

Appendix 1: Identification Screening Tool

Does the title/ abstract:		Yes (2)	No (1)	Unsure (3)	
1	Relate to a speech and language therapy intervention?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2	Relate to intervention for primary speech sound disorder?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	Indicate intervention received by children aged 2-7 years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	Relate to one of the following?				
	a. Involvement of parents in intervention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	b. OR Online/ digital intervention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	c. OR Intensity of intervention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5	The population receiving intervention does not fall within the exclusion criteria outlined below:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	If they do fall within the exclusion criteria, please specify which:	Autism Spectrum Disorder			<input type="checkbox"/>
		Down Syndrome			<input type="checkbox"/>
		Fragile X Syndrome			<input type="checkbox"/>
		Hearing impairment			<input type="checkbox"/>
		ADHD			<input type="checkbox"/>
		Cerebral Palsy			<input type="checkbox"/>
		Dysfluency			<input type="checkbox"/>
		Voice disorder			<input type="checkbox"/>
		Visual impairment			<input type="checkbox"/>
		Sensory processing difficulty			<input type="checkbox"/>
		Selective mutism			<input type="checkbox"/>
6	To be included?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Appendix 2: Selection Screening Tool

Does the paper:		Yes (2)	Somewhat (1)	No (0)
1	Relate to speech and language therapy intervention?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Relate to intervention for primary speech sound disorder?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Relate to intervention for children aged 2-7 years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Relate to one of the following?			
	Involving parents in intervention?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	OR Digital intervention?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	OR Intensity of intervention?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Describe the methodology used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Outline methodology:		
6	Refer to or describe mechanisms or contexts of the intervention?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Overall score (out of 16)			
7	Relevance of study	High (2)	Moderate (1)	Low (0)
8	To be included?	Yes (2)	Possibly (1)	No (0)
		Reason:		
Relevance:				
High (green):				
<ul style="list-style-type: none"> - The research is very relevant to the realist review research questions. - Contexts and mechanisms are clearly described. - The paper adds rich insight to initial programme theories - Makes specific reference to theory related to SSD (rather than SLCN) - Children are predominantly within the age bracket of 2-7 years - If looking at telehealth, the paper makes specific reference to theory that is relevant to asynchronous digital intervention - If looking at intervention delivered by another person (not the SLT), then this is the child's parent/ carer. 				
Moderate (amber):				
<ul style="list-style-type: none"> - The research has some relevance to the realist review questions and initial programme theories - The research covers SSD in some way but may also describe intervention for other SLCN. - Includes children aged 2-7 but this age is not the main focus of the study - If looking at telehealth, the research may cover asynchronous intervention, but also looks at synchronous telehealth - If looking at intervention delivered by another person, this may not be the parent/carer (e.g., school staff) 				
Low (red):				
<ul style="list-style-type: none"> - The research has some relevance to the research question and initial programme theories, but may not offer rich insight 				

Appendix 3: Appraisal tool

Does the full text paper:		Yes (2)	Somewhat (1)	No (0)
1	Help build on and/ or test (i.e., confirm, refine, refute) programme theories about: Involving parents in intervention? OR Digital intervention? OR Intensity of intervention?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Describe how the intervention was carried out?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Give insight into mechanisms or contexts of the intervention?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relevant comments				
4	Outline or refer to middle range theory related to: Involving parents in intervention? OR Digital intervention? OR Intensity of intervention? Yes: Clear overarching theory outlined. Somewhat: Theory alluded to but not specified. No: No links made to overarching theory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relevant comments				
5	Use methods that are credible, robust and trustworthy enough? Use the screening questions from MMAT/ PRISMA checklist/ SCRIBE.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments: Use screening questions from MMAT, SCRIBE or PRISMA. State strengths and weaknesses of the article. Any red flags?		Comments:		
6	Summary: Usefulness and relevance of study (please select):			
	High (2)	Moderate (1)	Low (1)	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7	Summary: Rigour, credibility, and trustworthiness of study (please select):			
	High (2)	Moderate (1)	Low (1)	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Summary of the paper (brief overview of what it is about/ methods used/ type of data source etc.):				
8	Relevance score out of 10:			
9	Critical appraisal score: MMAT (out of 5) PRISMA checklist (out of 42) SCRIBE (out of 26)			
10	Rigour score of data (out of 2):			
11	To be included?	Yes (2)	Possibly (1)	No (0)

Appendix 4: Data extraction tool

Author	
Year	
Objectives	
Research question	
Study type	
Study population (characteristics, inclusion or exclusion criteria)	
Age range of child receiving intervention	
Intervention focus (e.g., digital intervention, parent-based intervention, intensity of intervention)	
Programme description (location, timing, protocol, follow up etc.)	
Main outcomes	
Summary of methodological robustness and credibility (using previous appraisal tool)	
Key findings contributing to programme theory development:	
Mechanism	
Context (individual, interpersonal, infrastructural)	
Reference to middle-range theory:	
Identified by researcher	
Identified by author	