Department for Education

Supporting stammering, speech and language needs in the early years: rapid review and case study methodology

Methodology report

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Introduction

This rapid review, commissioned by the Department for Education (DfE) and conducted from February to July 2024, aimed to identify the best available evidence to guide early years practitioners in supporting children aged 0-5 with speech, language, and communication needs (SLCN), specifically stammering, speech sound issues, and language development. Excluding autism-related communication needs, the review focused on three areas: (1) identification and assessment, (2) intervention and support, and (3) working together. Varied evidence sources and tailored methods for each work package were employed.

Identification and assessment methods

This work package of the rapid review focused on identifying and evaluating tools that non-specialist early years staff can use to identify stammering, speech, and language needs in young children. Using a multi-source search strategy, including database searches, web reviews, and expert input, we identified 22 relevant tools and assessed their characteristics and psychometric properties (e.g. reliability, validity, usability, accuracy in identifying needs). The review aimed to determine which tools are most suitable for formative assessment and decision-making around universal, targeted, or specialist support.

Intervention and support methods

This part of the rapid review examined the effectiveness of speech and language interventions for children that can be delivered by early years practitioners, using existing systematic reviews and the What Works database. While no suitable studies were found for stammering interventions at universal or targeted levels, 25 studies on speech and language were identified and appraised for their characteristics, effectiveness, and quality.

Using the TIDieR framework, each intervention was detailed by its components, delivery method, and rationale, while study quality was assessed using nine indicators (e.g. fidelity, blinding, validity). Effect sizes were calculated using Hedges g and interpreted using Education Endowment Foundation (EEF) guidance to show impact in months of progress. Additionally, techniques from specialist interventions were reviewed to identify safe, practical strategies that could be adapted for universal or targeted use by non-specialists. The findings aim to guide practitioners in selecting appropriate interventions

based on children's needs, the level of support required, and the best fit to their setting's unique context.

Working together methods

This section of the rapid review explored collaborative models between early years settings and professionals such as speech and language therapists (SLTs), health visitors (HVs), educational psychologists (EPs), and parents to support children's speech, language, and stammering needs. Using peer-reviewed and grey literature alongside case studies analysed through the Theoretical Domains Framework and COM-B model, the review identified nine academic papers and five grey literature sources, highlighting key components of effective collaboration including training, knowledge exchange, and flexible intervention pathways.

Introduction

This rapid review was commissioned by the Department for Education and was completed between February and July 2024. The aim was to identify the best current evidence to inform the provision of universal and targeted support for children with speech, language and communication needs (SLCN) by early years practitioners.

The review focuses on identification, support and interventions, and working collaboratively for children with stammering, speech or language needs (aged 0-5):

- Stammering (also known as stuttering) is characterised by whole and part-word repetitions, prolongations and blocking of sounds, and may be accompanied by physical tension, additional movements, and/or avoidance of words or speaking.
- Speech refers to the production and use of speech sounds including consonants (e.g. p, b, m, s) and vowels (e.g. ah, ee, oo) to convey a message in a given language.
- Language is the understanding and use of words, sentences and grammatical markers (e.g. -ing; -ed) to share meaning.

The review does not address the needs of children with autism and/or pragmatic or social communication needs. This was both because a parallel review for autism was planned where we anticipated relevant research for communication needs would be identified and to ensure the scope of the review was possible with the available resources and time frame.

The review comprised three work packages to identify evidence relevant to the non-specialist early years workforce with respect to:

1. Identification and assessment
2. Intervention and support
3. Working together

This methodology report describes the methods used to identify studies discussed in our review Supporting stammering, speech, and language needs in the early years. A Supplementary Evidence Report is also available and published by Newcastle University, which provides additional detailed results, data extraction tables and analyses.

Rapid review methods provide an overview and synthesis of the available evidence of relevance to each work package. As such, they do not guarantee a fully comprehensive identification of all available evidence. The nature of available evidence for each work package varied. For example, in work package 1: Identification and assessment tools, evidence consisted of assessment manuals and peer-reviewed papers; for work package

2: interventions and support, evidence was peer-reviewed papers; and for work package 3: working together, the literature was peer-reviewed papers and grey literature, as well as qualitative case studies. Given this, differing methods were used to identify, appraise and synthesis the evidence for each, and are outlined in turn.

Work package 1: Identification and assessment

In order to meet the goals of this rapid review we carried out a desk-based review of available measures and tools for identifying stammering, speech and language needs in early childhood by non-specialist staff.

Research questions

The aim of the work package was to identify and compare the effectiveness of different measures and tools for identifying stammering and potential speech and language needs during formative assessment.

- Which measurement tools are available to early years practitioners to identify children's stammering, speech, and language needs across the early years?
- What are the performance parameters of these measurement tools (e.g. reliability/ validity/ specificity)?
    - Which measurement tools are most appropriate for use by staff in early years settings? What are the advantages and disadvantages of the different tools?
- How can these tools be used to guide decisions regarding the provision of universal, targeted or specialist support? What profiles of need require specialist approaches?
- Which profiles of need are likely to require immediate specialist referral?

Methods

We applied recognised search, and data extraction strategies and methods of data extraction, summary and appraisal used in 'desk-based' and/or scoping reviews (Grant and Booth, 2009).

Search strategy

The search strategy to identify published tools included 5 approaches:

1. A list of prespecified tools in the specification from DfE
2. Tools identified in existing systematic reviews of identification tools known to the research team (Feltner et al., 2024, Baker et al., 2022)
3. Web searches of UK assessment publishers: GL Assessment; Pearson Clinical Assessment UK; Gov.UK; and Grey literature (e.g. on Speech and Language Therapy and Early Years services webpages)

4. Database search: Three databases most likely to yield relevant literature were searched for reviews of identification tools (Embase; Scopus; EBSCO: ERIC). Search strategies for these databases used both indexing terms and free text searching and were designed for rapid retrieval by searching titles and records published in English. Search terms included: Review AND Language OR Speech OR Communication OR Stammer*ing OR Stutter*ing AND Tool*s OR Identification OR Screening
5. Finally, the team reviewed the list and added additional tools which they are aware are in widespread use, but which did not appear in the above searches. This was, in the main, due to the date of development being earlier than 2013

Once the tools were identified we sourced publications to provide the necessary details to summarise the characteristics of the tools and appraise the tools psychometric properties. To do this we first identified manuals and primary papers which described the development and psychometric properties of the tools. We then conducted searches in SCOPUS and EBSCO for papers published after the date of the manual publication, which included the name of the tool in the title or abstract to check if further evaluation had been conducted. We also checked with the authors themselves on whether further evaluations had been published.

As this is a rapid review it cannot be guaranteed that our search yielded a fully comprehensive list, but we can be confident that it included the large majority of those available and in use.

Inclusion criteria

Tools were included for appraisal applying the following inclusion and exclusion criteria

Include if:

- Prespecified in DfE specification
- Early Language Identification Measure (ELIM)
- Language Screen
- WellComm
- Progress checker
- Infant Language Link
- Every Child a Talker (ECAT)

Or if:

- Covered relevant age range

- Assessed stammering, speech, and/or language
- Can be used by early years educators
- UK developed/adapted

Where no or limited available tools for a specific domain were available (i.e. stammering, speech or language), then inclusion criteria were relaxed to consider:

- Non-UK tools
- Professional guidelines

Tools were excluded if they were:

- For children aged above 6 years of age
- Published pre-2013 (with the exception of tools specified by DfE or known to be in widespread use)

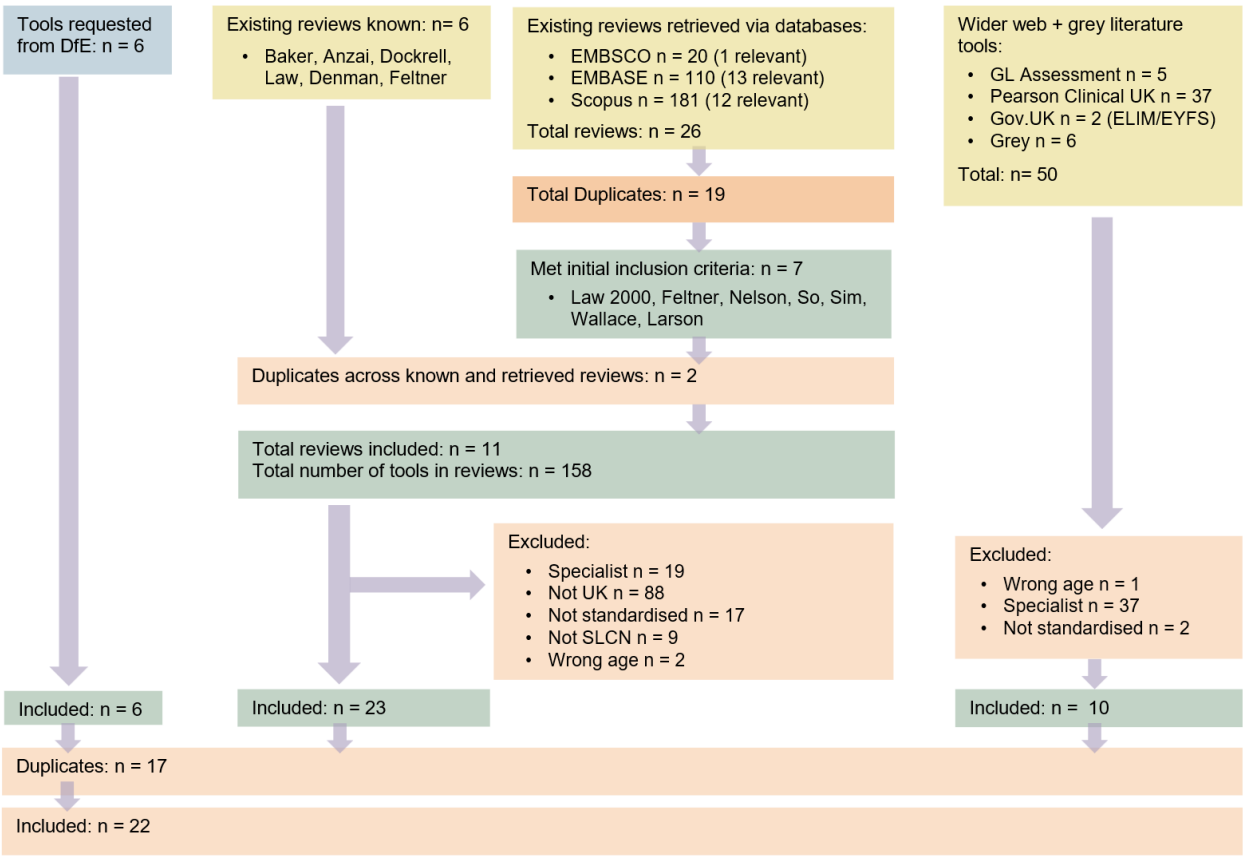
Search results

The results of the search for identification and assessment are documented in a flow diagram in Figure 1. Existing reviews retrieved via database searching yielded a total of 26 reviews and combined with the 6 existing reviews known to the Newcastle team, resulted in a total of 32 studies. After duplicates and those that did not meet the inclusion criteria were removed, a total of 23 studies were retrieved from database searching.

The wider web and grey literature yielded a further 50 studies, with 40 of the studies then excluded due to not meeting the inclusion criteria (wrong age, specialist, not standardised), resulting in 10 papers being included. 6 tools were also requested by DfE to be included.

After duplicates removed, a total of 22 studies across searching via databases, the wider web and tools already known and/or requested were included in the review.

Figure 1. Flow chart for identification and assessment search



Extraction and appraisal of data

Characterising the tools

We extracted descriptive information regarding the characteristics of the tools from the manual, websites and primary research paper(s) where these were available, including:

- Name of the measure
- Age group(s) assessed (i.e. 0-12 months; 1-3 years; 3-5 years; 5-6 years)
- Stammering, speech and/or language domain covered
- Specific skills assessed (e.g. vocabulary, speech sounds, grammar)
- Type of assessment (e.g. parental report, observation, direct assessment)
- Designed for use by which practitioner groups
- Brief description
- Purpose (i.e. identification of needs, tracking progress, profiling strengths and weaknesses)
- Specified age range (month/years)

- Cost
- User training or qualifications

Appraisal

We extracted and evaluated information regarding the psychometric properties of the tools identifying whether or not they were reported in the sources we identified. Appendix A: Definitions of key psychometric constructs provides a list of key psychometric terms and their definitions. The psychometric properties considered are drawn and adapted from Asunta et al., 2019, and based on classical test theory as these were reported for the majority of tools:

- Normative sample: consideration of the sample used to develop, standardise and create norms for the tool in terms of representativeness of the UK population and size.
- Usability: a qualitative judgement regarding how feasible, practical and easy a tool is for practitioners to use.
- Accuracy in identifying needs: Measured using sensitivity/specificity metrics.
- Validity: considering concurrent, discriminant and face validity.
- Cross-cultural: consideration as to whether tools had been evaluated in in non-monolingual and/or non-English speaking groups or if the tools, at a minimum, advise regarding its use with these groups.
- Reliability: considering internal consistency, test-retest reliability and inter-rater reliability.

It is important to note that classical test theory has been challenged in recent years with respect to potential inaccuracies (Cappelleri et al., 2014). In addition to these classic psychometric properties, we therefore also noted if tool development had included more modern methods of development, including Rasch analysis and Item response theory. These approaches enable higher confidence in a tool's ability to detect individual differences between children and in individual children over time (Jabrayilov et al., 2016).

Once identified, the level of quality for each metric was rated using recognised guidance for each metric where available as: not reported; reported but unclear; reported but quality rating not applicable (i.e. relating to qualitative characteristics); low quality; moderate quality; and good to excellent. The definitions for quality ratings for each metric are in Appendix B: Criteria for psychometric quality judgements.

Work package 2: Intervention and support

To meet the goals of the rapid review on intervention and support, we carried out a review of existing systematic reviews of interventions to support speech and language, and children who stammer. Interventions and approaches included in the review were those that are suitable for delivery by early years education professionals.

Research questions

To identify the effectiveness of different approaches to supporting children with speech and language needs or children who stammer at universal, targeted and specialist levels. To identify techniques and strategies from specialist approaches that require delivery by a speech and language therapist (SLT) that may be applicable for use by early years professionals.

- What Universal and Targeted approaches are effective at addressing different types of need across stammering, speech and language for children aged 0-5 years?
- What interventions are effective at addressing different types of needs (across stammering, speech and language) for children at different points across the 0-5 age range (e.g. 0-12 months, 1-3 years, 3-5 years) and with what size of effect?
- What is the most appropriate level of delivery (Universal, Targeted, Specialist) for each of these interventions?
- What types of children (with what types of need) appear to respond most to the different types of approach / intervention?
- What recommendations for practice flow from this analysis? In particular, what advice can we give practitioners to help them to select the most relevant intervention / approach in individual cases.

Methods

In order to complete this review, we first used existing systematic reviews to identify intervention studies listed in those which met our inclusion criteria (see under ‘Inclusion criteria’). This reduced the time needed and allowed us to quickly identify relevant studies with randomised control trial (RCT) and/or quasi-experimental designs.

Following this, we then identified the individual intervention studies in the reviews, which met our inclusion criteria. We then supplemented this list with the knowledge of the

review team and expert colleagues regarding any studies we may have missed and with a search of the ‘What Works’ database.

As the focus of this rapid review is for universal and targeted interventions deliverable by early years practitioners, a detailed summary and synthesis of studies evaluating interventions at these levels was completed. Although early years practitioners are not in a position to provide specialist interventions independently, we also extracted data regarding the characteristics of effective specialist interventions. These were summarised and synthesised to describe approaches that might have relevance and offer additional insights regarding the provision of effective universal and targeted approaches. Each of these steps were completed for language, speech and stammering interventions.

Search strategy

Our goal was to identify intervention studies published in the last 10 years at universal, targeted and specialist levels. We identified recent systematic reviews (published in the last 5 years) of interventions to support children’s speech, language and communication or stammering as these would provide a rapid method for identifying the relevant intervention papers published in the previous 10 years. These reviews included those already known to the research team and any further reviews found via database searching.

Systematic reviews were identified via:

- Systematic reviews known to the research team
- Database searches: Six databases most likely to yield relevant literature were searched for reviews of intervention for speech, language and communication and stammering/stuttering including (1) EBSCO: ERIC; (2) EBSCO British Education Index; (3) Embase; (4) Scopus; (5) Medline; and (6) Web of Science. Search strategies for these databases used both indexing terms and free text searching and were designed for rapid retrieval by searching titles and records published in English in the last 5 years (2018-2023). Search terms included: Systematic AND/OR review; Language OR Speech OR Communication OR Stammer*ing OR Stutter*ing AND Intervention

Intervention studies were identified via:

- The studies listed in the systematic reviews identified met the inclusion criteria

- The ‘What Works’ database[1] (hosted by Speech and Language UK). The What Works database of interventions for speech, language and communication was searched for interventions that met the inclusion criteria

Inclusion criteria

The degree to which evidence was available for individual domains of speech, language, and stammering was variable. Historically and to date there is a larger body of literature reporting approaches for supporting language than for speech and stammering. In consideration of this, we applied an ‘extended’ inclusion criteria for reviews of interventions for speech and stammering to enable us to gather the most robust and informative evidence for these. Inclusion and exclusion criteria applied to systematic reviews and to interventions.

Systematic reviews

Systematic reviews were included if:

- Published in last 5 years (2018-2023) for language interventions and the last 10 years (2013-2023) for speech and stammering interventions
- Published in English
- Relevant interventions for children aged 0-5 years
- Systematic review methods
- Thematic or non-systematic reviews were included for stammering only

Excluded if:

- Published before 2018 for language interventions and 2013 for speech and stammering interventions
- Reports intervention for age 6 and above or adults
- Reports intervention for broader neurodevelopmental conditions (e.g., Autism, Downs Syndrome, Intellectual Disability) or Cleft Palate
- Not published in English
- Doctoral thesis/unpublished/not peer-reviewed

Intervention studies

Include if:

[1] What Works database: A database of evidenced interventions to support children’s speech, language and communication skills.

- Published in the last 10 years (2013-2023) for language interventions, the last 20 years (2004-2023) for speech interventions, and the last 20 years (2004-2023) for stammering interventions
- An RCT or quasi-experimental design
- Relevant for children aged 0-5 years (mean age above 6 years of age)
- Published in English
- Suitable for early years practitioners to deliver

Exclude if:

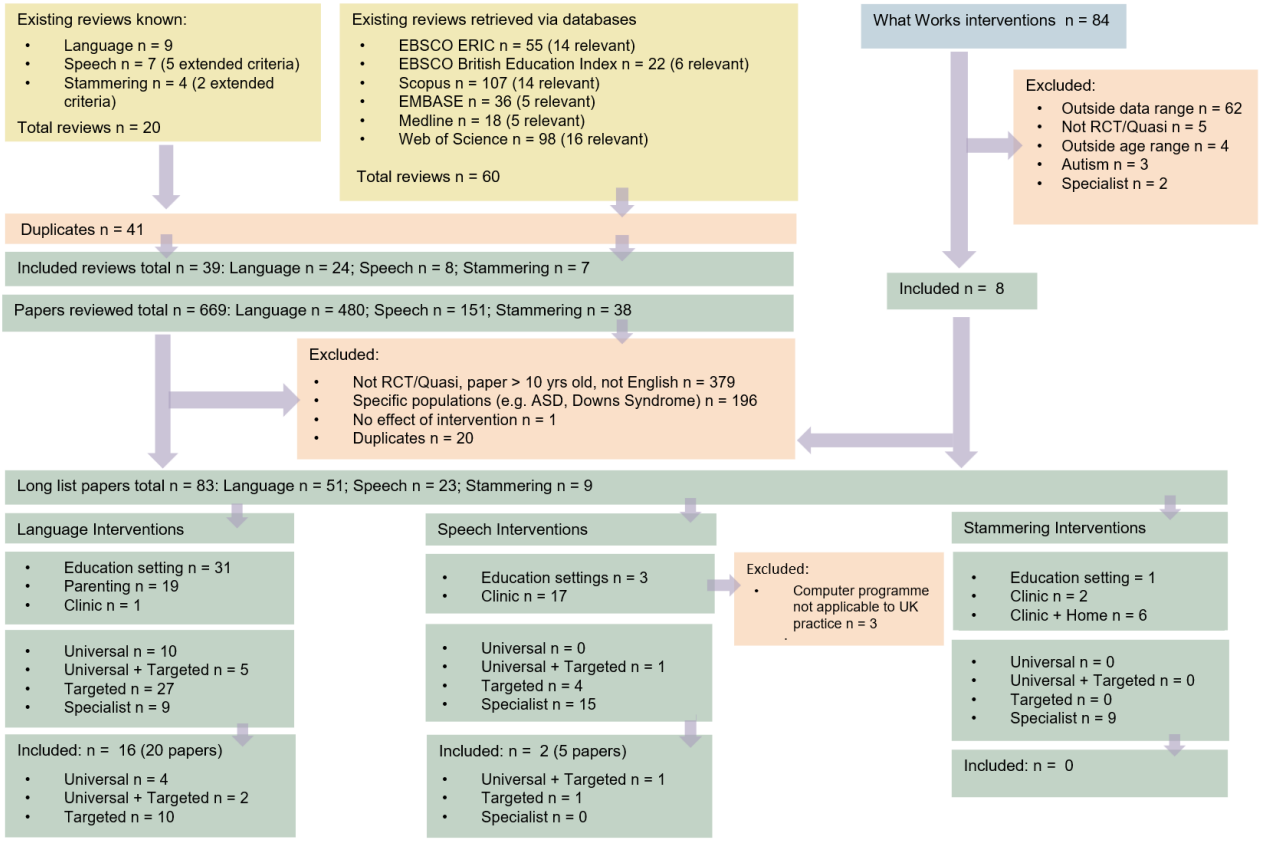
- Published pre-2013, pre-2004 (speech)
- Not RCT or quasi-experimental design
- Reports intervention for age 6 and above or adults
- Reports intervention for broader neurodevelopmental conditions (e.g., Autism, Downs Syndrome, Intellectual Disability)
- Reports intervention for specific populations (e.g., Cleft Palate, hearing impairment, Childhood Apraxia of Speech) (for speech interventions)
- Reports only data from children who speak a language other than English (for speech interventions)
- Not published in English
- Not suitable for early years practitioners to deliver (i.e. specialist/SLT)
- Doctoral thesis/unpublished/not peer-reviewed

Search results

Figure 2 describes the process of identification of systematic reviews and individual studies. The systematic reviews identified and used as sources are listed in a separate list of references at the end of this report.

Existing reviews retrieved via database searching yielded a total of 60 reviews and combined with the 20 existing reviews known to the Newcastle team and 84 interventions sourced from the What Works database, resulted in a total of 164 studies. After duplicates and those that did not meet the inclusion criteria were excluded, a total of 83 papers were longlisted. Of these, 51 studies focused on language and 23 studies on speech and 9 were found for stammering. Once shortlisted, 20 papers were included on language interventions and 5 papers on speech interventions. No papers on stammering interventions were included.

Figure 2. Flow chart for intervention and support search



Review and evaluation of intervention studies

There were no studies found from our search relevant to universal and targeted interventions for stammering. Therefore, the review and evaluation of the intervention studies applied to studies related to speech and language interventions.

We systematically extracted relevant data from the intervention studies identified in the literature reviews to provide an analysis of the characteristics, efficacy, and study quality of the interventions. This was to support practitioners and settings to evaluate the fit and feasibility of the interventions for their settings and pupils. We summarised the characteristics of the interventions using an adaptation of the TIDieR framework (Hoffmann et al., 2014), the effects using the EEF framework methods for interpreting effect sizes (Higgins et al., 2012) and summarised study quality using the (Durán et al., 2016) framework adapted from Cirrin and Gillam (2008) (Shobbrook et al., 2024).

Data extraction and appraisal

Data was extracted for each intervention study into an overarching excel database and the key characteristics for each intervention were then transferred and inputted into evidence tables.

These key characteristics include:

1. Evidence paper reference (author name and date)
2. Age of children the intervention is appropriate for
3. Speech and language skills targeted by the intervention
4. Participant characteristics (country, universal or targeted, language(s) spoken, age)
5. Sample size
6. Outcomes measured (speech and language-related only)
7. Summary of findings (speech and language related only)
8. Reported effect size(s) (for statistically significant outcomes only)

Some interventions had more than one paper that met the inclusion criteria. Where this was the case, we report the key characteristics of each paper associated with the intervention.

Template for Intervention Description and Replication (TIDieR) framework

We used an adaptation of the TIDieR framework to describe components of the interventions (Hoffmann et al., 2014). This framework enabled interventions to be described clearly and comprehensively to support replication and use in practice. The components of interventions as reported in included studies were extracted against the following categories:

- Name of intervention (Where interventions were not named, we have allocated a name that represents the key components of intervention)
- Why use it? (rationale)
- What does it involve?
- Materials to deliver it
- Who delivers it?
- Where is it delivered?
- How is it delivered? (e.g. face to face)
- How often and how much? (Frequency/dosage, i.e., session duration, over what period of time)
- Tailoring (if the intervention was designed to be personalised or adapted for individual children or users)

- Fidelity: can it be delivered as intended? (adherence to intervention procedures/delivered as intended)

Where interventions have more than one evidence paper, the TIDieR summaries include combined information extracted from all papers.

Study quality indicators

Each evidence paper was included in this review because its study design (level of evidence) is relatively robust in that it uses an RCT or quasi-experimental design. RCTs are higher level of evidence; whether a study uses an RCT design is indicated in the evidence summary tables. However, the quality of execution of various aspects of these study designs (procedures/methods) varies substantially. Each evidence paper was therefore appraised using the (Durán et al., 2016) framework adapted from Cirrin and Gillam (2008) against a pre-specified set of 9 quality indicators:

1. For RCTs, the randomisation procedure is clear
2. There is initial group similarity
3. Fidelity is reported (adherence to intervention procedures)
4. Fidelity level is acceptable (more than 80%)
5. There is blinding of assessors (i.e., assessors were not aware which group (intervention/control) children were allocated to)
6. The intervention description is sufficient for replication
7. Measures are valid and reliable
8. p values are reported for all outcomes
9. Effect size(s) are reported

These quality indicators are all important and should be considered together when appraising evidence.

Whether a criterion was ‘met’ or ‘not met’ by evidence is indicated in an evidence appraisal table for each intervention. Where an intervention had multiple evidence papers, quality indicators were judged collectively considering indicators met/not met across all papers. The term ‘unclear’ indicates where evidence is mixed across multiple papers (for example, when one paper does meet a criterion, and one does not). For single evidence papers ‘unclear’ refers to lack of clarity in the information provided in the paper.

Effect sizes

Effect sizes allow us to describe the size of the difference in outcomes between an intervention and control/comparison group in a standardised and comparable way. Measures of effect size vary between studies; therefore, calculated effect size allows us to standardise and compare effects across multiple interventions. Calculated effect sizes are only provided for statistically significant outcomes post-intervention to allow comparison of positive impact across interventions. Effect sizes are calculated using post-intervention descriptive data (Mean, standard deviation) comparing the intervention group with the control or comparison group. Outcomes that lack the required descriptive data to calculate a standard effect size using Hedges g, we report as 'unable to calculate'. Details about effect sizes reported in evidence papers and those that we have calculated, for all study outcomes are found in Supplementary Evidence Report.

The effect sizes we have calculated are Hedges g, a calculation which includes a correction for small and/or uneven sample sizes between groups. We interpret them using the Education Endowment Foundation toolkit guidance (EEF, 2023a) which categorises effects from 'very low' to 'very high' and translates them into the number of months' progress children gain as a result of the intervention (Table 1).

Table 1. Effect size table and corresponding months of progress and impact (using EEF guidance)

Effect sizes (Hedges g)	Progress (months)	Impact
-0.05-0.05	0	No or very low
0.06-0.18	1-2	Low
0.19-0.44	3-5	Moderate
0.45-0.69	6-8	High
0.70-1.00	9-12	Very high
1.00+	More than 12	Very high

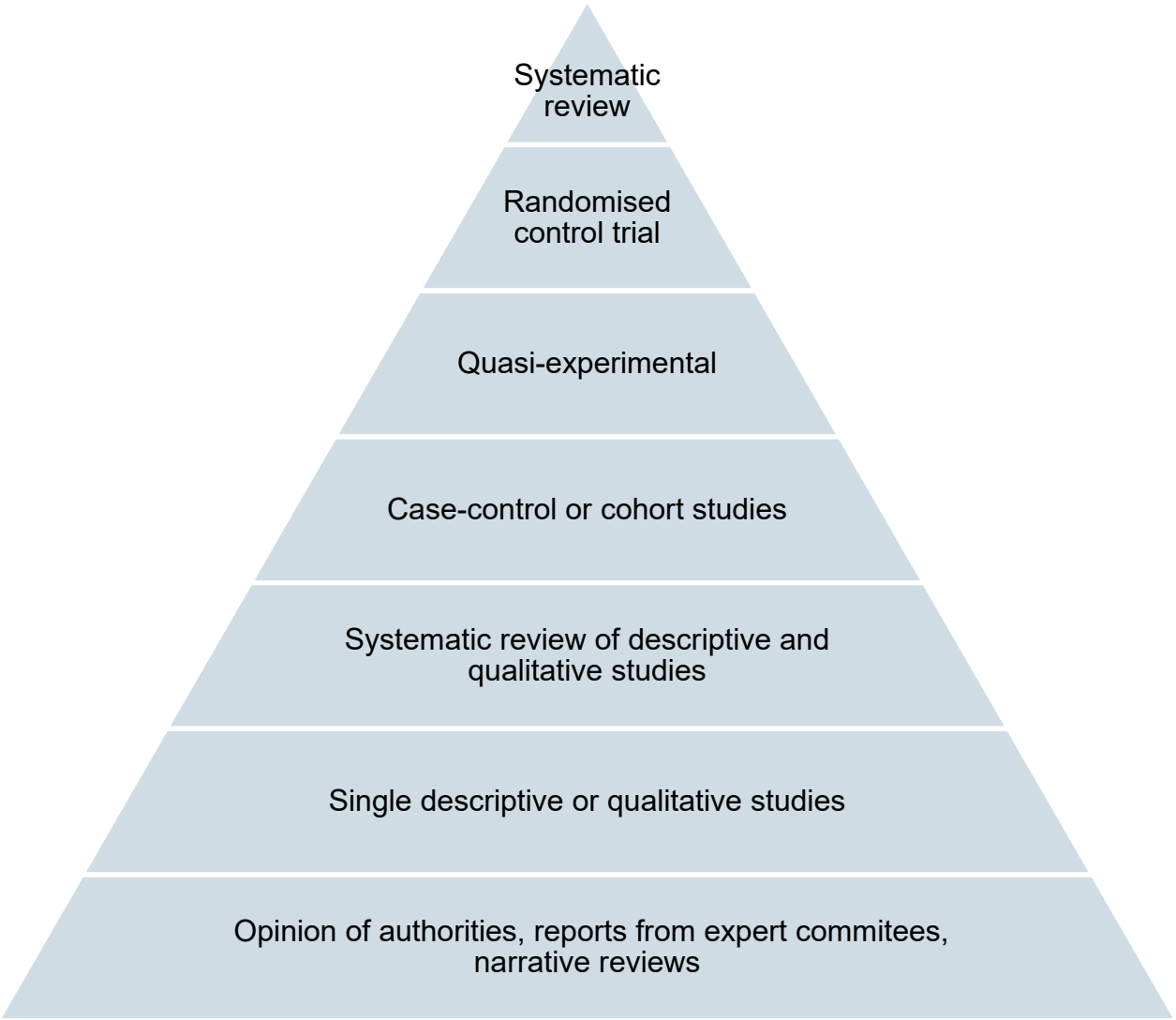
For each intervention we provide an effect size summary table of its highest and lowest calculated effect size and report any outcomes where there was no effect. For highest and lowest effect sizes we also indicate level of impact using EEF descriptions, as shown in Table 1. Alongside these summary tables we provide a narrative overview of effect sizes and study quality which includes whether the sample sizes of the evidence paper(s) are small, moderate, or high. We consider a sample size to be 'small' if it includes less than or equal to 30 children per group (intervention and control); 'moderate' if it includes 31-40 children per group; and 'large' if it includes more than or equal to 60 children per group. These categories are based on our knowledge of typical sample sizes included in studies reporting children's speech and language needs.

Levels of evidence

Levels of evidence may be represented as a hierarchy which ranks studies based on the robustness of their design. This hierarchy is depicted in the pyramid in Figure 3 and is adapted from Lo-Biondo-Wood, G. P. & Haber, J. (2010). Nursing research: Methods and critical appraisal for evidence-based practice (7th Ed.) St Louis, MO: Mosby Elsevier.

Systematic reviews and meta-analyses are considered the most robust evidence, and opinion pieces and reports the least robust. All studies included in our review were either Randomised Controlled Trials (RCT) or quasi experimental studies (QES).

Figure 3. Evidence hierarchy



Analysis of approaches used in specialist interventions

The DfE requested that in addition to identifying specific universal and targeted interventions that we review specialist interventions identified in the search to extract from them any approaches or techniques which might be applied to teaching practices within early years settings as potential universal or targeted techniques.

We found nine specialist intervention papers for stammering, 16 for speech and nine for language within included systematic reviews. For each paper, we extracted the skills targeted by the intervention, and author-reported intervention approaches and/or techniques that we considered as appropriate for use within early years settings with universal and targeted children. These were approaches that would not require specialist-level knowledge for implementation and would not cause harm or have negative effects on children's stammering, speech or language if delivered by non-specialist practitioners. These approaches/techniques were then viewed across all evidence papers to explore commonality and group together papers that reported the same approach/technique. In total, appropriate approaches/techniques were extracted from three of the specialist papers for stammering, five of the specialist papers for speech and all nine for language.

Work package 3: Working together

To answer the research questions related to working together, a rapid review of peer-reviewed literature and resources published in reports or doctoral theses (known as grey literature) and a series of case studies of examples from practice were completed. The case studies were analysed using qualitative framework analysis based on the theoretical domains framework (TDF) (Cane et al., 2012) and mapped onto the COM-B model (Michie et al., 2011).

Research questions

- What examples are there of different models of collaboration between early years settings with other professionals for identifying and providing support for children's stammering, speech and language needs. These other professionals include: SLTs; Health Visitors (HVs); Educational Psychologists (EPs); and parents and caregivers
- What recommendations can be made about optimal components and characteristics of collaboration between early years settings, other professionals and parents and carers to support identification and intervention for children's stammering, speech and language needs.

Rapid literature review methods

The remit for this rapid review of literature about working together with early years settings was to conduct a database search for peer-reviewed evidence published in the last 10 years, and a search of grey literature, including doctoral thesis and reports using the same parameters:

- All sources were described with respect to the evidence/theoretical base
- Target cohort characteristics
- Evidence of knowledge exchange
- Training content and availability
- Assessment and intervention content
- Effectiveness
- Evidence of sustainability/normalisation
- Flexibility and tracking through universal, targeted, specialist intervention pathways

As this is a rapid review, it cannot be guaranteed that a fully comprehensive list of literature about working together has been generated.

Search strategy

Peer reviewed articles

One of the issues with conducting a rapid review of the literature on 'working together' was the lack of consistent terminology used to describe it or what is meant by it. Therefore, we had to make decisions regarding the search terms used but are cognisant of the fact that this will have resulted in many studies and papers not appearing in the results of the database or grey literature searches. Endeavouring to mitigate this was addressed by adding filters for synonyms and mapped terms. Advice was taken from Newcastle University Library specialist librarian to ensure we were searching all available and relevant databases for both peer reviewed and grey literature.

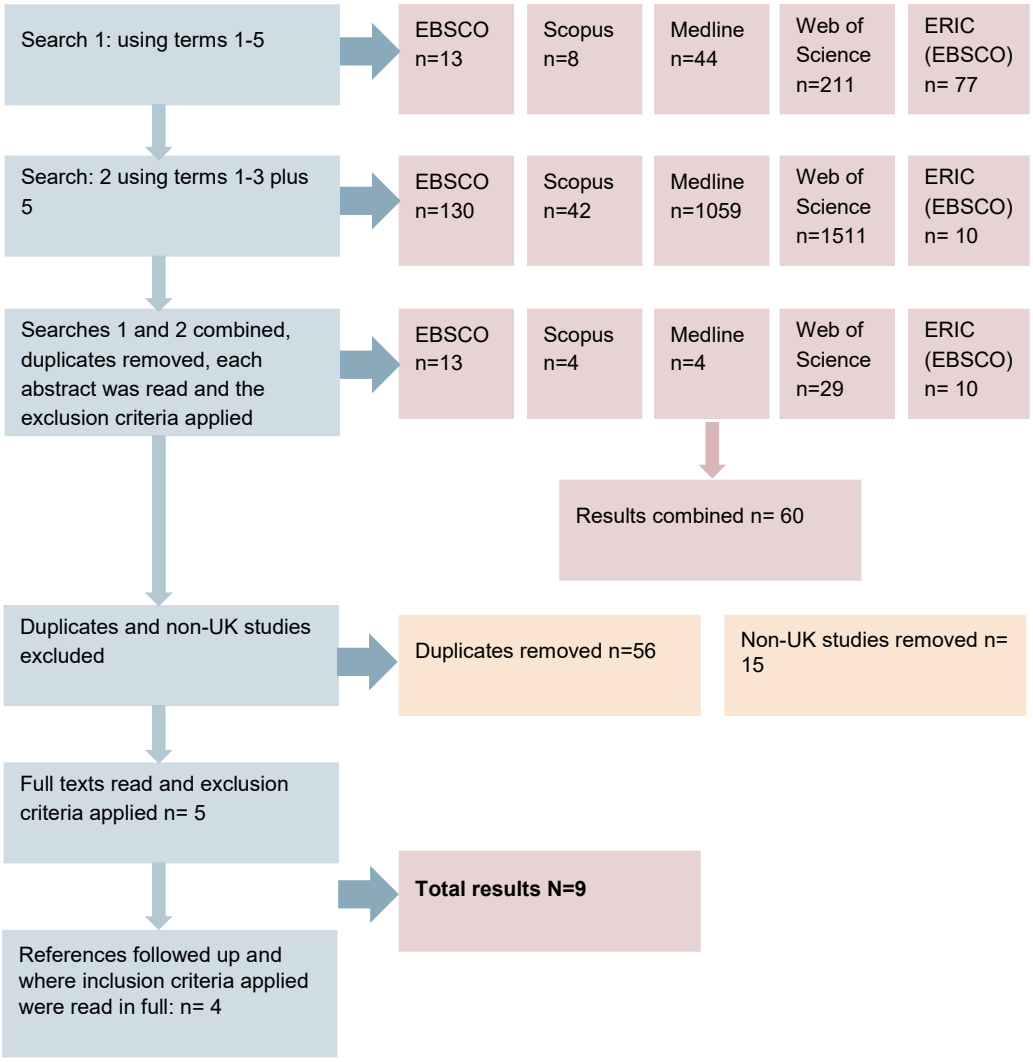
Five key databases were identified to conduct the rapid review including: The British Education Index (EBSCO), SCOPUS, Medline (OVID), Web of Science and ERIC (Educational Information Resources Centre).

Following identification of search terms, searches took place firstly with all terms comprising age, setting, type of need, pathway, and collaboration (see Appendix C: Working together search terms). With few results being returned, the searches were run again with terms Universal* OR targeted* OR specialist* removed. An additional series of searches was also run that included specified partners. The searches were limited to the time frame of January 1st, 2014, to the end of February 2024.

The results of searches for each separate database were combined and duplicates removed. The abstracts were read and exclusion criteria applied (age range of children (0-5); focus on collaboration; focus on speech, language and communication; involvement of early years practitioners and settings). The results from each database were combined and duplicates removed. Non-UK studies were removed. This resulted in 15 studies.

All studies were read in full and exclusion criteria applied, resulting in five papers being included in the rapid review. The reference lists of these papers were also followed up and exclusion criteria applied, resulting in a further four results. Additional results were then also read in full. A total of nine papers were included in the rapid review on working together (Figure 4).

Figure 4. Flow chart for the working together search of peer-reviewed articles



Grey literature, thesis and websites

Three search engines/databases were identified to conduct the grey literature rapid review including: (1) Google Advanced Search; (2) The Bielefeld Academy Search Engine (BASE), an open access repository containing 100 million documents; and (3) ProQuest™ Dissertations & Theses Citation Index.

The British Library online search facility for theses was unavailable due to a Cyber incident in October 2023.

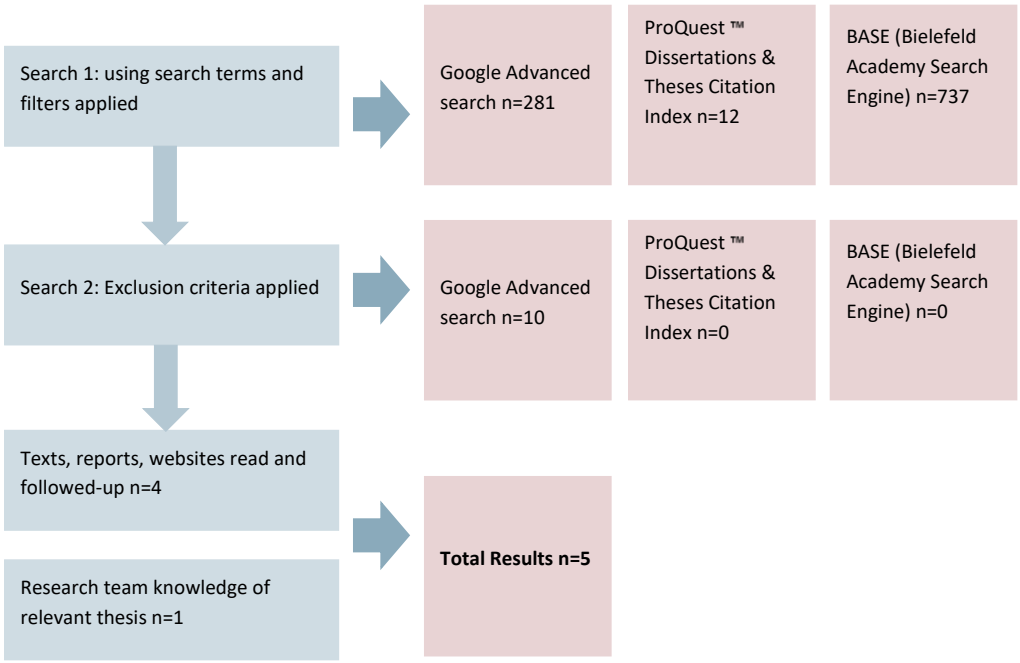
Drawing on the experience of the academic database searches, the search terms were limited to in order to have a broader scope and obtain more potential results. Additional filters were added, based on the exclusion criteria used in the academic database search.

The filters applied for the search engine and database searches were as follows:

- Google advanced search:
- Contain all of these words (speech, language, communication, early years, collaboration, partnership)
    - Language: English
    - Region: UK
    - Last update: anytime
- Terms appearing: in the whole page
    - File type: any
- BASE:
    - Filter: Time: 2014-2024
    - Filter: UK
    - Filter: text
    - Filter: subject: communication
    - Filter: Language: English
- ProQuest™ Dissertations & Theses Citation Index:
    - Filter: Time: 2014-01-01 to 2024-06-11
    - Filter: Included thesis and dissertations in England

Following this search of Google (websites, links); BASE and ProQuest (titles and descriptions) the results were followed up and inclusion criteria applied. This resulted in four relevant sources. Knowledge of a relevant thesis was also followed up. This yielded a total of five sources (Figure 5).

Figure 5. Flow chart for the working together search of grey literature articles



Case study methods

A range of case studies of good practice in working together to support children with speech and language needs in the early years were identified and examined in order to consider how different approaches can be or are effective. Each locality has different needs, the services are organised differently and the professionals that come together bring different knowledge and expertise. Each approach is unique, yet there are commonalities across them. Our goal was to describe good practices such that localities that aim to develop their own model of working together may find that one of the examples will meet their need or that parts from each example will best fit their context. Additionally, we aimed to identify cross-cutting themes of best practice to inform service and policy development.

Structured interviews were used to collect data which were then analysed using the Theoretical Domains Framework (Cane et al., 2012). This is a model from behavioural sciences that has been validated for use in the identification of barriers and enablers in contexts where conditions are identified and interventions implemented (Cane et al., 2012). The TDF maps onto the Capability, Opportunity, Motivation-Behaviour (COM-B) Model (Michie et al., 2011) which can be used to help us better understand the components that contribute in positive or negative ways to the desired outcomes.

Ethics

Ethical approval was given by the Newcastle University Ethics Committee. Information and consent documents were emailed to participants for completion.

Participants

Participants were identified through the research team's existing professional networks and from a list of contacts provided by the DfE. We aimed to recruit participants from different regions and with different models of working together. Emails were sent to the named contact explaining the scope and purpose of the work and they were asked if they thought their work aligned with our aims. From this we recruited four speech and language therapy services and one Academy Trust whose early years settings worked together with one of the speech and language therapy services. Three of the speech and language therapy services recruited early years settings whom they thought were typical of their working together model. EPs and an associated settings were later recruited through personal contacts. Despite multiple attempts we were unable to recruit a Health Visitor.

Procedure

Questionnaires for use in online interviews with representatives from the different organisations were devised to address the research questions. Modified versions of the same questions were developed for use with SLTs, HVs, EPs, and managers of early years settings. The introductory email for early years practitioners is in Appendix D: Case study email template. The questions used for the early years setting interviews are in Appendix E: Early years settings interview questions.

The interview questions were emailed in advance to the participants so they could prepare their responses. In addition, they were asked to provide the following information by email:

- Name of organisation
- Title of working together/partnership/collaborative work (if there is one)
- Geographic location
- Type of working together (collaboration, partnership etc.)
- Who is working together (please just provide job titles involved e.g. teaching assistant, head teacher, SLT, parent etc.)
- Who leads the working together (please provide job titles and organisation names)
- How children's progress is tracked/measured

- Types of interventions implemented by early years practitioners
- What training do early years practitioners receive to prepare them for implementing interventions for children with SLCN? [for early years settings only]
- What training do specialist professionals receive to support collaborative or partnership working with early years settings? [for SLTs, EPs, HVs only]
- If you have online information about your work, please provide the link

Interviews between the participant and research associate took place online using Zoom. With permission, the interviews were recorded and automatically transcribed using the routine Zoom software. The transcripts were checked and edited for accuracy by the research associate.

Data analysis

The interview transcripts were analysed using the TDF domains by Thomas. Approximately 20% of the analyses were checked by H. Stringer (Newcastle team member). No classification was changed at this stage. However, as the case studies were populated some of the information moved categories to support clarity and follow themes within the case study, e.g. goal setting occurred in different categories depending upon the process in the working together.

Appendices

Appendix A: Definitions of key psychometric constructs

Psychometric term	Definition
Concurrent validity	The degree to which a measure aligns with another well-established measure which is often a standardised "gold standard" test.
Construct validity	The theoretical basis of the measure and ability to differentiate between groups with known differences in ability e.g. with age. Does the test measure the concept it is intended to measure.
Correlation	A statistical test measuring the degree to which two sets of scores are related to one another such that if one increases then the other also increases or vice versa.
Cronbach's alpha	A statistical test measuring agreement between scores.
Cross-cultural validity	The degree to which a measure is applicable across cultures and/or has been adapted for use in other languages.
Discriminant validity	Verifies that measures or components of measures that should not be related are not related.
Face validity	A qualitative, subjective judgement by those who use the tool as to whether it measures what it aims to measure.
Internal Consistency	Assesses how well the different items within the measurement tool measure the same underlying construct.
Inter-rater reliability	Assesses the degree to which two different users of the measure or raters of the child's performance agree with one another.
Intra-class Correlation	A statistical test can measure inter-rater reliability and test-retest reliability.
Normative sample	The sample of children used to develop the norms for a given measure. That is to generate the average range of scores for a given tool and/or the age when a certain behaviour or skill would be expected to have developed.

Psychometric term	Definition
Reliability	The consistency and precision of the measure. This can include consideration of consistency over time, between different people using the measure and across items within the measure. Lack of reliability introduced error into the measurement process reducing the confidence we can have that it is providing a true representation of the child's abilities.
Sensitivity	The proportion of people with a given condition that have a positive result on a screening test. A test that is 100% sensitive means all individuals with a given condition are correctly identified i.e. there are no false negatives (i.e. people who have the condition but are not identified by the test). As sensitivity increases specificity decreases.
Specificity	The proportion of people without a given condition that have a negative result on a screening test. A test that is 100% specific means all individuals who do not have a given condition are correctly identified i.e. there are no false positives. As specificity increases, sensitivity decreases.
Usability	A qualitative judgement regarding how feasible, practical and easy a tool is for practitioners to use.
Validity	The degree to which an assessment tool measures the construct it is designed to be measured. There are multiple types of validity.

Appendix B: Criteria for psychometric quality judgements

Criteria	Quality judgement
Normative sample size	Tertiles were created of the sample sizes used for standardization in the included assessment tools, where tertile 1 was low (0-65); tertile 2 was moderate (606-1516); and tertile 3 was good to excellent (1517-350,000).
Normative sample representativeness	No quality rating given. A qualitative judgement as to whether developers consider Geography, socioeconomic status, age and sex in sampling methods.
Usability	No quality rating given. A qualitative judgement regarding how feasible, practical and easy a tool is for practitioners to use.
Sensitivity and specificity	Categories of quality adapted from (Law et al., 2000, Michael et al., 2013) where good to excellent was greater than 80% in both sensitivity and specificity; moderate was when the sum across sensitivity and specificity greater or equal to 150; and low, when the sum across sensitivity and specificity was below 150.
Concurrent validity	Measured using correlations between measure and "gold standard". Higher correlations equalled higher concurrent validity. The categories of correlation coefficient adapted from (Portney and Watkin, 2007) where, less than 0.25 was small, between 0.25 and 0.5 was moderate; between 0.5 and 0.75 was good; and above 0.75 was excellent.
Discriminant validity	Measured using correlations between aspects of measure measuring differing domains and/or measurement tools assessing differing constructs. Lower correlations equalled higher discriminant validity.
Face validity	No quality rating given. A qualitative judgement by those who use the tool as to whether it measures what it aims to measure.

Criteria	Quality judgement
Internal Consistency	Measured using Cronbach's alpha. Categories of quality in Cronbach's alpha (Cronbach, 1951) where less than or equal to 0.5 was unacceptable (low); between 0.5 and 0.6 was poor (low); between 0.6 and 0.7 was questionable (low); between 0.7 and 0.8 was acceptable (moderate); between 0.8 and 0.9 was good; and above 0.9 was excellent.
Test-retest reliability	Measured using Intra Class Correlations (ICC). Categories of quality in ICC (Koo and Li, 2016) where less than 0.5 was poor reliability; 0.5 to 0.75 indicated moderated reliability; 0.75 to 0.9 was good reliability; and above 0.9 was excellent reliability.
Inter-rater reliability	Measured using Intra Class Correlations (ICC). Categories of quality in ICC (Koo and Li, 2016) where less than 0.5 was poor reliability; 0.5 to 0.75 indicated moderated reliability; 0.75 to 0.9 was good reliability; and above 0.9 was excellent reliability.

Appendix C: Working together search terms

Criteria	Terms
Age	Child* OR boy* OR girl*
Setting	Preschool* OR nursery* OR reception* OR “Early Years”
Type of need	Phon* OR “speech, language and communication needs” OR SLCN* OR Language* OR speech* OR “speech needs” OR “speech sound disorders” OR SSD* OR dysfluency* OR stuttering* OR stammering* OR fluency* OR semantics* OR vocabulary* OR syntax* OR grammar* OR morphology* “expressive language” OR “receptive language”
Pathway	Universal* OR targeted* OR specialist*
Collaboration	Collaboration* OR partnership* OR co-practice* OR multidisciplinary* OR “knowledge exchange” OR training*
Speech, language and communication partners	“Speech and language therapist” OR “speech therapist” OR “speech pathologist” OR “speech language pathologist” OR “speech AND language pathologist” OR “health visitor” OR HV* OR “Educational Psychologist” OR “Ed Psych” OR EP*
School partners	Teachers* OR practitioners* OR “Teaching assistant” OR TA*
Parent/carers	Parents* OR care*

Appendix D: Case study email template

Dear [Name]

Thank you for agreeing to be interviewed about the way you provide support to children with speech, language and communication needs (SLCN) in the Early Years (EY). We are compiling case studies for the Department of Education National Standards Unit about how early years settings and early years practitioners work with parents/caregivers and specialist professionals to effectively support EY children with SLCN. In each case we are interviewing representatives of at least two organisations so that we can get a more rounded view of the process and why it is successful.

To save time at the interview we request that you email some background information about how EY children with SLCN are supported. Please let us have your answers to the background questions a few days before the interview.

The questions that we will ask in the interview are attached to this email. Please read them and if necessary, discuss them with others in your organisation.

So that we are all talking about the same concepts when we are considering working together across organisations, we are using the following definitions:

Collaboration is when two or more people with different skills and knowledge work effectively with each other to complete the same piece of work or to achieve the same goal. The work evolves as each person contributes. The arrangement can be informal, and collaborators may change during the work as they start or finish their contribution. Collaborators may not have equal status in the relationship and may not bear the same responsibility for completing the work or achieving the goal.

Partnership is a more formal arrangement than a collaboration. There is a high level of commitment and an expectation that the partnership will be long lasting. Partners share risk and responsibility and contribute similar levels of expertise and resource. Partnerships may facilitate several different collaborations and have several projects or pieces of work at the same time.

Parallel working is when the different professionals work separately with the same child/children, each contributing their specialist knowledge. Each professional bears responsibility individually to achieve their goals, which may have been set with no consultation with other professionals. Parents/caregivers may be more involved with each professional in this model. Information about progress is reported from the professional to the educational setting, other involved professionals and parent/caregiver. There may or may not be a two-way flow of information.

Appendix E: Early years settings interview questions

1. Please tell me about the way you work together with other services (SLT, HV, EP) and parents/caregivers to support children in your setting with SLCN. Please think about how the partnership with other professionals (SLT, HV, EP) started; what you think helps the partnership to last over time (sustainability); how senior leaders support the working together (e.g. is there a strategic plan? Do you have a strategy document?); the training available to your staff that supports the work with children with SLCN, (who provides it and who funds it); which areas of speech, language and communication you support with universal or targeted interventions; the interventions you use (e.g. Talk Boost, Phonological Awareness, Language Steps etc.); how resources are managed, including the materials needed for the interventions, the allocated staff time and physical space for the interventions/support; if you fund any of the support from specialists e.g. buying in extra speech and language therapy; how you make best use of the free NHS service that children are entitled to.
2. How do you know that the way you work together with other services (SLT, HV, EP) and parents/caregivers is achieving its goal of successfully supporting children with SLCN in your setting? Please think about how the attainment profile of the children has changed; how the number and nature of referrals to speech and language therapy have changed since you have been working together in this way; what aspects of the working together you think are most important in contributing to its success; if all children benefit equally or do some benefit more, (e.g. children from poorer backgrounds, bilingual children with SLCN in all their languages, boys etc.); how parents/caregivers are involved; how is information about individual children shared across organisations/with parents/caregivers and how are decisions about children made.
3. What were the biggest barriers/major concerns you had to overcome to establish successful working together? Please think about how these issues were identified; who worked together to overcome them.
4. How has the nature of the working together changed over time? Please think about how sustainable it is even if key personnel leave or change roles within the organisation; how you link up with others to share good practice; if your staff, especially teaching assistants, have opportunity to support and learn from each other in relation to the working together to support children with SLCN; If you think this way of working is now just normal for you?
5. What advice would you give to other EY settings who would like to change their practice to better support children with SLCN in the early years? Please think about the important things you have learnt along the way; whose strategic support

you need e.g. executive managers/officers, commissioners; how you get staff at all levels of the organisation on board; how you get parents/caregivers on board?

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