

Current and pre-pandemic use of digital technologies by speech-language pathologists and speech-language pathology graduate students to assess and treat fluency disorders

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1. Introduction

At the start of COVID-19, many speech-language pathologists (SLPs) and speech-language pathology graduate students were unprepared to offer teletherapy and were forced to innovate and transition to telemedicine. SLPs have indicated that they believe that telemedicine and the use of digital technologies to deliver therapy to their clients requires more innovative planning and preparation (Valentine, 2015). These digital technologies such as smartphones, Apps, social media, and the Internet have changed the way that research is shared and accessed (Finn, 2019). Various forums and communities have been effective as a form of support for people who stutter (e.g., online support groups, etc.). Raj and Daniels (2016) found that online communities for people who stutter are useful for psychosocial support because they provide members with a platform to connect with others to gain and provide support and encouragement.

Mashima and Doarn (2008) suggest that implementing “low-tech” digital technologies for assessment and treatment, such as training videos, recorded speech samples, telephone conversations, and e-mails, have yielded satisfactory clinical outcomes. However, with advancements in modern technologies and the staggering use of telepractice due to COVID-19, research is needed to investigate the new types of digital technologies that SLPs and graduate student clinicians use to assess and treat fluency clients. Currently, there are no known studies about the types of digital technologies SLPs and speech-language pathology graduate students use to assess and treat fluency disorders. It is important to obtain this information because more clinicians are now using digital technology to assess and treat fluency disorders. By gaining an understanding of the digital technologies that practitioners use, we will be able to determine which technologies are most often used to assess and treat fluency disorders and which ones are preferred.

The purpose of this study was (a) to explore the various types of digital materials used by SLPs and speech-language pathology graduate students to assess and treat fluency disorders, and (b) to compare pre-pandemic use to current use of digital technologies in fluency disorders. This information will provide an insight into the technologies that are used most often and the types of digital technologies that are preferred by SLPs and speech-language pathology graduate students.

2. Method

There were 284 SLPs from all 50 states who participated in the study. These included 276 certified SLPs, 1 clinical fellow, 11 clinicians with their doctorates, and 13 Board-Certified Fluency Specialists. An electronic survey (*SurveyMonkey*) was sent to 4,962 SLPs and yielded a return rate of 5.72%. Participants consisted of 13 males, 268 females, and 3 who preferred not to disclose their gender. Demographic information collected included duration of clinical experience, the state in which they provided clinical services, and work setting. Speech-language pathology graduate students included 295 student clinicians from universities across the United States. The participants indicated that they were either first- or second-year graduate students. Demographic information collected included years of clinical experience, clinical practice setting (e.g., university clinic), and the state that they provide services.

Electronic surveys using *SurveyMonkey* were sent to SLPs and graduate speech-language pathology students to determine the various digital technologies they currently use or have used to assess and treat fluency disorders before and during the pandemic. Participants were asked to answer all survey questions; however, they had the option of skipping open-ended questions. The SLPs received the survey through blind carbon copy (BCC) email from the member directory on the ASHA website. On the member directory that is found under the member center, there is an advanced search option that includes each state and certain criteria such as areas of expertise, primary employment facility, and primary employment function. These options were selected. A link to the survey was sent via a direct message; however, if an SLP decided to complete the survey, the person's name remained anonymous. The survey was sent to 4,962 SLPs who indicated on the ASHA portal that they had some expertise in fluency disorders. Of these, 284 SLPs completed the survey. The SLPs indicated that they worked in the following settings (with some in more than one setting): 53 in early intervention, 181 in preschool through 12th grade, 23 at a university clinic setting, 43 in an outpatient rehabilitation, 6 in an inpatient rehabilitation, 5 in acute care, 8 in home health, and 56 in private practice. The graduate speech-language pathology student survey was sent to 305 speech-language pathology graduate chairs from universities across the United States. The department chairs were requested to forward the surveys to their first and second-year graduate students. In total, 295 graduate speech-language pathology students completed the survey.

When participants launched the direct *Survey Monkey* link, they were presented with a consent form. Once they provided consent, the participants could begin the survey. Qualitative and quantitative data were obtained through the use of Likert-type, yes/no, and open-ended questions. Some of these questions included: Their use of digital technologies to virtually assess and treat fluency disorders prior to the COVID-19 pandemic and currently, the number of clients with fluency disorders they have assessed and treated, their comfortability assessing and treating fluency disorders, whether they believed that more resources are necessary to provide them with functional digital technologies to assess and treat fluency disorders, and which forms of digital technologies they preferred and why?

3. Results

Findings indicated that 65% of the respondents had an average of more than 10 years of work experience. With regard to comfortability with assessing and treating fluency disorders, 79.93% of SLPs agreed or strongly agreed that they were comfortable assessing fluency clients, and 73.24% agreed or strongly agreed that they were comfortable treating fluency clients. Additionally, 96% of respondents had worked with school-age children diagnosed with fluency disorders at some point in their careers and 64% currently worked in school settings.

From the 295 graduate speech-language pathology students who completed the survey, findings indicated that 40% of student clinicians had assessed and 63% had treated clients both virtually and in-person. Additionally, 40% of respondents had less than a year of clinical experience and 76% of the respondents had taken a graduate level course in fluency disorders. From the students who had taken graduate fluency coursework, only 17% indicated that they currently use digital technology to virtually assess and 37% currently use digital technology to virtually treat fluency disorders. With regard to their comfortability in assessing fluency disorders, only 30% of graduate students strongly agreed or agreed that they were comfortable assessing fluency disorders, and 53% strongly agreed or agreed that they were comfortable treating fluency disorders.

Table 1 provides details about how SLPs and graduate student clinicians assessed fluency disorders and if they used digital technologies to assess fluency disorders prior to COVID-19 and currently. Prior to the pandemic, very few SLPs and graduate student clinicians had virtually assessed fluency clients or used digital technology for fluency assessment. The data indicate that the number of clinicians (both groups) who currently use any digital technologies to assess fluency disorders has increased compared to pre-COVID-19.

Table 1. Use of Digital Technologies to Assess Fluency Disorders Prior to COVID-19 and Currently

	Professionals		Students	
	Yes	No	Yes	No
Assessed in person only	48.59%	51.41%	32.20%	67.80%
Assessed virtually only	1.06%	98.94%	12.54%	87.46%
Assessed in person and virtually	50.35%	49.65%	40.34%	59.66
Used digital technology for fluency assessment <i>before COVID-19</i>	14.79%	85.21%	4.41%	95.59
<i>Currently</i> using digital technology for fluency assessment	27.46%	72.54%	20.34%	79.66

Table 2 indicates where participants have treated fluency disorders (in-person or virtually) and compares their digital technology use before and during COVID-19. Prior to the pandemic, very few SLPs and graduate student clinicians had virtually treated fluency clients or used digital technology for fluency treatment. The data indicate that professionals and graduate student clinicians now have more experience treating fluency disorders in person and virtually. Additionally, the number of SLPs and graduate student clinicians currently using digital technologies to treat fluency disorders has increased compared to pre-COVID-19.

Table 2. Treatment and Use of Digital Technologies for Fluency Treatment Prior to COVID-19 and Currently

	Professionals		Students	
	Yes	No	Yes	No
Treated in person only	10.21%	89.79%	16.95%	83.05%
Treated virtually only	1.41%	98.59%	14.58%	85.42%
Treated in person and virtually	88.38%	11.62%	63.05%	36.95%
Used digital technology for fluency treatment <i>before COVID-19</i>	32.39%	67.61%	10.17%	89.83
<i>Currently</i> using digital technology for fluency treatment	55.99%	44.01%	40.00%	60.00%

Table 3 provides an outline of the general digital technologies SLPs and graduate speech-language pathology students have used to assess fluency disorders. The three primary places SLPs and graduate student clinicians obtain assessment materials are PDF files, websites, and mobile applications.

Table 3. Digital Technologies Used by SLPs and Graduate Student Clinicians to Assess Fluency Disorders

	Professionals	Students
Mobile applications	16.55%	11.19%
Websites	22.54%	19.32%
PDF Files	30.99%	20.34%
Online games	10.56%	8.81%
Online videos	12.68%	7.80%
Online books	10.56%	5.42%
Boom cards	8.80%	6.44%
None	58.80%	66.10%

Table 4 provides an outline of the general digital technologies SLPs and graduate speech-language pathology students have used to treat fluency disorders. The three primary places SLPs obtain treatment materials are websites, PDF files, and online video, whereas the three primary treatment tools that graduate student clinicians use are websites, PDF files, and online games.

Table 4. Digital Technologies Used by SLPs and Graduate Student Clinicians to Treat Fluency Disorders

	Professionals	Students
Mobile applications	35.56%	22.37%
Websites	60.21%	41.69%
PDF Files	54.93%	35.59%
Online games	42.61%	33.90%
Online videos	46.13%	28.81%
Online books	32.75%	20.68%
Boom cards	41.20%	21.69%
None	22.89%	35.93%

Results indicate that there are many favorite digital materials that are used for assessing and treating fluency disorders, including Boom cards, online videos and games, websites (e.g., Stuttering Foundation; Ultimate SLP), PowerPoint presentations, online games (e.g., Jeopardy) and Apps (e.g., disfluency index counter, metronome, turtle pacing board). The three main places SLPs learn about these digital technologies are blogs or websites (66.2%), from colleagues (64.4%), and via continuing education experiences (49.3%). Overall, 78.6% of SLP respondents agreed or strongly agreed that they need more resources to virtually assess fluency disorders and 79.5% agreed or strongly agreed that they need more resources to virtually treat fluency disorders. In comparison, the three main places that graduate student clinicians learn about these digital technologies are from supervisors (58%), blogs or websites (53.6%), and peers (42.4%). From these graduate student respondents, 83.73% agreed or strongly agreed that they need more resources to virtually assess fluency disorders and 85.76% agreed or strongly agreed that they need more resources to virtually treat fluency disorders.

4. Discussion

COVID-19 transformed the way SLPs and graduate student clinicians provide services to their clients. Overnight, clinicians needed to learn to not only use digital technologies to offer services but they also needed to develop innovative assessment and treatment procedures to serve their clients. Many of these digital resources were already available; however, to conduct assessment and treatment, SLPs as well as graduate student clinicians learned to adapt these technologies to digital platforms (e.g., Zoom, etc.). They overcame many technological challenges and began to incorporate engaging and practical strategies to assess and treat fluency clients. Though the use of digital technologies with fluency disorders has not become standard practice, when compared to pre-pandemic levels, SLPs and graduate student clinicians are now using more digital technologies to assess and treat fluency disorders. When used appropriately, digital technology has the capability of increasing client engagement because of the myriad interactive digital tools that are available (e.g., apps, video chats, speech blurbs, etc.). While assessment and treatment of clients who have fluency disorders is still conducted by traditional methods, the use of digital technologies has added another aspect to service delivery.

The results support previous research about the usefulness of digital technologies for assessment and treatment (Lowe et al., 2014; Mashima & Doarn, 2014; Valentine, 2015). The results highlight specific digital materials that SLPs and student clinicians prefer to use when they assess and treat clients with fluency disorders. As insurance companies continue to approve payments for teletherapy, SLPs will need to use digital materials to some degree to provide evidence-based assessment and treatment services to their clients. Although various digital technologies were identified in this study, further research is necessary to determine the most effective digital assessment and treatment material for clients with fluency disorders. Armed with information from this study, university programs can shape future student training. Student clinicians and university programs will know which digital therapy options are the most widely used, most popular, and easiest to use with fluency clients. Ultimately, SLPs and graduate student clinicians and their clients with fluency disorders will benefit from using digital technology.

Disclosures

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References

- Finn, P. (2019). The impact of social media on communication sciences and disorders: a need for examination and research. *Perspectives of the ASHA Special Interest Groups*, 4(2), 224-227. https://doi.org/10.1044/2019_PERS-ST-2019-0001
- Lowe, R., O'Brian, S., & Onslow, M. (2013). Review of telehealth stuttering management. *Folia Phoniatica et Logopaedica*, 65(5), 223-238.
- Mashima, P. A., & Doarn, C. R. (2008). Overview of telehealth activities in speech-language pathology. *Telemedicine and E-Health*, 14(10), 1101-1117. doi:10.1089/tmj.2008.0080
- Raj, E. X., & Daniels, D. E. (2016). Psychosocial support for adults who stutter: Exploring the role of online communities. *Speech, Language and Hearing*, 20(3), 144-153. doi:10.1080/2050571x.2016.1253533

Valentine D. T. (2015). "Stuttering intervention in three delivery models (direct, hybrid, and telepractice): two case studies." *International Journal of Telerehabilitation*, 6(2), 51-63. <https://doi.org/10.5195/ijt.2014.6154>