students seemed quite well prepared and quite confident… I was quite impressed with all of my groups" (CE3). From the client's perspective, some simulated patients proposed that students presented as more relaxed in the online SBL "I wondered if some of the students who might have been super-nervous in person felt more relaxed" (SP4).

Students and clinical educators expressed overall satisfaction with the online SBL. It was reported as a positive experience and "it probably exceeded my expectations" (St6). Clinical educators conveyed a preference for online SBL in comparison to the traditional in-person mode; "If I had a choice, online" (CE1). Reported benefits of the online SBL included; "I really found it great managing my fatigue" (CE3), equity of learning experience for all students irrespective of their location, reduced concern with contracting COVID-19, and convenience; "When it finishes I don't have to rush and get home" (SP3).

4. Although online and in-person SBL are comparable, in-person experiences are still valued

All participant groups perceived outcomes comparable to in-person modality following participation in the online SBL experience. Students felt that similar clinical skills were gained:

> I don't feel like I left the sim thinking that would have been so much better in person or I've missed out in any way. I think they would be really comparable in terms of what they gave us with the skills (St5).

Clinical educators and simulated patients perceived student clinical competency levels to be similar to those demonstrated in in-person SBL.

Some challenges were also identified with online SBL. Clinical educators reported difficulty with observation of some specific stuttering clinical skills, with simulated patients required to exaggerate these stuttering behaviours to facilitate observation. In particular, demonstration of 'real-time' clinical skills involved in stuttering management, such as observing breathing and muscle tension, calculating stuttering rates or keeping a speech rate consistent, were identified as more challenging by all participant groups; "I think some of the signs, though, were more easily missed. Specifically, the stuff about shoulder tension or neck tension" (SP4).

Interpersonal and communication skills were reported as different in online and in-person SBL. Students perceived difficulty with turn-taking, eye contact and demonstrating empathy in an online format; "we did have an issue with interrupting each other whenever we talked" (St9). However, clinical educators indicated that these challenges provided an additional opportunity to discuss interaction skills with the students. Simulated patients discussed that students appeared to have difficulty interpreting body language and building rapport more readily; "I did feel it was harder for them to build that rapport" (SP3). Despite these challenges, solutions were identified such as preparation prior to sessions such as "any tele

tips… would have been really great" (St5). Encouraging the simulated patients to make stuttering behaviours more obvious was also suggested.

Participants expressed a need to have in-person clinical opportunities to ensure sufficient in-person practice prior to graduation "also quite nervous in the fact that we might very well graduate and … not have a lot of experience face to face" (St5). Simulated patients voiced an overall preference for in-person SBL, but suggested that a combination of both online and in-person experiences would be beneficial for students; "I feel like telehealth is going to be a big part of their [students'] career, so I think it's worth practising both" (SP4).

Discussion

This study aimed to investigate the perceptions of students, clinical educators and simulated patients who participated in an online adult stuttering SBL experience. Participants perceived online SBL to be a primarily positive experience that enabled comparable learning to an in-person SBL experience, as well as yielding additional clinical learning. Previous literature investigating online SBL in speech pathology has similarly found that students' perceived confidence and skills increased (Howells et al., 2019). The current qualitative study further contributes to the body of literature through an exploration of students', clinical educators', and simulated patients' voices. In particular, the perspective of the simulated patients on student learning and the impact of that learning in an online SBL format is an important inclusion that has rarely been considered in the wider SBL literature in speech pathology.

Investigation of students' insights into and development of clinical skills in an in-person stuttering SBL revealed that students demonstrated an improvement in the management of stuttering (Penman et al., 2021). The present study suggests that similar positive outcomes are also achievable when the SBL experience is converted to an online modality. Students and clinical educators expressed that the SBL features of pre-briefing, debriefing, feedback and opportunity to practice were appreciated. These learning process elements of SBL also exist in-person and are widely acknowledged as necessary to facilitate quality skill development (Ker & Bradley, 2014). Simulated patients also reported that feedback was important for the standardisation of their client portrayal in the SBL program. Previous studies have also demonstrated that the provision of feedback to simulated patients is valuable to ensure a high level of accuracy in their presentation (Furman, 2008). The videoconferencing system enabled the clinical educator to provide feedback to the simulated patients in a timely manner; an unexpected benefit of the online SBL experience.

Results showed additional benefits to conducting the SBL online. With clinical educators hidden from view, students were able to focus more on the client and on their own interpersonal skills without disproportionate attention to how they were being perceived by the clinical educator. Furthermore, the physical distance between each student pair, the clinical educators and simulation co-ordinator resulted in more purposeful attempts to communicate with one another, thereby strengthening teamwork. Additionally, students were found to be more prepared for the online SBL experience by scripting and rehearsing their interactions, potentially due to the additional considerations to conducting the session online (e.g., technology skills and possible communication breakdown). Given the benefits observed in student performance and teamwork reported by students and clinical educators, there is capacity to incorporate positive aspects revealed in the online SBL such as the use of instant messaging and encouraging student preparation in an in-person clinical experience.

The exposure to and development of skills in telepractice was an important outcome of this study. While telepractice was imperative during COVID-19, prior to the pandemic it had become an increasingly important component of service delivery and deemed a necessary inclusion in university programs (Overby & Baft-Neff, 2017). It is encouraging that participants were implementing solutions to overcome the challenges of stuttering management via the videoconferencing system. Results of this study suggest that students may have therefore gained skills which will support their participation in telepractice placements and practice into the future, specifically in the area of stuttering but also in other speech pathology practice areas. In future, however, to address the study participants' concerns about their preparation for the placement and their use of clinical skills in an online environment, more detailed training and guidelines in using Zoom and modifying clinical practice for telepractice are warranted.

A number of practice implications have emerged from the current study regarding student learning in an online SBL format. The worldwide COVID-19 pandemic continues to impact the accessibility of in-person clinical placements for students in health professions, as well as the delivery of education within the tertiary sector. Additionally, governments across the world have requested that university students return to their home country, which in turn has required university programs to transition to remote online learning. The online SBL enabled students to access clinical education and learning at their enrolled university, regardless of location. In addition, the presented online SBL, in line with the benefits of SBL more broadly (Ker & Bradley, 2014), has ensured that speech pathology students have guaranteed exposure to the management of fluency disorders, which is traditionally difficult to obtain (Yaruss & Quesal, 2002). The present study has revealed many additional benefits of the online SBL. Results, particularly from the perspectives of the students and clinical educators, suggest that continuing with an online format of SBL is worthwhile beyond the imposed restrictions of COVID-19. Whilst the majority of participants valued the online SBL experience, some students and simulated patients acknowledged the importance of both online and in-person clinical experiences in developing speech pathology skills prior to graduation.

Limitations and future directions

Whilst a strength of the study was its inclusion of three participant groups, sample sizes for each group were small and present a study limitation. Additionally, the online SBL experience was conducted at one university only with a single cohort and results may not be further generalisable. The study captured perceptions only and it is acknowledged that perceptions do not equate to competency. Therefore, future research should measure students' clinical competency to determine if there is an improvement between SBL sessions in an online format.

Conclusion

Shared perceptions of students, clinical educators and simulated patients about the online SBL experience revealed that it was a positive, comfortable and comparable experience that enabled students to build client-centred clinical and telepractice skills in the area of stuttering. While the online SBL was a necessary shift in academic curricula during the COVID-19 pandemic response, these positive outcomes suggest that online SBL has an important role in the education of speech pathology students alongside in-person clinical education experiences as a standard clinical placement option. To ensure continued success of such programs, it is paramount that key SBL practices are incorporated to facilitate quality student learning.

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Ethical approval

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