

<p>Institution: University of Strathclyde</p>
<p>Unit of Assessment: 25</p>
<p>Title of case study: Language gains for children with persisting developmental language disorders through use of an intervention programme and support model for teachers.</p>
<p>1. Summary of the impact (indicative maximum 100 words) Strathclyde researchers developed, via a randomised controlled trial, a replicable effective language intervention programme (<i>SLIP</i>) for primary-school children with persisting developmental language disorders. This was followed by a cohort study investigating <i>SLIP</i>'s implementation in schools, and an evaluation study providing information for speech and language therapists and teachers on implementing <i>SLIP</i> in the classroom: the Language Support Model (<i>LSM</i>). The Royal College of Speech and Language Therapists included the research outcomes in commissioned economic evaluations and in their Resource Manual for commissioning and planning Speech and Language Therapy Services. Also, many speech and language therapy and education groups have requested presentations and training on <i>SLIP</i> and <i>LSM</i>. The impact of the research has been upon speech and language therapy education internationally; on therapists and teachers using <i>SLIP</i> and the <i>LSM</i>; on service commissioners; and on improved language intervention for children.</p>
<p>2. Underpinning research (indicative maximum 500 words) Context Approximately 6% of school entrants (around 2-3 per primary class) show specific developmental oral language impairments. Where these have persisted to school entry they predict poor social, mathematical, literacy, communication and quality-of-life outcomes. Policy and good practice mean children are educated in their local mainstream schools, with their language-learning supported via collaboration between speech and language therapists (SLTs), who work for the NHS, and teachers. Non-professionally qualified assistants are often involved in delivering language-learning activities. Little was known about the efficacy of such language interventions, and no full-scale trial had been undertaken. Key findings The research team was commissioned by the NHS Research & Development, National Co-ordinating Centre for Health Technology Assessment (NCCHTA) following competitive tender to investigate the efficacy of intervention delivered by SLTs or speech and language therapy assistants to children individually or in groups, in comparison with a control group of children receiving their current SLT language interventions, with a one-year follow up. A full-scale randomised controlled trial (Study 1, 2002-2007) developed a language intervention based on a systematic review of existing evidence-based interventions, leading to writing and auditing a manual of language-learning activities, <i>The Language Therapy Manual</i>. An economic evaluation compared costs of research delivery modes. The <i>Strathclyde Language Intervention Programme (SLIP)</i> was then trialled in a cohort study (Study 2, 2003-2004), funded by the Chief Scientist Office Priorities and Needs Programme (CSO PNP), with language-learning activities delivered by school staff. The implementation and outcomes of Study 2 were less successful so an evaluation study (Study 3, 2004-2005, also CSO PNP) was undertaken, which involved discussing <i>SLIP</i> with SLTs and teachers from four Education Authorities, refining <i>SLIP</i> for teacher use, and consideration of further co-working between SLTs and teachers. This is one of the few studies reporting the views of classroom teachers and practising SLTs. Study 3 produced the <i>Language Support Model for Teachers (LSM)</i> outlining language-teaching principles for primary school staff cross-referred to activities from the <i>Language Therapy Manual</i>, and adding an implementation and monitoring schedule for delivering language intervention in schools within the <i>SLIP</i> protocol. Participants evaluated positively the frameworks offered by the <i>LSM</i>, in particular the clear language-learning principles, and the implementation and monitoring schedule to be shared with school management. Key insights from Study 1 were that <i>SLIP</i> was equally efficacious when used by SLTs or speech and language therapy assistants with children individually or in groups, and for each mode child progress exceeded that of the control group. Moderate effect sizes (gains) were shown for expressive language. All research delivery modes were acceptable to teachers, parents and families, and functional gains were identified. There were cost benefits for delivery through assistants. The <i>Language Therapy Manual</i> provided language-learning activities for individual and</p>

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group delivery via SLTs or assistants, and the intervention was replicable. The gains shown during research intervention did not continue to accelerate during the study's one-year follow-up period, where limited intervention took place from NHS services. **Study 1** thus impacted upon SLT practice by providing an efficacious intervention that could be used across current service-delivery modes for children in need of specialised intervention, and gave indications of the amount of intervention required. In **Study 2** some school staff found it difficult to undertake the amount of language-learning activity required by *SLIP*, and **Study 1's** efficacious results were not replicated. The impact of **Study 2's** non-significant results was to reinforce the need for enhanced levels of intervention, and the indication that the widely-used SLT practice model of delivery through school staff was not unproblematic, and that teachers' understandings and the amount of intervention to be delivered required careful consideration. **Study 3** addressed these issues, developing the *Language Support Model for Teachers (LSM)*. The *LSM* supported language-learning activities delivered by school staff by providing 'how-to' information, and a joint SLT-school monitoring procedure.

Key researchers at Strathclyde

Elsbeth McCartney, Lecturer, then Senior Lecturer in Dept. Speech and Language Therapy 1987 to present; James Boyle, Reader, then Professor, School of Psychological Sciences and Health from 1993 to present. Susan Ellis Lecturer then Reader School of Education from 1989 to present

Study 1: Professor Anne O'Hare, Reproductive and Developmental Medicine, University of Edinburgh contributed to the CONSORT diagram and to discussion of the findings; Dr John Forbes (Reader in Health Economics) University of Edinburgh conducted the economic evaluation. Neither contributed to the development of *SLIP*.

3. References to the research (indicative maximum of six references)**Outputs from Study 1.**

1. McCartney, E., Boyle, J. et al. (2004). Becoming a manual occupation? The construction of a therapy manual for use with language impaired children in mainstream primary schools. *International Journal of Language and Communication Disorders*, 39, 135-148.

Notes on quality: Published in a peer-reviewed international journal.

2. McCartney, E., Boyle, J. et al. (2005). 'Thinking for Two': a case study of speech and language therapists working through assistants. *International Journal of Language and Communication Disorders*, 40, 2, 221-235.

Notes on quality: Published in a peer-reviewed international journal.

3. Boyle, J., McCartney, E., Forbes, J. & O'Hare, A. (2007). A randomised controlled trial and economic evaluation of direct versus indirect and individual versus group modes of speech and language therapy for children with primary language impairment. *Health Technology Assessment*, 11, 25, 1-158.

Notes on quality: Publication in the NCCHTA research series *Health Technology Assessment* is reserved for reports of work commissioned for the HTA Programme of a sufficiently high scientific quality as assessed by the referees and editors. Access statistics were available for the first year of publication, and between July 2007 and July 2008 the publication had 18,658 views or downloads.

Studies 1 and 2.

4. McCartney, E., Ellis, S. & Boyle, J. (2009). The mainstream primary school as a language-learning environment for children with language impairment: implications of recent research. *Journal of Research in Special Education, Themed Invitation Issue 'Social and Environmental Influences on Childhood Speech, Language and Communication Difficulties'*, 9, 2, 80-90.

Notes on quality: This is the peer-reviewed version of an invited contribution by the first author to the Third Journal of Research in Special Education (JORSSEN) Invitation Seminar 'Social and Environmental Influences on Childhood Speech, Language and Communication Difficulties', Manchester Metropolitan University, 3rd July 2008.

Study 2 and 3.

5. McCartney, E., Boyle, J., Ellis, S., Bannatyne, S., & Turnbull, M. (2011). Indirect language therapy for children with persistent language impairment in mainstream primary schools: outcomes from a cohort intervention. *International Journal of Language and*

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Communication Disorders, 46, 1, 74-82.

Notes: Included in REF 2, UoA 25 Education. Published in a peer-reviewed international journal. This paper remains on the journal's list of most accessed papers. It won the journal's article prize for 2011.

6. McCartney, E., Boyle, J., Ellis, S., Turnbull, M. & Kerr, J. (2010). Developing a language support model for mainstream primary school teachers. *Child Language, Teaching and Therapy*, 26, 3, 359-374.

Notes: Included in REF 2, UoA 25 Education. Published in a peer-reviewed journal. This paper remains on the journal's list of most read papers.

Other evidence for research quality: The three studies were funded by UK Government (NHS, Chief Scientist Office) with research grants totalling over £813k.

4. Details of the impact (indicative maximum 750 words)

Process from research to impact

The intervention protocol and the *Language Therapy Manual* were disseminated as the *Strathclyde Language Intervention Programme (SLIP)*, supplemented later by the *Language Support Model for Teachers (LSM)*; *SLIP* and *LSM* were placed online in the institution's repository, Strathprints [Sources A & B]. Published reports of the studies were disseminated in journals read by relevant professionals. *Health Technology Assessment* is widely read by medical professionals; the *International Journal of Language and Communication Disorders* is the journal of the UK SLT professional body the RCSLT; the *Journal of Research in Special Education* is the research journal of the National Association of Special Educational Needs (NASEN), and *Child Language, Teaching and Therapy* is read by teachers and therapists working with language-impaired children. Professionals reading the papers could access the *Language Therapy Manual* and the *LSM* from Strathprints, for direct use. Thirty-two presentations (17 invited) were made to professional conferences, teacher and SLT study days, and seminars across the UK, in Europe and in New Zealand.

Types of impact

Impact on UK policy and practice: The positive results of **Study 1** were cited in the *Bercow Review*, 2008 [Source C p. 24], a cross-party review of services in England for children with speech, language and communication needs (SLCN), chaired by MP John Bercow. In response to this review, the UK Government commissioned a *Better Communication Research Project (BCRP)*, to develop policy and practice in English schools. *BCRP* evaluated international evidence-based interventions and listed them on a 'What Works' website [Source D]; *SLIP* appears with a 'moderate' level of evidence of efficacy, which is the highest level listed for language impairment interventions. *SLIP* is recommended for use in schools, impacting upon professionals' choice of interventions. In 2009 The Royal College of Speech and Language Therapists (RCSLT) cited **Study 1** as their evidence for intervention for children with language impairment in their *Resource Manual for Commissioning and Planning Services for SLCN* [Source E], which lists efficacious therapies appropriate for NHS delivery.

Impact on cost-efficient public services: In 2010, RCSLT commissioned an economic evaluation of therapies from international consultants Matrix Evidence, which also analysed language outcomes from **Study 1** as the evidence related to language impairment. Since language benefits exceeded costs (benefit:cost ratio 6.43), Matrix Evidence concluded the intervention represented an efficient use of public resources [Source F p. 47]. In 2013, RCSLT commissioned new consultants (RTK Ltd and Concentra) to update the Matrix model regarding population, prevalence and cost statistics, and to develop an on-line cost-benefit analysis tool for local NHS services' use [Source G], which also uses **Study 1** as the evidence for language gains. The RCSLT also presents this information to other professions, such as the Royal College of General Practitioners, as evidence of the value of therapy. The outcomes of **Studies 1 and 2** have informed the amount of intervention understood to be needed by children with language impairment, and correspondingly, have impacted on those planning and developing SLT services; on decisions about the amount of therapy and delivery mode; on workforce planning in relation to the use of assistants, and on the provision and purchase of efficacious interventions, particularly within current service commissioning regimes in UK NHS and education services.

Improved practice and language gains for children: *SLIP* provides an evidence-based intervention that can impact positively upon the expressive language skills of children with language impairment. The randomised controlled trial design, the rigorous analysis of effects, and the replicable therapy mean it can safely be used by SLTs directly or via supervised assistants, with the *LSM*, to achieve language gains for children in schools.

Influence on SLT education internationally

Email correspondence, course documents, professional forums, and invitations to present and publish indicate that *SLIP* and the underpinning research is taught in SLT qualifying courses in the UK, South Africa, USA, Australia, New Zealand, Ireland and in other European countries, and has influenced the international SLT professional knowledge base. *SLIP* and the *LSM* have also impacted upon the design of an Australian trial of language intervention for pre-school children [Source H].

Reach and significance

The strong research support for *SLIP*, its accessible information on implementation and materials, and the fact that *SLIP*, supplemented by the *LSM*, fits easily into primary school contexts all mean that it has reached the international community of SLT clinicians, educators, teachers and other practitioners whose professional roles commit them to evidence-based practice, and who require evidence-based interventions that can be used safely and effectively. Through this community, *SLIP* has reached many children with developmental oral language impairments, their schools and families. Publications from The Royal College of Speech and Language Therapists that draw upon the Strathclyde research have influenced service commissioners and providers across the UK and beyond who seek cost-effective interventions, bringing effective changes to intervention practices for children with language impairment.

5. Sources to corroborate the impact (indicative maximum of 10 references)

- A. Strathclyde Language Intervention Programme (SLIP) <http://strathprints.strath.ac.uk/32807>
- B. Language Support Model for Teachers <http://strathprints.strath.ac.uk/32808>,
- C. Bercow Review 2008
<http://webarchive.nationalarchives.gov.uk/20130401151715/https://www.education.gov.uk/publications/eOrderingDownload/Bercow-Report.pdf>
- D. The 'What Works' database. <http://www.thecommunicationtrust.org.uk/whatworks>
- E. RCSLT Resource Manual for Commissioning and Planning Services for SLCN: Specific Language Impairment. 2009.
http://www.rcslt.org/speech_and_language_therapy/commissioning/sli_plus_intro
- F. An economic evaluation of speech and language therapy. Final Report. Matrix Evidence, December 2010. http://givingvoiceuk.org/wp-content/uploads/2012/06/matrix_report.pdf
- G. RCSLT (2013) Cost benefit analysis models for SLTs.
http://www.rcslt.org/speech_and_language_therapy/commissioning/cost_benefit_analysis_models
- H. Wake et al. (2012) <http://www.biomedcentral.com/1471-2431/12/96>