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Systematic reviews across different components of language.

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Unpacking the evidence for and theory of intervention in childhood language impairment: Systematic reviews across different components of language.

Carol-Anne Murphy, University of Limerick, Ireland; Kristine Jensen De López, Aalborg University, Denmark; Mila Vulchanova, Norwegian University of Science and Technology, Trondheim, Norway; Marja Laasonen, University of Turku, Finland; Sari Kunnari, University of Oulu, Finland; Pauline Frizelle, University College Cork, Ireland and David Saldana, University of Seville, Spain.

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Background	Methodology	Study characteristics																											
<p>Children with Primary language impairment (PLI) or Developmental language disorder (DLD), estimated at 1-2 children in every classroom (Norbury, Gooch et al 2016), are at risk for poorer social, emotional and mental health outcomes and lower academic and vocational attainments than the majority of their peers who acquire oral language without difficulty (Bishop, Snowling et al 2017). We have growing evidence for the efficacy and cost-effectiveness of intervention to improve the language skills of these children, but efficacy across languages is unknown. Additionally, systematic reviews of the evidence base have not explicitly uncovered the theoretical bases for interventions. Language interventions are underpinned by a range of linguistic, cognitive and processing theories linked to language acquisition and to proposed deficits. Intervention theory proposes how the components of an intervention act on the targeted areas to reach the desired outcomes and can support the replication of effective interventions (Turkstra, Norman et al 2016).</p>	<p>Population: Children 3-18 with PLI/DLD. Sources: Peer-reviewed articles from systematic search of empirical databases (PsychInfo; ERIC; Web of Science; LLBA; Scopus; PubMed) Dates 2006-2017; all languages. Process: Systematic Reviews. Protocols available at https://www.crd.york.ac.uk/prospero/ (search COST IS1406).</p> <ul style="list-style-type: none"> 20% of hits double-screened for inclusion on title & abstract Two members from each review team double-screened full texts for topic relevance (language component) Full texts are being double-coded and critically appraised <i>Codes: Participants, language, intervention context, setting, practitioners; dosage; Theoretical approach, Intervention components (targets, ingredients, mechanism of change); primary and secondary outcomes.</i> <p>Analysis: Meta-analysis of quantitative data. Qualitative meta-synthesis of theoretical data.</p>	<table border="1"> <tr> <td>Language of participants in included studies.</td> <td>Majority participants English speaking; Minority German, Spanish, French, Portuguese (1) Polish (1), Cantonese (1), Korean (1). Bilingual children in 12 studies across topics</td> </tr> <tr> <td>Age Profile</td> <td>All groups aged 3-18, majority studies with younger children</td> </tr> <tr> <td colspan="2" style="background-color: #0070c0; color: white; text-align: center;">Emerging Findings Example: Morpho-Syntax (17 studies)</td> </tr> <tr> <td>Designs</td> <td>Randomised Control Trials-35% Non-randomised Group with control-26% Group design no control-5% Single case studies-7% Case series-18% SRs & non-systematic reviews-9%</td> </tr> <tr> <td colspan="2" style="background-color: #0070c0; color: white; text-align: center;">Theoretical orientations</td> </tr> <tr> <td>Specified</td> <td>Not specified/implicit</td> <td>Unclear</td> </tr> <tr> <td>41% Cognitive/Social- interactionist/ Constructivist/ Linguistic/ Behavioural</td> <td>42% Cognitive/Social- interactionist/ Constructivist/ Linguistic/ Behavioural</td> <td>17% No clear reference to an underpinning theory</td> </tr> <tr> <td colspan="2" style="background-color: #0070c0; color: white; text-align: center;">Intervention Components</td> </tr> <tr> <td>Targets</td> <td colspan="2">MLU/length. Morphemes. Simple & Complex sentences. Receptive grammar. Narrative micro-Structure</td> </tr> <tr> <td>Ingredients</td> <td colspan="2">Explicit teaching (30%) Linguistic modelling (47%) Hybrid Parent-child interaction Non-linguistic cognitive treatment</td> </tr> <tr> <td>Mechanisms of Change</td> <td colspan="2">Specified (47%) Hypothesised (inferable) (41%) Not-specified (12%).</td> </tr> </table>	Language of participants in included studies.	Majority participants English speaking; Minority German, Spanish, French, Portuguese (1) Polish (1), Cantonese (1), Korean (1). Bilingual children in 12 studies across topics	Age Profile	All groups aged 3-18, majority studies with younger children	Emerging Findings Example: Morpho-Syntax (17 studies)		Designs	Randomised Control Trials-35% Non-randomised Group with control-26% Group design no control-5% Single case studies-7% Case series-18% SRs & non-systematic reviews-9%	Theoretical orientations		Specified	Not specified/implicit	Unclear	41% Cognitive/Social- interactionist/ Constructivist/ Linguistic/ Behavioural	42% Cognitive/Social- interactionist/ Constructivist/ Linguistic/ Behavioural	17% No clear reference to an underpinning theory	Intervention Components		Targets	MLU/length. Morphemes. Simple & Complex sentences. Receptive grammar. Narrative micro-Structure		Ingredients	Explicit teaching (30%) Linguistic modelling (47%) Hybrid Parent-child interaction Non-linguistic cognitive treatment		Mechanisms of Change	Specified (47%) Hypothesised (inferable) (41%) Not-specified (12%).	
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<ol style="list-style-type: none"> Identify the theories and mechanisms of change underpinning interventions in PLI/DLD. Evaluate the efficacy of interventions for childhood language impairment. 	<pre> graph TD A[Records identified through database searching (n = 9,528)] --> B[Records after duplicates removed (n = 7,063)] B --> C[Records screened (n = 7,063)] C --> D[Records excluded (n = 6,188)] C --> E[Records screened for eligibility for each thematic review (n=873)] E --> F[Full texts eligible morphosyntax (n = 253); excluded with reasons (n = 620)] E --> G[Full texts eligible phonology (n = 444); excluded with reasons (n = 429)] E --> H[Full texts eligible vocabulary (n = 286); excluded with reasons (n = 587)] E --> I[Full texts eligible pragmatics (n = 262); excluded with reasons (n = 611)] F --> J[Studies included for data extraction and synthesis (n = 85)] G --> K[Studies included for data extraction and synthesis (n = 157)] H --> L[Studies included to date for data extraction and synthesis (n = 85)] I --> M[Studies included to date for data extraction and synthesis (n = 57)] </pre>																												
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<p>Systematic review group members: Carol-Anne Murphy, David Saldana, Pauline Frizelle, Kristine Jensen de Lopez, Mila Vulchanova, Marja Laasonen, Sari Kunnari, Cristina McKeane, Arve Asbjornsen, Dagmar Bittner, Ana Castro, Jan de Jong, Edith Kouba, Rayya Francis, Filip Smolk, Virve Vihaman, Pernille Dornau, Melanie Dornstauder, Daniel Holzinger, Hanne Knudsen, Jelena Kovac, Andrea Marini, Niloufar Jalali-Moghadam, Valentin Vulchanova, Francisco Peres, Isabel Rodriguez, Maja Savic, Marte Valdes, Dina Alves, Johanna Einarasdottir, Martina Ozbic, Kakkia Petinou, Anna-Kaisa Tolonen, Kristizina Zajdó. [Contact 1st author for references].</p>																													

