Research Article

Genesis of a New Generation of Telepractitioners: The COVID-19 Pandemic and Pediatric Speech-Language Pathology Services

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Purpose: In March 2020, the COVID-19 pandemic caused a worldwide shift from in-person care to synchronous videoconferencing or telehealth. Many barriers to remote service delivery were eliminated, effectively creating a new generation of telepractitioners. This study chronicles changes in speech-language pathology clinicians' use and perceptions of telehealth with pediatric populations.
Method: The *Telehealth Services: Pediatric Provider Survey* was created in multiple steps and then distributed broadly through social media and professional community sites. Respondents were speech-language pathologists and speech-language pathology assistants in a variety of employment settings from across the country and abroad who were serving primarily pediatric clients (*n* = 269). Survey questions sought to capture changes in speech-language pathology clinicians' experiences with and perceptions of telehealth before, during, and predictions after the COVID-19

pandemic. Analyses identified factors that influenced the use of telehealth services before and after March 2020 (COVID-19).
Results: Survey results documented the dramatic increase in telehealth use from before March 2020 to October 2020. The reasons pediatric speech-language pathology clinicians used telehealth during the pandemic were mostly a result of employer mandates or lowering infection risk for both client and clinician; however, over time, pediatric speech-language pathology clinicians increased their telehealth proficiency and discovered the benefits of telehealth.
Conclusion: The adoption of telehealth and the rapid improvement in proficiency is a testament to the resiliency of providers and has long-term effects on the use of telehealth into the future.
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Prior to March 2020, only 1.6% to 9% of global pediatric speech-language pathology services were provided via telehealth and using telecommunications technologies for synchronous videoconferencing (American Speech-Language-Hearing Association [ASHA], 2020b; Fong et al., 2020; Hill & Miller, 2012; Lam et al., 2021; Mohan et al., 2017; Taylor et al., 2014; Tucker, 2012). Many speech-language pathologists questioned the efficacy of telehealth or raised concerns about client comfort (Freckmann et al., 2017; Keck & Doarn, 2014; Lustig, 2012). Medicare, Medicaid, and many private insurers limited reimbursement for telehealth to specific services or providers (Martinez et al.,

2020; Mechanic et al., 2019). When a patient was fortunate enough to have telehealth coverage, finding a provider who was experienced in its use was challenging (Mechanic et al., 2019). Fewer than 25% of graduate programs addressed telepractice, and state licensing boards prohibited synchronous videoconferencing across state lines (ASHA, 2016c; Grillo, 2017; Grogan-Johnson et al., 2015; Houston et al., 2012; Martinez et al., 2020; Mechanic et al., 2019). Reimbursement, training, and licensure barriers hampered universal adoption of telehealth (Coufal et al., 2018; Dekhtyar et al., 2020; Houston et al., 2012; Martinez et al., 2020; Mechanic et al., 2019; Mohapatra et al., 2015).

For clients receiving therapy through school-based services, the availability of speech and language intervention via synchronous videoconferencing was just as bleak. In 2012, a survey reporting telepractice used by school-based speech-language pathologists revealed that only 1.8% of respondents had used this delivery method and they were more likely to be younger speech-language pathologists (Tucker,

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2012). The findings in this study were consistent with those in previous surveys conducted by ASHA and Tucker (2012). Speech-language pathologists in the schools identified administrative hurdles such as lack of allocation of funds for technology and personnel, lack of training, limited facility readiness, as well as negative attitudes toward telepractice (Sanchez et al., 2019; Tucker, 2012).

Speech-language pathologists in both health and education settings have expressed reservations about forgoing face-to-face interaction. Speech-language pathologists questioned how they could deliver therapy without the use of traditional procedures such as tactile cueing or directly manipulating a client's articulators (Coufal et al., 2018; Freckmann et al., 2017). Speech-language pathologists' negative attitudes, such as the perceived impersonal delivery of services or limited client–caregiver–clinician interactions, represented additional barriers to implementation of telehealth services (Freckmann et al., 2017). Thus, lack of knowledge and training in telehealth as well as speech-language pathologists' perceptions and attitudes about remote service delivery prevented providers from considering synchronous videoconferencing as a viable option for their services (Grillo, 2017; Lam et al., 2021; Taylor et al., 2014).

Even though speech-language pathologists may have been lacking formal telehealth training, clinicians in all therapy settings were gaining experience with the infrastructure and technology that provides the foundation for telehealth service delivery. For example, speech-language pathologists have been using tablet-based software applications (apps) and videoconferencing on their own computers or smart phones. Speech-language pathologists unknowingly were benefiting from advancements in mobile technology, synchronous electronic communication, and improvements in high-speed broadband connections, all of which are fundamental components and experiences that make telehealth feasible (Bashshur et al., 2020; Coufal et al., 2018; Dekhtyar et al., 2020; McClellan et al., 2020; Mohapatra et al., 2015).

Then, a novel coronavirus, COVID-19, forced "essential critical infrastructure workers" (Silver et al., 2020), including speech-language pathologists, to assess the risk of infection for both clients and clinicians when providing in-person care. Suddenly, the utility of telehealth usage came to the fore (Gaeta, 2020; Wang et al., 2020; Zhu et al., 2020). Speech-language pathologists, educators, and health care workers instantly participated in a massive, worldwide conversion from in-person care to telehealth (Bashshur et al., 2020; Smith et al., 2020; Tohidast et al., 2020). School-based clinicians, working under stay-at-home orders, adopted telecommunication services as it was the only option available for providing synchronous services. Most of the telehealth barriers that existed prior to COVID-19, including reimbursement, regulations, and technology as well as speech-language pathologists' negative perceptions of telehealth dissipated (Keck & Doarn, 2014; Lustig, 2012; Freckmann et al., 2017). Because telehealth enabled speech-language pathologists to provide care without the risk of spreading COVID-19, clinicians were forced to consider the viability of telehealth as a new option for service delivery (Tohidast et al., 2020).

To identify the effects of the COVID-19 pandemic on speech-language pathologists and their clients, American Speech-Language Hearing Association (ASHA) and researchers surveyed service providers. For example, in March 2020, Fong et al. (2020) found 72% of speech-language pathologists were new to telehealth and the majority had no prior training in the delivery method. In March and May 2020, ASHA investigated the needs of members, students and assistants (ASHA, 2020a, 2020b). In March, 87.5% of speech-language pathologists across all practice settings noted that COVID-19 had a major or moderate impact on them professionally or academically. In May, ASHA asked participants about their use of remote services prior to COVID-19 and currently. They reported that 4.5% of speech-language pathologists across all practice settings had previously used telehealth but that 63% were using it currently. However, 60.9% of speech-language pathologists found delivering their clinical services remotely as their greatest challenge. In November 2020, Tenforde et al. (2020) reported measures of high patient satisfaction with telehealth, across age and conditions for pediatric clients. Additionally, families responded positively when asked about their willingness to participate in future telehealth visits.

The surge of telehealth implementation during the pandemic is creating the opportunity for permanent adoption of remotely delivered speech and language services. Temporary, emergency waivers may soon become permanent, removing many of the previous reimbursement and regulatory barriers (Ortega et al., 2020; Tohidast et al., 2020). However, some issues and concerns that existed prior to COVID-19 still remain, such as disparities among those who have access to technology and broadband Internet (Benda et al., 2020; Fong et al., 2020; Monaghesh & Hajizadeh, 2020; Ortega et al., 2020; Smith et al., 2020). However, we do not know the extent to which the lack of technology or its infrastructure prevents clinicians and clients from connecting via telehealth during COVID-19. We do not know how the attitudes of clinicians, most specifically pediatric speech-language pathologists, have changed as a result of the increased use of synchronous, videoconferencing during the pandemic. Thus, much remains unknown.

Although previous studies have collected information about the use of and the attitudes toward telehealth in the provision of pediatric speech-language services, most of these data were collected prior to the COVID-19 pandemic (Manning et al., 2020; Orlando et al., 2019). Prior to March 2020, telehealth research was limited due to the prolific barriers and restrictions creating underutilization of this delivery method within the pediatric population. However, COVID-19 created a surge in speech-language pathologists using synchronous videoconferencing (ASHA, 2020b). The makeup of this cadre of speech-language pathologists included medical and educational providers, early-career and seasoned clinicians, and rural and urban speech-language pathologists. What made them unique was that they had rarely or never used telehealth previously to provide speech-language pathology services (ASHA, 2020b; Fong et al., 2020). Thus, what was known previously about telehealth

use and providers' opinions potentially has changed, with the genesis of a large, new cohort of telepractitioners. However, since the onset of the COVID-19 pandemic, there has been limited research investigating how the surge in telehealth use has affected pediatric speech-language pathology clinicians and their ability to provide therapy services remotely. Thus, a survey was developed with the aim to investigate the impact of COVID-19 on the provision of speech-language services using a telehealth delivery model.

The *Telehealth Services: Pediatric Provider Survey* was constructed to identify factors influencing the use of telehealth services before and after the onset of the COVID-19 pandemic. The single survey would be completed by speech-language pathology clinicians to collect retrospective data before and immediately after the pandemic, current data for the survey time period, and their predictions about future telehealth use. The data obtained have the potential to expand our knowledge about the future of telehealth use among pediatric speech-language pathologists. This may lead to additional research supporting the sustainability of long-term adoption of this delivery model, allowing clinicians to advocate for the permanent elimination of previous barriers (i.e., lack of reimbursement and limited clinical training) that had deterred speech-language pathologists from offering services via telehealth. Therefore, to inform this research, the following questions were addressed.

1. What is the employment setting and level of telehealth experience for clinicians providing speech-language therapy services prior to and after March 2020 (COVID-19)?

2. To what extent did telehealth use change from prior to and then during the COVID-19 pandemic? Did the use of telehealth over time influence speech-language pathology clinician's predicted future use of remote delivery of therapy services?

3. What are the reasons stated for telehealth use prior to and immediately after March 2020 (COVID-19) and into the future?

4. How does the use of telehealth over time influence speech-language pathology clinicians' perceived proficiency in providing remote therapy services?

Method

Survey Development

The *Telehealth Services: Pediatric Provider Survey* was constructed in stages using the process and standards described for questionnaire development (American Educational Research Association et al., 2014; Plake & Wise, 2014; Presser et al., 2004; Willis, 1999). First, the content validity was investigated to assess the appropriateness of the tool for making decisions and interpretations about the involvement of pediatric speech-language pathologists in performing therapy services via a telehealth delivery model (Cook & Hatala, 2016). A literature review and an examination of current surveys (i.e., March–July 2020) confirmed that

this content was relevant and not previously studied. Five steps were used to create and review the survey's domains and their component questions.

The survey was validated through the following steps: (a) generate a blueprint of survey items; (b) create an initial pool of survey questions; (c) test the presentation functioning of question items (continued throughout the validation process); (d) review of survey questions by at least five telepractice experts in the field of pediatric speech-language pathology and revise questions for clarity and relevance based on feedback; and (e) implement cognitive interviews with the revised survey by at least five practicing pediatric speech-language pathologists currently using telepractice and revise questions for clarity and relevance based on feedback.

Step 1: Survey Blueprint

To identify the impact of the sudden widespread use telehealth, there was a need to investigate clinicians' experiences performing therapy services remotely. Therefore, the first step was to refine the purpose of the proposed tool. Questionnaires disseminated during the period of March 2020 to July 2020 were reviewed. For example, in March and May of 2020, ASHA (2020a, 2020b) surveyed its members and inquired about the needs of audiologists and speech-language pathologists during COVID-19. The Aggarwal et al. (2020) survey in May 2020 noted the uptick of speech-language pathologists in India using telepractice after COVID-19. Based on this review of available surveys at the time of tool development, it was determined that none adequately represented the content of the identified need. For example, studies reported the increase in the number of speech-language pathologists who were doing telehealth prior to and directly after COVID-19, but they did not report the weekly volume of services that clinicians were providing during these time periods (e.g., 25% of their caseload receiving therapy remotely). Prior surveys acknowledged that COVID-19 was a significant reason most practitioners chose to use telehealth at the onset of pandemic. However, they did not ask what reasons clinicians were doing telehealth prior to March 2020 (COVID-19) or their rationale for telehealth, other than the pandemic, after March 2020. Subsequently, a review of the literature on telehealth, as well as the terms speech-language pathologists used, such as telepractice, telespeech, teletherapy, teleassessment, and telerehabilitation, was conducted to investigate the history of synchronous videoconferencing to provide pediatric speech and language services (ASHA, 2016a, 2016b, 2016c; Cason & Cohn, 2014; Freckmann et al., 2017; Keck & Doarn, 2014). Based on the review of surveys and extant literature as well as feedback from telepractitioners currently providing speech and language therapy, an initial blueprint of items was produced. This consisted of ideas, such as reasons providers might continue or abandon telehealth after the COVID-19 pandemic, and effects of speech-language pathologists' clinical experience, technical skills, or prior telehealth knowledge on current attitudes toward telehealth.

Step 2: Creation of Survey Questions

Question development followed Dillmans' (2000) "Principles of Writing Survey Questions." Survey items asked questions with a single idea per question, stated both sides of an attitude question in the stem (i.e., agree or disagree), used simple language, and included precise estimates to avoid vague quantifiers (i.e., rarely). During this step of the development process, 61 questions were initially created. Among those 61 questions, 27 were deemed relevant to the research questions for this study. Based on the literature review and feedback from practicing speech-language pathologists, questions were grouped by topic. Each of the six topics contained an item pool of up to 14 questions.

The survey questions were entered into Research Electronic Data Capture (REDCap) allowing the survey to be administered electronically. REDCap is an electronic data capture tool hosted in the University of South Florida. REDCap is a secure, web-based software platform designed to support data capture and analysis for research studies (Harris et al., 2009).

Step 3: Expert Panel Review

Speech-language pathologists with expertise in the area of telehealth were asked to review the survey. These professionals were identified from authors who had published in the area of telehealth, business owners of telepractices, and leaders of the ASHA Special Interest Group on Telepractice. Sixteen individuals were contacted by e-mail and asked to participate in an expert review of the proposed survey. Nine of them chose to participate. They were asked to provide feedback on the relevance and the clarity of each item using a 5-point rating scale. An additional, open-ended question option was available for each item, allowing experts to provide further information about their response, such as suggestions for modifying wording for greater clarity or opinions about relevance of questions to the proposed research. Any items that 75% of the experts rated as somewhat or not relevant or somewhat or not clear were considered candidates for elimination or major revision. Experts' suggestions were reviewed and considered for possible question revisions.

Based on the expert feedback, four irrelevant questions were eliminated, 12 vague questions were reworded for clarity, and three new questions were added. More significantly, the questionnaire was reorganized. In the original version of the survey, questions were grouped by topics that concurrently inquired about speech-language pathologists' and their clients' experiences. The experts suggested grouping the questions into more specific domains, separating questions pertaining to the speech-language pathology clinician versus their clients. The questions for each topic focused solely on questions related to clinician's experiences before and after the onset of COVID-19. Prior to the next step, all of the survey changes and revisions were made, and the revised online questionnaire items were tested for accurate functioning in REDCap.

Step 4: Cognitive Interviews

The last steps, prior to disseminating the final version of the instrument, were cognitive interviews with five seasoned pediatric clinicians. The interviews followed Willis (1999) guide to cognitive interviewing. Speech-language pathologists completed the survey using a think-aloud procedure. Two speech-language pathologists had prior experience with telehealth, and three were new to this service delivery model. One speech-language pathologist was interviewed in person, whereas the other four were interviewed via FaceTime. During the cognitive interviews, clinicians were asked to verbalize their answer choices, telling the survey developer everything that came to mind about how they arrived at their answers. Feedback was requested for every survey item. Anytime a speech-language pathologist was unsure of the content presented, such as concerns about clarity or meaning, they were engaged in a discussion to discern possible alternative wording or to make suggestions about ways to revise the survey item.

Upon completion of the cognitive interviews, additional revisions to the survey instrument were made. This included the following: reformatting questions to improve ease of response; eliminating more questions; rewording questions for clarity; changing questions to emphasize the focus on the clinicians' perspectives; streamlining the survey with additional branching of survey items; and defining terms used for clarity (i.e., suburban, rural, and urban; socioeconomic status). The finalized questionnaire can be found in Supplemental Material S1.

The final survey was composed of six topics that each participant was asked to self-report: employment and experience; telehealth services prior to the beginning of the pandemic, immediately after the pandemic began, during the survey period, and for the future (2021 and beyond); and reasons for telehealth usage.

Step 5: Survey Dissemination

In September of 2020, after receiving institutional review board approval, the survey, *Telehealth Services: Pediatric Provider Survey,* was disseminated (online and by e-mail). A one-paragraph overview explaining the purpose of the questionnaire was used to invite pediatric speech-language pathology clinicians to complete the survey. This was e-mailed to the directors of pediatric practices, school district speech-language pathology administrators, members of state and national organizations (i.e., ASHA, Florida Speech-Language Hearing Association, Learning Disabilities Association, Florida Learning Disabilities Association), and West Central Early Steps early intervention providers (i.e., birth to three providers) and was posted on social media sites (i.e., closed and public Facebook groups with pertinent interests, such as pediatric speech-language pathologists, school-based speech-language pathologists, telepractice). Additionally, this survey was shared on ASHA's State Advocates for Reimbursement (STARS) committee message board as well as the Special Interest Groups 1 (Language, Learning and Education), 11 (Administration and Supervision), and 18 (Telepractice). Follow-up reminders were sent and posted weekly until the survey closed on October 31, 2020.

Survey participation was voluntary. Participants provided informed consent prior to proceeding with the

questionnaire. The survey was designed to be completed in one administration; however, participants were provided the option to return at a later date if they were unable to finish in one sitting. During the survey, each respondent was asked to answer questions about past, recent, and future experiences.

Data Analysis

Experience and Setting

Descriptive statistics were used to summarize demographic data. Due to question responses being independent of one another, partial data were included.

Provision of Telehealth Services

Descriptive statistics were used to summarize the reasons speech-language pathology clinicians reported providing telehealth therapy service before and after the COVID-19 pandemic. Descriptive statistics also summarized the participants' impressions of the impact of the COVID-19 pandemic on their employment and ability to deliver in-person speech-language therapy services. A repeated-measures analysis of variance (ANOVA) was used to compare the mean scores of the frequency of telehealth use prior to March 2020, during March to July 2020, during August to October 2020, and predicted utilization for 2021 and beyond.

Proficiency

Descriptive statistics were used to compare the mean scores of the telehealth proficiency changes over time, as self-reported by survey participants.

Results

Participant Demographics

A total of 293 speech-language pathology clinicians completed the survey. None of the respondents were omitted as they all met the inclusion criteria. Because participants were able to choose the items they completed, 8.5% of the 293 participants did not answer all of the questions presented.

Demographic information is presented in Table 1. The clinicians practiced in 38 states, the District of Columbia, as well as from outside of the United States. Florida was overrepresented, and the southwest was somewhat underrepresented in the sample. The majority of participants were from suburban areas ($n = 164$). The most common primary employment settings were schools ($n = 78$) and private practices ($n = 64$). The survey included a variety of speech-language pathology clinicians, including speech-language pathology assistants. The vast majority of respondents (82%), though, held a master's degree ($n = 238$).

The participants' experience in the profession of speech-language pathology ranged from less than 1 year to 55 years with a mean of 16.7 years of experience ($SD = 11.7$). The participants' telehealth experience ranged from less than 1 year to 34 years with a mean of 1.88 years of experience ($SD = 2.9$), with the majority of clinicians (80%) reporting telehealth experience of 1 year or less. Approximately 74% of participants reported completing courses and/or training

on providing direct therapy services via telehealth. The majority of respondents reported completing one (33%) or more (67%) courses on telehealth, with many (31%) reporting that they performed mock therapy sessions with a peer or coworker.

Participants' Locations When Providing Telehealth Services

Participants were asked where they were located when providing telehealth services. For clinicians providing telehealth services prior to the COVID-19 pandemic ($n = 52$), home was the most frequent location (52%), followed by office (34%), school (12%), and car (1.5%). However, since the increase of telehealth services began occurring as a result of the COVID-19 pandemic, survey respondents ($n = 243$) reported an increase in services being performed from home (78%) immediately after the onset of COVID-19, with a large drop-off of office (18%) and school (2%). There was a shift to more office- and school-based telehealth services in August 2020, with home reported at 61%, office increasing to 24%, school increasing to 13%, and car still at 2%.

Participants' Provision of Telehealth Services

Survey participants were asked to reflect on past experiences, current experiences, and future expectations about providing speech-language therapy services remotely during four separate time periods. Only 18% of respondents ($n = 54$) reported that they had provided telehealth services remotely prior to the pandemic, whereas 87% ($n = 246$) of clinicians reported they had provided telehealth therapy services in the months after the pandemic began. This high rate of telehealth use continued during pandemic, with 90% of clinicians responding they provided direct telehealth therapy services. When asked if they would continue to provide speech-language therapy services remotely in 2021 and beyond, almost all of respondents (87%) predicted they would provide telehealth services in the future.

A speech-language pathology clinicians' years of experience did not negatively impact future telehealth use. Speech-language pathology clinicians with 15 or more years of experience ($n = 115$) predicted they would provide telehealth services (87.8%) in the future at the same rate as clinicians with less than 15 years of experience ($n = 131$; 87.6%).

Setting did not negatively affect predictions for future telehealth use. Survey participants from settings with more than 20 respondents (i.e., clinic, early intervention, independent contractor, private practice, school, and university) predicted frequent telehealth use in the future, with the highest percentage reported by early intervention speech-language pathology clinicians at 95% ($n = 46$) and the lowest reported by clinicians in school settings at 79% ($n = 78$).

Speech-language pathology clinicians were asked to retrospectively self-report the percentage of their clients in a typical week who received services via telehealth. Prior to the COVID-19 pandemic, 84% of respondents reported serving 0% of their caseload via telehealth and 4% reported

Table 1. Participant demographic information.

Region	n	%	Location	n	%	Setting	n	%	Education	n	%
Northeast	66	25%	Rural	45	16%	Clinic	39	13%	Associate	1	0%
Southeast	94	35%	Suburban	164	57%	Clinician's home	6	2%	Bachelor's	20	7%
Midwest	44	16%	Urban	80	28%	Early intervention	46	16%	Master's	238	82%
Southwest	14	5%				Homecare	3	1%	Doctorate	23	8%
West	31	12%				Hospital	4	1%	Professional	5	2%
Outside of the United States	19	7%				Independent contractor	23	8%	Other	2	1%
						Private practice	64	22%			
						School	78	27%			
						University	23	8%			
						Other	3	1%			
	268			289			289			289	

Note. The regions are as follows: Northeast (ME, MA, RI, CT, NH, VT, NY, PA, NJ, DE, and MD); Midwest (OH, MI, IN, IA, WI, IL, MN, MO, ND, SD, NE, and KS); Southeast (VA, WV, KY, NC, SC, TN, GA, FL, AL, MS, AR, and LA); Southwest (AZ, TX, OK, and NM); and West West (ID, CO, NM, AZ, UT, NV, CA, OR, WA, AK, and WY).

serving 100% of their clients remotely. In contrast, immediately after the pandemic began ($n = 272$), only 13% reported serving none of their caseloads via telehealth and 40% of clinicians reported serving 100% of their clients via telehealth. During that same period, the clinicians reported their average telehealth use per week was 69% ($SD = 37$) of their caseloads, with a median of 89%. This trend continued during the pandemic with only 12% reporting they were not providing services via telehealth and 34% of clinicians reported providing all of their services via telehealth; the average telehealth use per week was reported as 64% ($SD = 38$) of their caseloads being treated via telehealth, with a median of 80%. When predicting into the future, only 15% indicated they would not provide telehealth services and 9% reported they would provide all of their services via telehealth. The remaining clinicians predicted they would provide some telehealth services going forward, with predictions averaging 45% ($SD = 34$) of their caseloads being treated via telehealth, with a median of 48%.

Survey participants retrospectively self-reported the percentage of telehealth services they performed weekly (a) prior to the COVID-19 pandemic (March 2020) and (b) immediately after the pandemic began (March to July 2020); they also reported the percentage of telehealth services they performed (c) during the survey period (August to October 2020); and (d) they predicted for the future (2021 and beyond). A 6 (setting) × 4 (time) mixed ANOVA was performed to evaluate the percentage of telehealth services performed weekly over the four time periods for the six primary employment settings with more than 20 survey respondents (i.e., clinic, early intervention, independent contractor, private practice, school, and university). A summary of the participants' responses is presented in Figure 1. The results revealed significant main effects for time, $F(3, 214) = 151.9$, $p < .0001$, and for setting, $F(5, 216) = 3.21$, $p = .0082$, and no significant setting × time interaction. As is evident in Figure 1, independent contractors showed the most telehealth use. A post hoc Tukey honestly significant difference comparison test indicated that the mean score for independent

contractors was significantly different from schools ($p < .010$) and clinics ($p < .012$), whereas comparisons among the other settings did not differ significantly.

Participants' Reasons for Providing Telehealth Services

Participants retrospectively self-reported the reasons they were providing speech-language services remotely prior to the COVID-19 pandemic. As shown in Table 2, 67% of respondents reported they were not providing telehealth services. Clinicians who were providing speech-language therapy services remotely reported the ability to provide services for clients who travel long distances for in-person care (18%), the ability provide care to clients living in rural areas (17%), and the convenience of the client (17%) as the top three reasons for providing telehealth services. Only 5% of respondents reported that they did not provide telehealth services immediately after the pandemic began. Notably, 42% reported telehealth services were mandated by their employer. Clinicians who were providing speech-language therapy services remotely also reported lowering potential COVID-19 spread among speech-language pathologists and clients (68%), lowering their clients' exposure risk for illness (72%), and lowering potential exposure risk for the clinician (65%) as the top three reasons for providing telehealth services. When clinicians ($n = 265$) were asked about their future use of telehealth, only 8% of clinicians predicted they would not be providing therapy services remotely. Clinicians predicted the top three reasons they will provide speech-language therapy services remotely will be to lower clients' exposure risk for illness (72%), to lower clinicians' exposure risk for illness (58%), and for the convenience of the client (54%).

COVID-19's Impact on Employment and Service Delivery

Participants retrospectively self-reported the effect of the COVID-19 pandemic on their employment and ability

Figure 1. Percentage of telehealth services reported or predicted over four time periods by respondents from six employment settings when surveyed in September 2020.
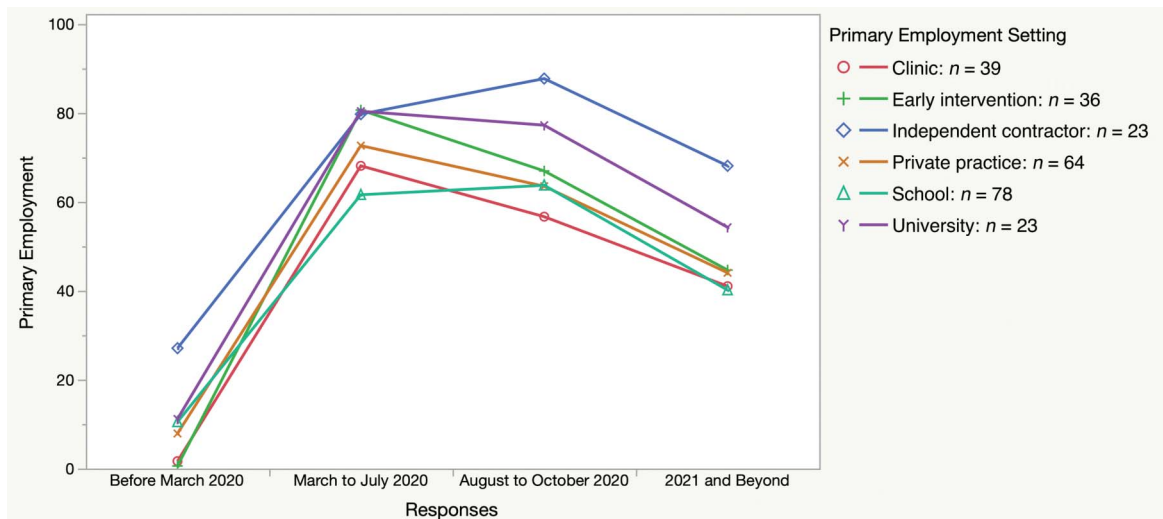
to deliver in-person speech-language therapy services. Immediately after the pandemic began, 26% of clinicians reported their employer temporarily closed, 11% reported being furloughed, and 4% reported they were provided paid time off during their employer's temporary closure. For clinicians who continued to provide care, they reported how their service delivery for speech-language services was affected by the pandemic. The majority of respondents (93%) reported they were able to provide direct telehealth therapy services. However, only 28% of clinicians reported that the choice of in-person care or telehealth services were optional for their clients; 72%

of clinicians reported that the only way their clients could receive therapy services was via telehealth. For the clinicians for whom telehealth was optional for their clients, 77% reported that their clients were open to either telehealth or in-person therapy services. In-person care was affected by the pandemic, with only 19% of clinicians reporting the ability to continue to provide face-to-face services and 18% reporting they were able to continue to practice off-site (i.e., travel to the client's home) and 30% reporting they were providing therapy services through an alternative method of delivery (i.e., paper packets and parent consultation).

Table 2. Reasons for providing telehealth services over time.

Reason	Before March 2020 N = 262	August to October 2020 N = 264	2021 and beyond N = 265
I was not providing telehealth services	n = 175; 67%	n = 14; 5%	n = 22; 8%
Ability to provide services while lowering potential COVID-19 exposure risk to SLP and client	NA	n = 178; 68%	
Ability to provide therapy services for clients who travel long distances for in person	n = 48; 18%	n = 74; 28%	n = 107; 40%
Ability to provide therapy services to rural areas	n = 44; 17%	n = 64; 24%	n = 100; 38%
It is required/mandated by my employer	NA	n = 110; 42%	n = 68; 26%
Convenience of client	n = 45; 17%	n = 105; 40%	n = 142; 54%
Convenience of clinician	n = 40; 15%	n = 73; 28%	n = 97; 37%
Lower the exposure risk for illness: client	n = 36; 14%	n = 190; 72%	n = 164; 62%
Lower the exposure risk for illness: clinician	n = 35; 13%	n = 172; 65%	n = 153; 58%
Lower the exposure risk for medically fragile children	n = 39; 15%	n = 152; 58%	n = 141; 53%
Ability to provide therapy to clients who may have otherwise canceled appointments	n = 38; 15%	n = 110; 42%	n = 134; 50%
Reduce clinician exposure to sick clients	n = 28; 11%	n = 137; 52%	n = 128; 48%
Ability of clinician to work from home	n = 43; 16%	n = 93; 35%	n = 128; 48%
Ability of client to have access to experts	n = 37; 14%	n = 65; 25%	n = 93; 35%
Cost-effective means of providing services	n = 28; 11%	n = 53; 20%	n = 77; 29%
Other	n = 16; 6%	n = 13; 5%	n = 16; 6%

Note. SLP = speech-language pathologist.

During the survey time period (August–October 2020), a small percentage of respondents reported their employment continued to be affected. Employers temporarily closed for 4% of clinicians, 1% stated they had been furloughed, and < 1% were provided paid time off during their employers' temporary closures. In contrast, service delivery continued to be impacted. The majority of clinicians (95%) reported they were able to provide direct telehealth therapy services, but only 53% stated they were able to continue to provide in-person therapy services. Off-site services (i.e., travel to the client's home) continued for 28% of survey participants. Lastly, 18% of respondents stated they were providing therapy services through an alternative method of delivery (i.e., paper packets and parent consultation).

Participants' Proficiency Providing Telehealth

Participants who were providing speech-language therapy services via telehealth prior to the COVID-19 pandemic ($n = 49$) were asked to retrospectively rate their own level of proficiency (on a scale of 0–100) in delivering these services. The median score was 84 with a mean proficiency of 79.8 reported ($SD = 17.1$). Participants who were providing speech-language therapy services via telehealth immediately after the pandemic began were asked to retrospectively rate their own level of proficiency (on a scale of 0–100) in delivering services remotely. The median score was 64 with a mean proficiency rating of 61.1 ($SD = 24.0$). However, participants who were providing speech-language therapy services via telehealth during the survey period (August–October 2020) ($n = 240$) rated their own level of proficiency similar to the clinicians who were providing remote therapy services prior to the pandemic, with a median score of 83 and a mean proficiency of 76.8 reported ($SD = 20.2$). As shown in Figure 2, the first and third panels are both skewed to reflect higher self-reported telehealth proficiency ratings, whereas the middle panel (immediately post-pandemic) is shifted down to reflect lower self-reported proficiency ratings and is more normally distributed.

Discussion

This paper describes the development, distribution, and responses to the *Telehealth Services: Pediatric Provider Survey Questionnaire*. The questionnaire was designed to identify the effects of the sudden widespread use of remote delivery of services, investigate pediatric speech-language pathology clinicians' experiences performing these vital services, and inquire about possible reasons clinicians used telehealth before and after the COVID-19 pandemic. Previous studies by Freckmann et al. (2017) and Tucker (2012) emphasized that one significant barrier of widespread speech-language pathology telehealth use was the reluctance of speech-language pathologists to attempt remote delivery of therapy services. The COVID-19 pandemic quickly changed this reluctance, requiring an entire generation of clinicians to learn to adapt and use telehealth to provide vital

speech-language services, thus potentially eliminating a long-standing barrier.

Not surprisingly, the results of this study identified a significant increase in telehealth use from prior to the COVID-19 pandemic (March 2020) to after the onset of the pandemic (i.e., March–July 2020 and August–October 2020). These findings are consistent with previous surveys in the United States and other countries. For example, Aggarwal et al. (2020) reported not only an increase in therapy services delivered remotely in India immediate after the COVID-19 pandemic but also acceptance and predicted future use. Speech-language pathologists who previously used telehealth understood its potential to provide access to clients in a larger geographical area and not predominantly clients who lived in rural areas (Manning et al., 2020; Sutherland et al., 2016). The pandemic enabled a diverse group of pediatric speech-language pathologists to finally experience this utility.

In contrast to other surveys completed after the pandemic, the *Telehealth Services: Pediatric Provider Survey Questionnaire* gathered more specific information about clinicians' use of telehealth to provide services. Respondents were asked to indicate the percentage of services provided via telehealth in a typical week. The majority of speech-language pathology clinicians (93%) were using telehealth immediately after the onset of the COVID-19 pandemic, and 42% of them initially were forced to use telehealth, as it was the only option clinicians had to continue providing care to their clients. As time went on though, clinicians reported they continued to use telehealth to provide therapy services (95%). Moreover, the majority of survey participants responded positively when asked if they will continue to provide therapy services remotely in 2021 and beyond (87%), predicting that 45% of their caseload will be treated via telehealth.

Future telehealth use was not influenced by the clinician's years of experience, in contrast to Tucker's (2012) findings. Tucker found that telehealth willingness was inversely related to age, suspecting the relationship was the result of young speech-language pathologists' familiarity with the technology. Future telehealth use also was not influenced by the clinicians' work setting. This, too, was in contrast to Tucker's (2012) and ASHA, 2014, 2016c) surveys that found limited telehealth use in several settings, including schools and universities. The desire to continue the remote delivery of services beyond what was initially perceived to be short-term use during the pandemic may indicate a significant change in attitude toward telehealth services, from early career to seasoned clinicians, no matter the setting. Fong et al. (2020) reported that speech-language pathologists' acceptance of telehealth's effectiveness is aided when clinicians are provided professional development. This also seems to be true of clinicians who are forced to adopt telehealth as a new and necessary professional expectation.

One reason for this attitudinal change may be clinicians' perceived proficiency in being able to deliver services remotely. The few clinicians with telehealth experience prior

Figure 2. Histogram and box plot showing self-reported telehealth proficiency before and after the COVID-19 pandemic.
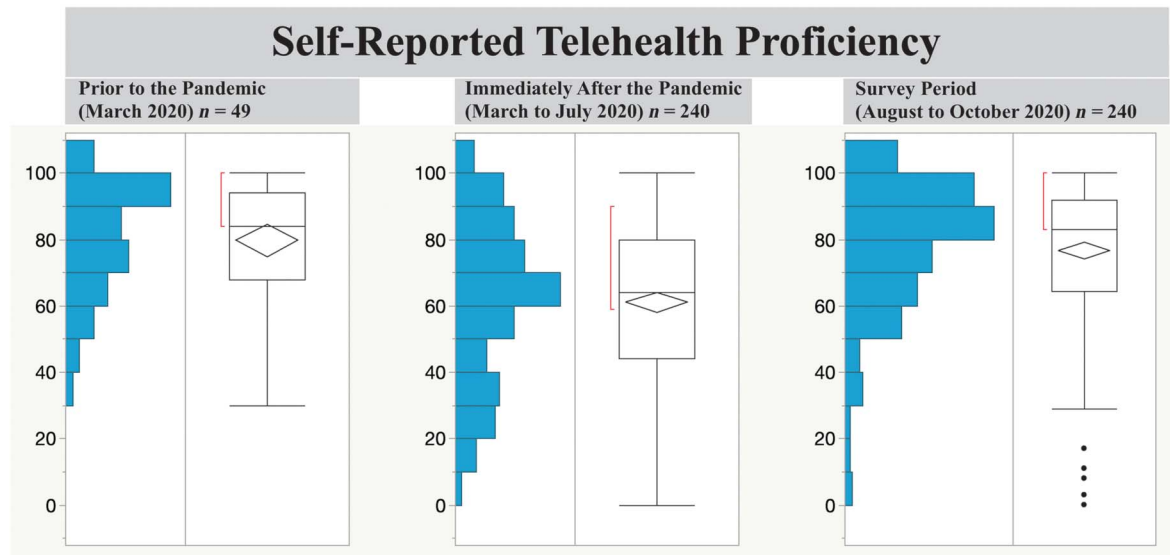
Note: box = 25th to 75th percentile; diamond = mean; circle = outlier; red bracket = shortest half of data (densest region).

to the onset of the pandemic rated their proficiency in delivering therapy service via synchronous videoconferencing highly. In contrast, the self-reported proficiency ratings were much lower among clinicians who began using telehealth immediately after the pandemic. Among those who continued to provide telehealth services during the pandemic, however, high ratings of self-reported proficiency became evident. Previous telehealth research reported that one barrier to remote delivery of speech-language therapy services was apprehension to even try telehealth. The sudden need to use telehealth during the pandemic allowed speech-language pathology clinicians who previously had not considered the utility of telehealth to discover its many benefits. This was apparent when speech-language pathology clinicians reported the reasons they were using telehealth.

Speech-language pathology clinicians' reasons for telehealth use changed over time. For providers who used telehealth prior to the pandemic, their primary reason for telehealth use was based on distance (35%, i.e., ability to provide therapy services for clients who travel long distances for in-person or to provide therapy services to rural areas) and convenience (32%) for both client and clinician. This was supported by the locations in which speech-language pathology clinicians provided therapy services, mostly from home (52%) and their office (34%). During the pandemic, reasons revolved around safety, by lowering infection risk for both client and clinician (72%) or because it was mandated by an employer (42%). This again was supported by the locations in which speech-language pathology clinicians provided therapy services, with an increase in services being provided from home (78%) and a decrease in services delivered in clinicians' offices (18%). However, clinicians who may have discovered the benefits

of telehealth report they will continue to provide services remotely in the future for the same pre- and post-pandemic reasons: distance, convenience, and safety.

During the COVID-19 pandemic, telehealth initially offered the ability for speech-language pathologists to work from home and children to receive services in the safety of their own homes. However, as a result of the increase in services being provided remotely, clinicians quickly adapted to using this new option of service delivery and seemed to have recognized the utility of telehealth (Tohidast et al., 2020). COVID-19 potentially has changed the landscape of health care and education forever. Current and future speech-language pathologists should therefore be afforded the opportunity to continue to expand and grow our knowledge about telehealth services, including training at the academic level, clinical work in the professional setting, and research about assessment and intervention services.

Limitations

Limitations should be considered when interpreting the results of this study. The sample size of 293 is relatively small in relation to the population of pediatric speech-language pathologists and speech-language pathology assistants. Additionally, due to the nature of distributing the survey through social media and ASHA's special interest groups, a rate of return could not be calculated. Finally, 25% of the respondents came from one state (Florida), which could bias results.

Although speech-language pathology assistants were invited to participate, there was a low percentage of respondents without a master's degree. In addition, information on the type of certification or licensure for each survey

participant was not collected. Therefore, it is unknown how many of the survey participants with bachelor's degrees were grandfathered speech-language pathologists, speech-language pathology assistants, speech-language pathology graduate students, or school-based clinicians with a speech-language impaired professional certificate or teaching certification.

Conclusions and Future Research

The unprecedented challenges brought on by the COVID-19 pandemic forced many medical and education providers to immediately consider and implement the delivery of their pediatric speech-language therapy services through synchronous videoconferencing. As this study has revealed, the adoption of telehealth and the rapid improvement in proficiency is a testament to the resiliency of providers. Thus, the pandemic created a new cohort of speech-language pathology clinicians across all settings and not limited by age or experience. This cohort, the next generation of telepractitioners, plans to continue using this delivery model, both in the short and long term.

However, for telehealth to sustain and evolve in a post-pandemic world, further research should investigate how speech-language pathology clinicians and clients perceive telehealth use and identify any barriers that continue to exist post–COVID-19. The surge of telehealth use could be indicative of permanent changes in attitudes and reductions in barriers that once existed prior to March 2020. Other types of therapy providers have begun to investigate these changes. For example, clinicians with knowledge and experience using telehealth in mental health settings were more likely to have positive opinions about its use (McClellan et al., 2020). Physical, occupational, and speech therapy as well as audiology visits were often not eligible for insurance company reimbursement prior to the pandemic; currently, telehealth visits are covered by insurers. Thus, telerehabilitation is now available to treat a variety of conditions and clients have subsequently reported high patient satisfaction with this service delivery option (Steuerwald et al., 2018; Tenforde et al., 2020). Therefore, factors that optimize speech-language therapy services delivered remotely should be researched.

Barriers to remote delivery of care is an ongoing concern for all telehealth providers (Benda et al., 2020; Ortega et al., 2020). Even though many pediatric clients were able to receive speech-language therapy services remotely during the COVID-19 pandemic, there remained those for which the option of telehealth was not viable. Further research should investigate the more nuanced information about how telehealth is administered and its effectiveness with different subgroups of pediatric clients, such as by age, condition, location, and socioeconomic status. Furthermore, research should identify what new technologies and applications are still needed to overcome ongoing challenges.

Finally, speech-language pathologists who previously performed the majority of their evaluations and treatments in person have now pivoted to providing these same services remotely. This increase in telehealth use, as a primary delivery method, now and in the future opens the door to new lines of research, investigating the feasibility, validity, and reliability of diagnostic services being provided remotely. Unfortunately, this line of research has been limited in pediatric speech-language pathology when compared to other allied health fields. For example, in psychology, Wright (2018, 2020) compared face-to-face administration to remote delivery of cognitive and achievement tests, determining that the online procedure was a viable alternative. In occupational therapy, Worboys et al. (2018) found that hand function assessments performed via telehealth had high levels of agreement with a traditional clinic model for objective measures Therefore, future speech-language pathology studies involving therapy evaluations and treatment procedures should now include both delivery modalities—in person and remote—when evaluating their effectiveness.

As speech-language clinicians have considered the scope of utility of telehealth, they have discovered unanticipated benefits of its use and plan to continue providing care using synchronous videoconferencing. It is now the job of researchers to investigate the relative effects of speech-language therapy services being provided remotely.

Acknowledgments

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