UK paediatric speech and language therapists’ perceptions on the use of telehealth in current and future clinical practice: An application of the APEASE criteria

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Abstract

**Background:** Telehealth for paediatric speech and language therapy became one of the most salient modes of service delivery during the COVID-19 pandemic. Evidence for speech and language therapy services via telehealth in comparison to face-to-face delivery demonstrates promising outcomes, and studies have begun to explore practitioner and client experiences. However, across the literature, many critical elements of services are overlooked, and there is a need to frame the evidence base within a theoretical model that can draw out practical implications that consider the range of factors having an impact on clinical implementation in real-world contexts. The APEASE (Acceptability, Practicability, Effectiveness, Affordability, Side-effects, and Equity) criteria offer such a model. The current study explored practising UK speech and language therapists’ (SLTs) clinical experience of telehealth through the lens of the APEASE criteria and aimed to identify recommendations for future service provision from the practitioner perspective.

**Methods:** An online survey structured using the APEASE criteria was developed in collaboration with the UK Royal College of Speech and Language Therapists. Quantitative data were analysed using descriptive statistics and qualitative data were analysed using reflexive thematic analysis.

**Results:** Four hundred and thirty-eight qualified and practicing UK paediatric SLTs completed the survey. Telehealth was broadly acceptable and practicable to SLTs yet there remains some uncertainty about its efficacy and cost-effectiveness compared to face-to-face interventions and how equitable it is for different population groups. SLTs reported that effective implementation of telehealth services was dependent upon several contextual factors; affordability was a perceived barrier to clients having access to telehealth resources, intervention via telehealth...
was perceived as more acceptable than assessment, and whilst many SLTs welcomed aspects of telehealth, there were concerns about the physical and mental health consequences for practitioners. Six themes for the future development of telehealth in paediatric speech and language therapy were identified: (1) balanced and tailored services; (2) technology and equipment; (3) information and communication; (4) capacity building; (5) monitoring and evaluation; and (6) leadership and governance.

Conclusions: Outcomes highlight promising, concerning and uncertain aspects of telehealth in paediatric speech and language therapy. SLTs value a flexible and tailored approach to service delivery and recommend that effective leadership, clear communication, ongoing policy and guidance development, upskilling of users and careful evaluation of impact are required to ensure optimal implementation. The APEASE criteria offer a valuable opportunity to enhance and streamline practice and research to ensure sustainable implementation of telehealth in the paediatric speech and language therapy services of tomorrow.

KEYWORDS
APEASE, child, speech and language therapy, telehealth

WHAT THIS PAPER ADDS
What is already known on this subject
• The COVID-19 pandemic led to the increased use of telehealth as a main mode of service delivery in paediatric speech and language therapy. Pre-COVID-19, evidence for the use of telehealth in this field included small-scale experimental studies that reported on children with particular disorders and explored telehealth outcomes in comparison to face-to-face delivery. The realities of at-scale clinical practice were not well-represented, and critical elements of service such as cost-effectiveness were often overlooked in the paediatric literature. Furthermore, despite emerging global evidence for temporary telehealth responses to the crisis in speech and language therapy, the long-term and future use of telehealth remains unclear.

What this paper adds to existing knowledge
• The current study applied the lens of the APEASE (Acceptability, Practicability, Effectiveness, Affordability, Side-effects, and Equity) criteria, which were used in this case to consider socioeconomic, ecological and cultural factors to capture an overarching understanding of the use of telehealth in paediatric speech and language therapy, and to inform the role of telehealth in future, longer-term and at-scale service development. Results indicated emerging trends in UK paediatric speech and language therapists’ (SLTs’) perceptions of telehealth and SLTs perceived a hybrid approach to service delivery, combining mostly face-to-face services with some telehealth, was likely to continue in the future. We identified six themes to guide the future development of telehealth in paediatric speech and language therapy services: (1) balanced and tailored
What are the potential or actual clinical implications of this work?

- UK SLTs believe that speech and language therapy services using telehealth should be reflective, tailored and flexible to meet the requirements and circumstances of the children, young people and families served, as well as the physical and emotional needs of practitioners. SLTs recommend that this service development is clearly communicated to all stakeholders and suggested that those using telehealth should be supported through appropriate training, and ongoing effectiveness should be monitored. Telehealth is here to stay and the APEASE criteria offer a unique opportunity to ensure sustainable models of service delivery; to support co-ordinated leadership at the local, national and international levels and the development of policy and clinical guidance.

INTRODUCTION

Telehealth (also known as telepractise, telecare, or telemedicine) is defined by the World Health Organization (WHO) as the delivery of services where ‘a health care provider and a patient are separated by distance’ (WHO, 2016). In many areas of healthcare, telehealth emerged in the 1990s to address physical and financial barriers of access to interventions, such as delivering services to populations living in remote and rural areas (Cochrane et al., 2018) or for individuals with mobility disabilities (Glueckauf et al., 2002). Until recent years, the steady development of speech and language therapy telehealth services was supported by increasingly accessible and affordable technology, but face-to-face service delivery remained by far the most common mode of service delivery. In early 2020, the COVID-19 pandemic led to a dramatic rupture in the delivery of rehabilitation services around the globe; one key component of this change was the unprecedented increase in the use of telehealth as a main mode of service delivery (WHO, 2020).

Before the COVID-19 pandemic, the telehealth literature in the field of paediatric speech and language therapy was characterised by specific trends (Law et al., 2021). Studies were often focused on particular groups of children with speech, language and communication needs (SLCN). These include telehealth interventions for children who stutter (Lowe et al., 2013; McGill et al., 2019), children with a hearing impairment (Edwards et al., 2012), childhood apraxia of speech (Thomas et al., 2016), speech-sound disorder (Grogan-Johnson et al., 2013) and increasingly for children with autism (Boisvert et al., 2010; Sutherland et al., 2018). Furthermore, although evidence reports comparable outcomes between telehealth approaches and face-to-face services, for both intervention (Grogan-Johnson et al., 2013; Speyer et al., 2018) and assessment (Hodge et al., 2014; Sutherland et al., 2017; Waite et al., 2010), a systematic review of the literature found that despite such promising evidence for the efficacy of telehealth, the evidence base remains limited (Wales et al., 2017). Many of the aforementioned studies have used the same study design (comparing telehealth to face-to-face delivery) and are small-scale projects conducted under optimal experimental conditions. Evidence is also largely built around the acceptability and practicability of technology used for telehealth, such as computers, web cameras and headsets (Keck & Doarn, 2014), and the attitudes of practitioners and clients to engage in telehealth interventions (Tucker, 2012a, 2012b), language assessment (Sutherland et al., 2017) and literacy assessment (Hodge et al., 2014).

Whilst each of these lines of enquiry are valuable to inform optimum modes of service delivery, many of the critical elements of services, such as client satisfaction and cost-effectiveness, are overlooked in the paediatric literature yet are commonly addressed in literature exploring telehealth for adult speech pathology (Burns et al., 2012; Ward et al., 2009). Given the rise in the use of telehealth post-COVID-19, these factors are of course important to consider in paediatric health services. Without consideration of these, we are limited in the extent to which we might generalise findings to clinical services operating
at scale, with limited resources, and facing the various pressures of frontline clinical practice.

In the early stages of, and in response to, the COVID-19 pandemic, there was a stark increase in the implementation of telehealth use by speech and language therapists (SLTs) globally, as services adopted a flexible approach to speech and language therapy provision (Chadd et al., 2021). For example, in a UK survey of paediatric SLTs, 51% reported using video calls with clients during COVID-19, compared to 3% using this method before the pandemic (Patel et al., 2022), and an Australian survey of SLTs indicated a significant increase in telehealth interest from before COVID-19 to during the pandemic (Rettinger et al., 2021). In Singapore, 74% of surveyed SLTs reported providing telehealth at the height of the pandemic, a significant increase from 14% before the pandemic (Peh et al., 2022), and in Croatia, 75% of surveyed SLTs reported using telehealth during COVID-19, with most of these (71%) offering it to all their clients (Kraljević et al., 2020). Unlike many of the telehealth studies published pre-COVID-19, these papers offer novel and valuable insights into the implementation of telehealth interventions when grounded in the realities of clinical practice, including evidence on the importance of clinician–parent collaboration, or practitioner and client attitudes toward telehealth. Yet most of these studies reported on the situation during the acute phase of the emergency responses to the health crisis, rather than long-term or sustainable usage, and there appears to be a lack of system-wide guidelines for telehealth that may inform national and international public health decision-making. There is also a notable lack of a theoretical framework underpinning this emerging body of evidence, which limits the breadth and depth of the lessons that can be learned in the longer term (Leone et al., 2021).

The application of the APEASE criteria for analysing paediatric speech and language therapy telehealth services

Previous research has used the COM-B (capability, opportunity, motivation-behaviour) model of behaviour change (Michie et al., 2014) to critically analyse existing speech and language therapy telehealth literature (Law et al., 2021) and practice (Patel et al., 2022). Whilst the COM-B model allows us to understand the components that underlie behaviour change of individuals in a specific context, exploration of the potential future, longer-term and at-scale application of telehealth may be guided by a broader model, the APEASE criteria. APEASE considers socioeconomic, ecological and cultural factors to assess the implementation of a new intervention or approach in real world contexts, and therefore may inform national public health systems. It is composed of six key components: Acceptability to key stakeholders (e.g., practitioners, clients, wider community); Practicability of implementation at scale within the intended context, material, and human resources; Effectiveness for the target group; Affordability of the approach to stakeholders; Side-effects of the approach (i.e., are there unintended adverse or beneficial outcomes); and Equity of the approach between advantaged and disadvantaged groups of society. The model suggests that each of these six criteria must be met for an intervention or approach to demonstrate successful effects and implementation.

AIMS

The current paper aimed to use the APEASE criteria to investigate the perspectives of telehealth of UK-based paediatric SLTs in the context of the COVID-19 pandemic. We aimed to identify key factors for optimising paediatric speech and language therapy via telehealth across these criteria and provide recommendations for future service delivery, policy and research based on SLTs’ views about which factors they thought would be important to consider. The key research questions were:

1. What are UK paediatric SLTs’ views and experiences of the acceptability, practicability, effectiveness, affordability, side-effects and equity of speech and language therapy services delivered via telehealth?
2. What do UK paediatric SLTs’ anticipate the future delivery of telehealth for speech and language therapy services to be, and which factors do they believe are most important for developing future telehealth services?

METHOD

Design

An online survey was used to capture the perceptions of paediatric SLTs on the implementation of telehealth services.

Survey respondents

The inclusion criteria for respondents specified: paediatric SLT; has used telehealth to deliver speech and language therapy services; currently practising in the United Kingdom.
Development of the questionnaire

The questionnaire was developed by the research team and comprised six sections to cover the APEASE criteria, a section to collect ideas for anticipated future delivery of services, and a section which collected information about respondents’ current clinical role. All questions could be reviewed and checked by the respondent before submission; however, no consistency checks were included in the survey. In total the survey included 62 questions; nine questions asked about respondents’ clinical role, 52 questions were structured around the APEASE criteria, 48 of which were closed questions such as 5-point Likert scales of agreement (e.g., ‘Strongly agree’ to ‘Strongly disagree’), fixed or multiple-choice questions, and four of which were open questions. Fifteen of the 48 closed questions were also accompanied by the option to provide a free-text response to gather more in-depth information (e.g., ‘If you selected ‘other’ please specify’). One open question asked about future service delivery. The survey was developed in rapid response to the COVID-19 pandemic and was not piloted with SLTs before distribution. The full questionnaire may be found in Appendix 1.

Recruitment

Respondents were recruited by the Royal College of Speech and Language Therapists (RCSLT), the membership body representing the speech and language therapy profession in the United Kingdom. The survey was advertised once in the RCSLT fortnightly e-newsletter and bimonthly research e-newsletter, twice in the RCSLT telehealth professional network (online group) and once on RCSLT social media. The RCSLT also collaborated on this research via co-authorship of the study.

Survey administration

The questionnaire was hosted by JISC Online Surveys platform and was open for 6 weeks; 8 July 2021–16 August 2021.

Ethical procedures

This study received full ethical clearance from the Policy and Information Team, Newcastle University [Ref: 13238/2020] on 15 June 2021 and was carried out in accordance with the Data Protection Act 2018 and principles of the Declaration of Helsinki.

Completion of the survey was voluntary. Respondents were fully informed about their participation prior to completing the survey and provided consent to take part prior to survey completion. No personal or identifiable data were collected; all survey responses were anonymous.

Analysis

We analysed 22/48 closed questions and 1/5 open questions to answer the study’s research questions. The remaining questions in the survey were included for other purposes, for example, for the RCSLT to understand respondents’ engagement with their resources or were questions that asked about other people’s experiences of telehealth such as managers and other professionals, so are not included in this analysis. Closed questions were analysed using simple counts and percentage comparisons. Our open question was analysed using reflexive thematic analysis (Braun & Clarke, 2022) employing a hybrid analytical approach combining deductive and inductive reasoning (Fereday & Muir-Cochrane, 2006; Roberts et al., 2019; Xu & Zammit, 2020). Deductive (theoretically driven) reasoning allowed us to use the lens of the APEASE criteria during coding and theme development, hence testing the relevance of its components to the field of speech and language therapy telehealth services. To complement it, inductive (data driven) reasoning allowed us to explore the data beyond the APEASE criteria, which gave us opportunities to identify extrinsic cross-cutting themes. We followed the reflexive thematic analysis guidance detailed in Braun and Clarke (2022) which recommends coding iterations and reflexivity to increase analytical rigor. This qualitative analysis was led by the second author (M.G.) who kept a research diary, reflected on her positionality and liaised with co-authors throughout the analytical process. M.G. is a trained SLT and early-career researcher whose interest in telehealth began in March 2020 when health services were disrupted by the COVID-19 pandemic. She collaborated with researchers to synthesise and collect evidence on this topic (Law et al., 2021; Patel et al., 2022) and worked with the team who produced the WHO-International Telecommunication Union (ITU) global standard for accessibility of telehealth services (WHO-ITU, 2022). In this study, M.G. reflected on the impact of her positionality and previous experiences to adopt a more aware approach to data analysis.

All UK SLT survey responses were included in the analyses. The Checklist for Reporting Results of Internet E-Surveys (CHERRIES, Eysenbach, 2004) was used for reporting of methods and results. Data were downloaded from the JISC Online Surveys platform in .xlsx and .sav format. Descriptive analysis of quantitative data was completed in Excel and SPSS. The qualitative analysis was conducted on NVivo v12.7.0. In the current paper, results
for all included closed questions are reported, and where these questions were accompanied by optional free-text responses (e.g., ‘please specify’), common responses were quantified, and are reported with exemplifying quotes. Participant numbers are also indicated (#number). All data reflect responses to individual survey questions; no composite results are included.

RESULTS

Respondents

In total 438 UK paediatric SLTs completed the survey. All 438 respondents completed the closed questions, and 341 respondents completed the open question. The completion rate for optional free-text responses that accompanied some closed questions varied; this rate is reported within the results where appropriate.

In May 2021, the RCSLT had 15 635 practising members (RCSLT, 2021). An analysis of the UK SLT workforce suggests around 61% of SLT working time is with children (Centre For Workforce Intelligence, 2014), hence a total of 438 respondents represents an estimated response rate of just under 5%. Table 1 displays details of respondents’ clinical practice details.

The sample of survey respondents was considered representative of the wider RCSLT workforce in the United Kingdom; the majority of paediatric SLTs work with primary-aged children, followed closely by those working in early years, then secondary (Centre For Workforce Intelligence, 2014). This same pattern is characteristic of the current sample. Wider RCSLT membership data (RCSLT, 2018) suggest that around 22% have been members for 0–5 years; 15% 6–10 years; 26% 11–20 years and 37% more than 20 years, figures closely represented in the current sample. Around 70% of RCSLT members work in the National Health Service (NHS) and around 14% in independent practice (RCSLT, 2018); within this sample, 73% worked in the NHS and 19% in independent practice, therefore SLTs in independent practice may have been slightly over-represented.

ACCEPTABILITY

Acceptability of SLT assessment and intervention via telehealth

Respondents were asked to rate their agreement with the statements telehealth is an acceptable ‘method of conducting speech and language therapy assessment’ and ‘way to deliver speech and language therapy interventions’, recognising these as distinct and key aspects of provision. Proportion of agreement is displayed in Figure 1.

Telehealth was perceived as a more acceptable method for SLT intervention (64% ‘agree/strongly agree’ compared to 14% ‘disagree/strongly disagree’) than assessment which was viewed as more nuanced (46% ‘agree/strongly agree’ compared to 34% ‘disagree/strongly disagree’).

PRACTICABILITY

SLTs use of telehealth in practice

We asked respondents to rate their agreement with the statement ‘I find it easy to use the technology for telehealth in my practice’.

Respondents mainly agreed that the technology was easy to use (72% ‘agree/strongly agree’), although 17% did not find it easy to use (‘disagree/strongly disagree’) and 11% were ‘unsure’.

We then asked whether they felt they were able to ‘explain clinical aims and instructions’ and ‘discuss challenges and barriers’ that clients faced using telehealth with parents (without specification to intervention and/or assessment), and most respondents felt they were as represented in Figure 2.

Parents’ use of telehealth from the perspective of SLTs

We also asked for SLTs’ perspective as to whether the parents they had engaged with were able to use the technology to carry out the speech and language therapy session; most reported parents were able to use the technology (60% ‘agree/strongly agree’), although some were either ‘unsure’ (25%) or disagreed (15% ‘disagree/strongly disagree’).
TABLE 1  Survey respondents’ clinical practice details.

<table>
<thead>
<tr>
<th>Question</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many years have you been practising as a speech and language therapist (SLT)?</td>
<td></td>
</tr>
<tr>
<td>0–2 years</td>
<td>41 (9)</td>
</tr>
<tr>
<td>3–5 years</td>
<td>51 (12)</td>
</tr>
<tr>
<td>6–10 years</td>
<td>76 (17)</td>
</tr>
<tr>
<td>11–15 years</td>
<td>66 (15)</td>
</tr>
<tr>
<td>16–20 years</td>
<td>48 (11)</td>
</tr>
<tr>
<td>20 years or more</td>
<td>156 (36)</td>
</tr>
<tr>
<td>Who is/are your current employer? Select all that apply [not mutually exclusive]</td>
<td></td>
</tr>
<tr>
<td>National Health Service (NHS)</td>
<td>320 (73)</td>
</tr>
<tr>
<td>Independent practice—sole trader</td>
<td>50 (11)</td>
</tr>
<tr>
<td>Independent practice—more than one SLT working</td>
<td>33 (8)</td>
</tr>
<tr>
<td>School</td>
<td>18 (4)</td>
</tr>
<tr>
<td>Justice</td>
<td>2 (1)</td>
</tr>
<tr>
<td>Not-for-profit organisation/third sector</td>
<td>6 (1)</td>
</tr>
<tr>
<td>Social care/services</td>
<td>4 (1)</td>
</tr>
<tr>
<td>University or other higher education institution</td>
<td>10 (2)</td>
</tr>
<tr>
<td>Local authority</td>
<td>22 (5)</td>
</tr>
<tr>
<td>Private health service</td>
<td>2 (1)</td>
</tr>
<tr>
<td>Social enterprise/public sector mutual</td>
<td>18 (4)</td>
</tr>
<tr>
<td>Other</td>
<td>5 (1)</td>
</tr>
<tr>
<td>Which clinical areas do you regularly work in? Select all that apply [not mutually exclusive]</td>
<td></td>
</tr>
<tr>
<td>Augmentative and alternative communication</td>
<td>138 (32)</td>
</tr>
<tr>
<td>Autism spectrum disorder</td>
<td>324 (74)</td>
</tr>
<tr>
<td>Brain injury</td>
<td>23 (5)</td>
</tr>
<tr>
<td>Cleft lip and palate / craniofacial</td>
<td>58 (13)</td>
</tr>
<tr>
<td>Cerebral palsy</td>
<td>75 (17)</td>
</tr>
<tr>
<td>Deafness</td>
<td>57 (13)</td>
</tr>
<tr>
<td>Dysfluency</td>
<td>154 (35)</td>
</tr>
<tr>
<td>Dysphagia</td>
<td>50 (11)</td>
</tr>
<tr>
<td>Genetic and chromosomal disorder (incl. Down syndrome/Fragile X)</td>
<td>139 (32)</td>
</tr>
<tr>
<td>Language disorder</td>
<td>345 (79)</td>
</tr>
<tr>
<td>Learning disabilities</td>
<td>217 (50)</td>
</tr>
<tr>
<td>Mental health</td>
<td>65 (15)</td>
</tr>
<tr>
<td>Motor disorders</td>
<td>40 (9)</td>
</tr>
<tr>
<td>Neonatal</td>
<td>12 (3)</td>
</tr>
<tr>
<td>Selective mutism</td>
<td>120 (27)</td>
</tr>
<tr>
<td>Social communication disorders</td>
<td>320 (73)</td>
</tr>
<tr>
<td>Speech sound disorders</td>
<td>309 (71)</td>
</tr>
<tr>
<td>Visual and multisensory impairments</td>
<td>51 (12)</td>
</tr>
<tr>
<td>Voice</td>
<td>26 (6)</td>
</tr>
<tr>
<td>Other</td>
<td>9 (2)</td>
</tr>
<tr>
<td>What age of children typically form your caseload? Select all that apply [not mutually exclusive]</td>
<td></td>
</tr>
<tr>
<td>Neonatal</td>
<td>18 (4)</td>
</tr>
<tr>
<td>Early years (1–4 years)</td>
<td>311 (71)</td>
</tr>
<tr>
<td>Primary (5–11 years)</td>
<td>370 (85)</td>
</tr>
<tr>
<td>Secondary (12–16 years)</td>
<td>232 (53)</td>
</tr>
<tr>
<td>Older (up to 18 years)</td>
<td>86 (20)</td>
</tr>
</tbody>
</table>
EFFECTIVENESS

Effectiveness compared to face-to-face delivery

We asked respondents to consider whether they thought speech and language therapy assessment and intervention delivered via telehealth was as effective as face-to-face delivery (Figure 3).

Regarding assessment, respondents were relatively evenly split in agreement/disagreement (43% ‘agree/strongly agree’, compared to 40% ‘disagree/strongly disagree’). In comparison, proportionately more respondents were positive about intervention via telehealth (61% ‘agree/strongly agree’ compared to 24% ‘disagree/strongly disagree’).

Respondents were also asked whether they felt they needed to offer more telehealth therapy sessions to achieve similar outcomes to face-to-face interventions. Most respondents felt ‘It depends’ (45%) and there was an almost equal amount that agreed (28% ‘yes/definitely yes’) and disagreed (27% ‘no/definitely no’); therefore no clear message could be identified. Specific responses qualifying the ‘It depends’ category (n = 188) captured the conditionality inherent in respondents’ overall response; the most common factor mentioned was child need (n = 91), for example, ‘It depends on the area of need and the attention span of the child on the tele health, they may need more frequent shorted sessions’ (#2); ‘Dependent on focus of child. If child is engaged, teletherapy can be as effective’ (#51); ‘Depends on age, nature, and complexity of the SLCN’ (#124). Other factors frequently mentioned included parent support, for example, ‘Depends on parents motivation/capability to carry out home practice’ (#354), and type of therapy required, for example, ‘For consultative / strategy-based sessions, fewer or the same number of sessions are often needed. For assessment more sessions are often needed’ (#138).

Factors contributing to effective telehealth intervention

We then explored which factors SLTs felt contributed towards how effective their telehealth interventions were. Respondents were able to select multiple fixed-choice responses, and all factors were rated as important, including parental assistance (92%), internet access (90%), children’s type of SLCN (84%), age (78%), digital equipment (73%) and children’s severity of needs (70%).

Where respondents selected ‘other’ (8%), specified examples were provided by 36 respondents. The most common issues mentioned included the support provided by parents (n = 8), for example, ‘Parental knowledge of information technology (IT)’ (#240); ‘Parental management of behaviour’ (#68); the appropriateness of therapeutic resources for online support (n = 6), for example, ‘Motivating therapy resources to use online’ (#313); ‘Use of engaging resources/ones that the child found motivating’ (#223); and the attitude and skills of the SLT facilitating the session (n = 6), for example, ‘Willingness and ability of clinician to adapt and be flexible’ (#12); ‘Practitioner’s skills at using telehealth’ (#347).

Financial implications

Telehealth also has financial implications in terms of its technology (potentially increasing costs) and travel to clinic (potentially reducing costs as not required). Therefore, we asked respondents to consider whether they believed telehealth approaches were cost-effective relative to face-to-face delivery.

Whilst most respondents felt telehealth was cost-effective for both assessment and intervention (51% and 61% ‘agree/strongly agree’, 19% and 13% ‘disagree/strongly Disagree’, respectively), a large proportion were ‘unsure’ about this (31% and 26%, respectively).

AFFORDABILITY

SLTs’ perceptions of client access to telehealth resources

We asked respondents whether their clients ‘had ready access to the resources in their home needed to engage in telehealth in SLT’; 51% responded ‘Yes’ and 49% ‘No’, a relatively even split. For those who reported their clients did not have ready access to these resources, we asked them to select the reasons why they thought this was from a given list of possible reasons, and/or to provide a free-text response. The list was informed by previous research
Respondents’ views as to whether speech and language therapy assessment and intervention via telehealth was as effective as face-to-face delivery.

(Law et al., 2021), and the SLT practitioner experience of the current authors. These reasons included general ‘affordability’ but also a range of factors that support telehealth but have financial implications.

All factors were identified as common issues to varying degrees, these included: ‘affordability’ (59%), ‘internet access’ (51%), ‘internet bandwidth’ (71%) and ‘space in the home’ (35%). Where respondents selected ‘other’ (11%), specified examples were provided by 24 participants. The most common issues mentioned included families having a lack of toys in the home that could be used in therapy sessions (n = 6), for example, ‘Some of our families have limited toys for their children that could then be used in therapy sessions’ (#290); ‘Affordability of appropriate toys’ (#346); and limited access to IT technology due to families sharing technology (n = 5), for example, ‘Families having to share technology, especially during lockdown periods when everyone was learning/working from home’ (#326); ‘Siblings needing the technology for home school prioritised over SALT [Systematic Analysis of Language Transcripts] assessment’ (#433).

Cost implications of telehealth in comparison to face-to-face delivery

Half (51%) of respondents felt that telehealth had cost implications for the SLT service, therapists and parents. We asked whether on the whole, respondents thought telehealth was more or less expensive than face-to-face interventions (considering travel costs, purchasing adequate technology, time commuting for the therapist and/or the clients etc).

Based on respondents’ opinion only (rather than measured cost data), telehealth was deemed more economical than face-to-face services (59% reporting it as ‘less expensive’ compared to 5% reporting it as ‘more expensive’ and 16% felt the costs were ‘the same’). A proportion (18%) reported they ‘don’t know’ and 10 respondents further specified why they selected this. The most common responses mentioned uneven cost distributions (n = 3), for example, ‘Some interventions are less expensive for the parent but more costly for the therapist to prepare online resources’ (#316); the contrasts between lower travel costs but increased costs due to failed appointments (n = 2), for example, ‘Less expensive in terms of traveling and commuting time but more expensive in terms of increased failed appointments and SLT time or requiring further appointments via telehealth (e.g., assessment)’ (#374); and the impact of client location, for example, ‘In rural areas time and cost of commuting would be high, but equally access to technology may be a challenge’ (#217).

Respondents were asked to consider the value of investment in telehealth equipment, either as a one-off or as part of a scaled-up approach. Three-quarters (76%) felt the one-off cost of purchasing telehealth technology was a good investment (‘agree/strongly agree’) whilst 5% disagreed (‘disagree/strongly disagree’) and 20% were ‘unsure’. When asked whether scaled up telehealth approaches were likely to be more cost effective than existing services, whilst the most common response was agreement (48% ‘agree/strongly agree’) many were ‘unsure’ (37%) and a sizable minority disagreed (14% ‘disagree/strongly disagree’).

SIDE-EFFECTS

Consequences of telehealth

We considered that the rapid implementation of telehealth for SLT may have both positive and negative consequences.

The majority (73%) of respondents reported they had noticed consequences of telehealth, either to their own service, the family or child. We asked respondents to select which consequences, positive (Figure 4) and negative (Figure 5), they had noticed from a list of possible
consequences informed by previous research (Law et al., 2021) and the SLT practitioner experience of current authors, or to provide a free-text response.

The most selected positive consequences were those that affected parents, including ‘increased service engagement from parents’ (58%), ‘improved quality of parental rapport’ (55%), ‘improved continuity of strategies’ (37%) and ‘reduced financial cost to parents’ (33%). Two SLTs reported they had noticed ‘other’ positive consequences and specified what these were: ‘Parents are able to work sessions around their own work commitments’ (#331), and ‘Improved rapport with teaching staff and SENCOs [special educational needs co-ordinators]’ (#304).

The most commonly reported negative consequence of telehealth were ‘screen fatigue’ (57%), ‘increased workload (46%) and ‘reduction in child concentration levels’ (46%). Nine SLTs reported they had noticed ‘other’ negative consequences and all specified what these were. The most frequent ‘other’ consequences of telehealth mentioned included a reduced connection with schools (n = 2), for example, ‘I don’t know what’s happening in the classroom which is a big problem. Observation is really important’ (#275); the workload required to set up telehealth (n = 2), for example, ‘Initial increased workload for SLTs [to create online resources]’ (#223); ‘It increased the workload for schools as they had to be ready for the appointment, have a Teaching Assistant (TA) and computer and place for the appointment to be carried out’ (#71); and the mental/physical impacts of telehealth, for example, ‘Screen fatigue, parent fatigue, increased anxiety, lower engagement’ (#109).

**EQUITY**

**Comparisons with face-to-face delivery**

We explored respondents’ perceptions of whether telehealth improved the attendance of clients whose historical attendance had been poor for face-to-face sessions.
Given the mix of responses (23% ‘Yes’ and 35% ‘No’) and high degree of uncertainty (42% ‘unsure’), no clear pattern could be identified.

Respondents were then asked whether they thought families who lived in more geographically remote areas attended therapy sessions more often using telehealth. The majority (62%) were ‘unsure’, 28% agreed (‘agree/strongly agree’) and 9% disagreed (‘disagree/strongly disagree’).

We also asked whether they perceived that families from different cultural backgrounds made less use of telehealth services than face-to-face services. Again many respondents were ‘unsure’ (53%), and there were equal amounts of agreement and disagreement, (24% ‘agree/strongly agree’, 23% ‘disagree/strongly disagree’).

**FUTURE DELIVERY OF TELEHEALTH FOR SLT SERVICES**

Looking ahead, we asked what combination of future delivery was anticipated for both speech and language therapy assessment and speech and language therapy intervention (Figure 6).

Respondents felt that despite a return to face-to-face engagement post-lockdowns, some telehealth would remain, reporting delivery that was ‘mostly face-to-face but with a little telehealth’ was most likely for both speech and language therapy assessment (56%) and intervention (50%).

**The development of future telehealth SLT services**

Respondents were asked the open question of which three factors they believed were most important for developing telehealth services in the future (n = 341). Six overarching themes were developed via inductive reasoning: (1) balanced and tailored services; (2) technology and equipment; (3) information and communication; (4) capacity building; (5) monitoring and evaluation; and (6) leadership and governance. These overarching themes were then elaborated according to each applicable APEASE criterion identified during deductive coding (see Table 2).

Quotes included within each theme were selected for illustrative purposes.

**Balanced and tailored services**

Practitioners reported that the development of speech and language therapy telehealth services should follow a balanced and tailored approach that complements rather than replaces traditional face-to-face service delivery, for example, ‘A balanced approach, it should not be a blanket policy to see all children over telehealth’ (#23). This theme covered four dimensions of the APEASE criteria: **Acceptability**: SLTs voiced the need to consider the clients’ acceptability of telehealth to adjust the offer between telehealth or face-to-face services accordingly (e.g., considerations of children’s age and attention levels), for example, ‘It is only appropriate for certain ages and profiles of children and families’ (#295). **Practicability**: Participants referred to practicability being a key factor to inform which mode of service delivery to prioritise. For instance, respondents mentioned advantages associated with the flexibility of time and location offered by telehealth services for certain aspects of their work, for example, ‘Will be able to attend more meetings than before’ (#332). **Effectiveness**: Participants reported that telehealth services may not be as effective as face-to-face services in certain situations, such as when SLTs have safeguarding concerns, for example,
TABLE 2 Overarching themes identified on SLTs perspectives of key factors for telehealth service development, expanded by the APEASE criteria.

<table>
<thead>
<tr>
<th>Theme</th>
<th>APEASE criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Balanced and tailored services</td>
<td>Acceptability</td>
</tr>
<tr>
<td></td>
<td>Practicability</td>
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<tr>
<td></td>
<td>Effectiveness</td>
</tr>
<tr>
<td></td>
<td>Equity</td>
</tr>
<tr>
<td>2. Technology and equipment</td>
<td>Practicability</td>
</tr>
<tr>
<td></td>
<td>Effectiveness</td>
</tr>
<tr>
<td></td>
<td>Affordability</td>
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<tr>
<td>3. Information and communication</td>
<td>Acceptability</td>
</tr>
<tr>
<td></td>
<td>Practicability</td>
</tr>
<tr>
<td>4. Capacity building</td>
<td>Acceptability</td>
</tr>
<tr>
<td></td>
<td>Practicability</td>
</tr>
<tr>
<td></td>
<td>Effectiveness</td>
</tr>
<tr>
<td>5. Monitoring and evaluation</td>
<td>Acceptability</td>
</tr>
<tr>
<td></td>
<td>Effectiveness</td>
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<td></td>
<td>Side-effects</td>
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<tr>
<td>6. Leadership and governance</td>
<td>Acceptability</td>
</tr>
<tr>
<td></td>
<td>Practicability</td>
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<td></td>
<td>Effectiveness</td>
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<td></td>
<td>Side-effects</td>
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<tr>
<td></td>
<td>Equity</td>
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</tbody>
</table>

Abbreviation: SLT, speech and language therapist.

‘Miss factors such as client smells unwashed’ (#148) or when detecting speech sound disorders (e.g., if the quality of digital equipment is poor). **Equity:** Clinicians elaborated on the need to offer a choice and to consider the clients’ preferences in order to promote equitable, family-centred services, for example, ‘Being able to tailor telehealth services to suit individual families to ensure families can access what they need’ (#18).

**Information and communication**

Respondents identified the importance of information and communication in the development of telehealth services. This theme covered two dimensions of the APEASE criteria: **Acceptability:** Respondents acknowledged the influence of information and communication to manage expectations about telehealth services for parents, children and school staff, for example, ‘[Providing] Information to support parents and schools with their role in telehealth services’ (#44). **Practicability:** SLTs mentioned that telehealth services created novel communication needs that needed to be considered to foster its practicability and use, such as liaising more frequently with parents and schools and providing clear instructions to service users on how to engage with the telehealth service, for example, ‘Clarity on what is being offered and so therapists and families know what it is going to look like’ (#336).

**Capacity building**

Respondents reported that capacity building was a fundamental factor to build and sustain telehealth services. This theme covered three dimensions of the APEASE criteria: **Acceptability:** Participants suggested that acceptability of telehealth services could be improved by capacity building. This could be done, for example, by addressing issues of confidence and digital literacy for SLTs and parents: ‘Training for practitioners to give them increased skills and confidence in delivering services via telepractice’ (#411). **Practicability:** Respondents highlighted that capacity-building opportunities must address practical needs, such as knowing how to manage when SLTs and families do not have access to ideal IT, for example, ‘Training on how to use your platform’ (#15); ‘What to do if they have poor internet connection’ (#134). **Effectiveness:** SLTs identified their own training needs to improve their efficiency.

‘Ensuring that practitioners are able to access the platforms and approaches that make best use of the resources available (such as screen-sharing)’ (#224). **Effectiveness:** SLTs reflected on how technology influenced the effectiveness for certain aspects of therapy, such as building rapport and engaging children and parents on screens, for example, ‘Effectiveness of relationship building on screens’ (#252). **Affordability:** SLTs highlighted the financial implications of access to appropriate technology (e.g., electronic devices, broadband) for all parties involved (e.g., SLTs, parents and schools), for example, ‘Investment in equipment and technology’ (#172); ‘Parent and/or school staff support to access good WiFi’ (#122).
Respondents were particularly keen to receive training on IT skills and to learn more about the evidence underpinning telehealth services, such as ‘what works (and what doesn’t)’ (#35) or ways to make telehealth as effective as face-to-face. It was also recognised that support and training opportunities should be widely accessible to SLTs, parents, multidisciplinary teams and school staff if they were to be impactful.

Monitoring and evaluation

SLTs highlighted the urgent need to monitor and collect evidence on telehealth to better inform development and implementation in their own services. This theme covered three dimensions of the APEASE criteria: Acceptability: Respondents suggested monitoring the satisfaction levels of parents, clients, school staff, and SLTs themselves to inform telehealth service development, for example, ‘Completing audits around patient and parent satisfaction’ (#93). Effectiveness: Clinicians reported the critical need to build the evidence base on the clinical effectiveness of telehealth services, for example, ‘Research to show effectiveness’ (#149); ‘Evidence for parents and schools around the effectiveness of telehealth’ (#52). Building evidence on the validity of speech and language therapy assessments was an area of need expressed by many. Side effects: SLTs recognised the need to monitor the implications of developing telehealth services at the system-level, with specific considerations of information governance and well-being: ‘[Monitor] if engagement via telehealth increases anxiety and adversely affects mental well-being’ (#247); ‘Data protection needs to be looked at’ (#79).

Leadership and governance

Practitioners discussed the fundamental role of leadership and governance to oversee service transformation at the system-level and offer equitable and sustainable telehealth services. This theme covered five dimensions of the APEASE criteria: Acceptability: Participants mentioned the importance of setting acceptable expectations, for example, ‘I do not think it is acceptable to expect a therapist to have a whole day of telehealth’ (#1). Practicability: Participants described new practicability issues brought by telehealth service development, such as the impact of telehealth on organisation and workload (both positive, e.g., reduced travel and flexibility of timing; and negative, e.g., the need for more time to prepare and more administrative support). This also included the need to consider the location and environment where telehealth is delivered from. Effectiveness: SLTs highlighted a need for clear and coherent guidance and guidelines to promote efficient telehealth service development, for example, ‘Clinical guidelines for practitioners to support them to ensure outcomes are achieved’ (#411). Affordability: Practitioners expressed the need to invest in services that are not cost-driven but cost-effective and needs-based, for example, ‘Making sure that the decision making around whether to use telehealth is based on what works best for that child, not efficiencies or cost savings’ (#123). They also indicated the cost of high-quality technology and other telehealth resources should not lie with the SLTs but be covered by services, and that cost implications for families should also be considered. Side effects: SLTs reported the need to anticipate and address the negative impact of telehealth on health and well-being for SLTs and parents (e.g., screen fatigue, tiredness and isolation). There were also concerns around the security, confidentiality and safeguarding issues of telehealth that must be addressed at the system-level, for example, ‘Robustness of system used with regards to data protection’ (#142); ‘The risk of data protection concerns needs to be weighed up […]’ (#79). Equity: SLTs highlighted the urgent need for services and leaders to promote equity of access, for example, ‘It doesn’t work for everyone so there needs to be a way of ensuring equity of access to the service’ (#120). More specifically, SLTs referred to the needs of different demographics, such as families with linguistically and culturally diverse backgrounds, low socioeconomic status groups and communities living in rural areas.

DISCUSSION

The current paper aimed to gather the perspectives of UK-based paediatric SLTs on implementing telehealth interventions in the context of the COVID-19 pandemic, and to identify gaps and opportunities for optimising future telehealth provision. The study used the lens of the APEASE criteria to offer an overarching understanding of this service development grounded in real world contexts, and which may inform national public health systems. The outcomes indicated emerging trends in UK paediatric SLTs’ perceptions of telehealth, and SLTs perceived that a hybrid approach to service delivery, combining mostly face-to-face services with some telehealth, was likely to continue in the future, supporting the findings of a similar national survey of paediatric SLTs (Patel et al., 2022).

Outcomes further contributed to the identification of the contextual factors that influence telehealth implementation. Intervention via telehealth appeared to be more acceptable to UK SLTs than assessment, despite promising evidence for the efficacy of telehealth assessment (Hodge et al., 2014; Sutherland et al., 2017;
Waite et al., 2010). There was recognition from SLTs of the need to also consider clients’ acceptability of telehealth and calibrate their offer to suit individual client requirements. SLTs suggested client acceptability may be enhanced by improving the information about telehealth that is available to parents, building capacity through support for digital literacy skills, and monitoring the levels of acceptability to different client groups.

How practicable telehealth is for service delivery has important implications for uptake and engagement. Telehealth was reported to be broadly practicable for SLTs to use; however, the physical and mental health consequences such as screen fatigue should not be overlooked. As telehealth services continue to develop, SLTs placed importance on managers addressing the practical impacts (both positive and negative) of telehealth on their organisation and practitioners’ workload, and prioritising which activities telehealth is most practicable for. The importance of leadership at an organisation level for telehealth implementation was also highlighted in Patel et al. (2022).

Informing this notion of prioritising specific service activities for telehealth, SLTs indicated intervention via telehealth may be more effective than assessment, and opportunities to partake in meetings could be facilitated and even enhanced with telehealth. SLTs were aware of their own training needs to provide efficient services and were keen to receive training on IT skills, supporting existing literature (Patel et al., 2022). SLTs would like to learn more about the evidence of effectiveness to inform practice, calling for evidence to be communicated through clear and coherent guidelines for practitioners.

Fundamental to the future sustainability of telehealth services, and frequently referenced by SLTs, was the affordability of, and having access to, appropriate telehealth resources. This is a critical aspect of telehealth that cannot be taken for granted; current outcomes suggested not all clients had ready access to telehealth resources, and affordability was a possible barrier to this.

Regarding the possible side-effects of telehealth, SLTs perceived there were many positive and negative consequences, including some positive influence on parental engagement but also physical and mental health side-effects of telehealth on practitioners. There was recognition that in future, practitioners and service leaders should anticipate, address and monitor potential physical and mental health side-effects of this approach to service delivery.

Despite indication in existing research that telehealth may not be equitable for all participants (WHO, 2022), current outcomes suggested there is much uncertainty amongst UK SLTs about this. Further clarification about how equitable telehealth is for service users is required as this has important implications should telehealth be used long-term and at scale nationally. In future telehealth delivery, there is a need for practitioners to consider and address the needs and preferences of different demographics to promote equity of access, such as families from culturally diverse backgrounds, and families living in remote geographical areas.

Implications for practice and policy

Telehealth represents a promising technological service development that is likely to be sustained in some form in future speech and language therapy practice. Managers should demonstrate supportive leadership through considering and making accommodations for the complex interplay of factors likely to influence the future success of their service. The six themes for the future development of telehealth identified in the current outcomes, may offer guidance and structure to these considerations. Each of these themes mapped directly onto the APEASE criteria, presenting an early validation for the APEASE criteria to be used in the future development of telehealth speech and language therapy. In such considerations, managers and SLTs should remain mindful that each area of the APEASE criteria should not be thought of as independent of each other but rather as interacting components, as reflected by the conditionality indicated across current outcomes. For example, telehealth cannot be effective if it is not affordable or acceptable.

UK SLTs believed that going forward, speech and language therapy services using telehealth should be reflective, tailored and flexible. SLTs should analyse which services are best suited to telehealth as opposed to face-to-face delivery and this should include consideration of their own physical and mental health needs. Managers may support this by recognising the potential side effects of telehealth and considering implications on their practitioners’ workload. Similarly, with variability in access to and affordability of technology, services should consider the appropriateness of telehealth for each client. Therefore, a flexible approach to service delivery should be adopted to meet the requirements of both the service being delivered, and the specific needs of individuals and their circumstances. This is especially important given that parents and carers are often the primary facilitators of telehealth delivery, especially for young children, and many may require additional support to do this. It is therefore essential that parents have access to support where it is needed. Previous research drawing from the COM-B model identifies key considerations to enable this to happen (Law et al., 2021; Patel et al., 2022).

To support the transformation of speech and language therapy services into combined delivery models of
telehealth with face-to-face delivery, parents should be made aware that telehealth is available as part of service delivery. This may be facilitated by organisations developing clear guidance and information about their telehealth offer, thereby managing expectations of parents and carers, children, school staff and other key stakeholders, and providing instructions as to how to engage with the service. Currently, there is a lack of evidence and system-wide guidelines to inform local decision-making processes and resources. There is therefore a responsibility for national and international co-ordination to continue to develop and update policy and clinical guidelines about telehealth, which should be aligned with the United Nations Conventions on the Rights of Persons with Disabilities to protect the rights of service users.

**Study strengths, limitations and future research**

The current study is unique in that it has applied the APEASE criteria to the reflections of UK paediatric SLTs on providing telehealth services, allowing us to define key considerations for current and future telehealth delivery derived from components necessary for effective intervention in real-world contexts, and components that may inform national public health systems. This has also enabled us to collect initial information on SLTs’ perceptions on areas that may often be overlooked when addressing practice issues, for example, cost-effectiveness, to better appreciate the range of factors likely to affect service provision from the clinicians’ perspective. This represents an initial but necessary step to contribute more meaningfully to national and international digital health strategies. Systematic consideration of all six components of the APEASE criteria in future research would mean due consideration can be given to the range of factors influencing the implementation of telehealth in paediatric SLT services. This research should involve multidisciplinary collaboration between researchers, service users and facilitators, policymakers and clinicians, and aim to bridge any potential gaps between research and practice. In time, such an approach would result in the accumulation of comparable evidence and meaningfully contribute to global collaboration and knowledge-transfer on digital health, as indicated in the WHO Global Strategy on Digital Health (2020-2025).

Whilst the current survey provided valuable insight into UK SLTs’ perceptions of telehealth, further validated by respondents’ clinical characteristics being broadly representative of the wider SLT workforce in the United Kingdom, such a design has meant it has not been possible to test the validity of these outcomes empirically. The survey captured SLTs’ perceptions only, and analysis included questions that answered the research questions, that is, focussing on their own experiences, rather than their perceptions of others’ experiences. Therefore, we have not explored the perceptions of children, their parents or carers, or other professionals in education, health or social care. The survey design also focussed heavily on the collection of quantitative data; therefore, the extent to which qualitative data were collected was limited. The survey format was suited for this initial study uncovering the trends in SLTs’ perceptions and experiences of telehealth, but other methods should also be considered to study the complexity of telehealth implementation, for example, using interviews and focus groups to identify the priorities of different stakeholders could lead to valuable insights.

Although it is anticipated by SLTs that telehealth will remain part of service delivery in the future, they felt it important that telehealth is seen as complimentary to, rather than a substitute for, face-to-face delivery. Respondents expressed this was particularly important in light of uncertainties they retained around its use which require further exploration. For example, SLTs were still unclear: whether more telehealth therapy sessions are required to achieve similar outcomes as face-to-face interventions, how equitable telehealth is for different population groups, or what the differential impacts of telehealth are on individual children, for example, which children SLTs believe are more likely to do equally well with telehealth in relation to a range of factors, for example, clinical areas, age, type of SLCN. Therefore, there is a need for further exploration in future research; these outcomes would have strong implications for practice and the tailoring of service delivery. There is also further research required to determine how cost-effective telehealth is compared to face-to-face service delivery (and what the cost implications are of scaled-up approaches to telehealth), which may be of particular importance in a post-COVID-19 world where telehealth continues to be used.

**CONCLUSIONS**

SLTs reacted quickly to the impact of the COVID-19 pandemic, adopting telehealth services at unprecedented speed. Following this initial change there was perception amongst UK paediatric SLTs that telehealth would likely play an ongoing role in service delivery, and that this delivery should adopt a flexible, balanced approach that is tailored to meet the needs and circumstances of clients and practitioners. Should telehealth continue to be used, there is a need to clearly communicate this service development
to all stakeholders, to continue to develop policy and clinical guidance, to upskill those using the technology on an ongoing basis, and to carefully monitor the impact of its use in clinical services. Clear and co-ordinated leadership from all relevant stakeholders at the local, national and international levels is required to maximise the chance that future paediatric speech and language therapy services are acceptable, practicable, effective, affordable, have limited side-effects and are equitable. A focus on the aforementioned APEASE criteria offers a valuable opportunity to enhance current SLT practice, and to guide future research collaboration between multidisciplinary stakeholders on a global scale.

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CONFLICT OF INTEREST STATEMENT
Amit Kulkarni of this paper is Head of Research and Outcomes and the Royal College of Speech and Language Therapists.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are openly available in Newcastle University’s repository at https://doi.org/10.25405/data.ncl.24018198.v1

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**SUPPORTING INFORMATION**
Additional supporting information can be found online in the Supporting Information section at the end of this article.

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