

Impact case study (REF3b)

Institution: University of York
Unit of Assessment: 4, Psychology, Psychiatry and Neuroscience
Title of case study: Improving the assessment and teaching of children with reading and language difficulties.
1. Summary of the impact

Approximately 3-6% of children in the UK have literacy difficulties and are at high risk of educational underachievement. Basic scientific investigation of reading and language development and disorders led to the design and evaluation of school-based interventions for children with language and literacy difficulties. The findings have fed into government reports on the teaching of literacy in schools, dyslexia and the assessment and monitoring of children's progress in phonics in the form of the nationally-introduced Phonics Screening Test. The interventions, delivered by teaching assistants, were implemented and evaluated in Cumbria and North Yorkshire. They are now recommended by the Department for Education and are commercially available from Down Syndrome Education International, and have influenced the procedures of the Special Educational Needs/Tribunal Service.

2. Underpinning research

Hatcher, Hulme and Ellis (1994) published one of the first systematic, longitudinal investigations of the effectiveness of different teaching methods for improving the literacy skills of poor readers. Integrated reading and phonics training was more effective than pure phonological training or training in reading that was not integrated with phonics. That paper has received over 600 citations. At the same time, Snowling was demonstrating the importance of poor phonological skills as an underlying deficit in developmental dyslexia (e.g., Snowling, Goulandris & Defty, 1996). Crucially, Muter, Hulme, Snowling, and Stevenson (2004) went on to show that children's phonological skills predicted their ability to decode print whereas grammatical language skills and vocabulary predicted variations in reading comprehension.

Snowling, Hulme and Hatcher planned and implemented the first large-scale randomized controlled trials designed to evaluate the effectiveness of theoretical-motivated interventions in remediating and possibly preventing children's reading difficulties, combining their expertise in developmental, cognitive and educational psychology, respectively. In each trial, the starting point was a causal theory and intervention activities were targeted to improve impaired cognitive processes that underpin word level reading (phonological skills and letter knowledge; Hulme et al., 2012) or reading comprehension (broader oral language difficulties; Clarke et al., 2010). The precise content of the materials for the interventions were selected on the basis of interactions with practitioners. The work has thus benefitted from the input of a large team including stakeholders (e.g. professional consultants in speech and language therapy, teaching and education). Together the researchers showed that training in phoneme awareness, letter-sound knowledge and reading from graded books led to significant improvements in word decoding skills in low achievers in mainstream classrooms (Hatcher, Hulme & Snowling, 2004) and in dyslexia (e.g., Hatcher et al., 2006). Significant gains in reading comprehension were demonstrated following intervention aimed at training vocabulary, figurative language, listening comprehension and spoken narrative skills (Clarke et al., 2010). The researchers have also demonstrated that it is possible to promote the foundations of early literacy in children who enter school with poorly developed language before they begin to fail (Bowyer-Crane et al., 2008) and in children with learning difficulties (Burgoyne et al., 2012).

These landmark studies were all carried out at the University of York where Hulme was a member of staff from 1978 to 2011 and Snowling from 1994 to 2012. Hatcher, who was involved in the underpinning research, was employed from 1998 to 2004. The research is distinctive in using theoretical models of reading development to inform applications in real educational settings and hence translating theory into practice. These researchers are the only UK group to have run a significant number of randomized controlled trials in education in all of which they have engaged with partners in school, trained teaching assistants to deliver the interventions, and supported them throughout the process to ensure fidelity of delivery. In so doing they have demonstrated it is possible to conduct rigorous research with practical significance in schools.

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The work continues at York. Snowling has a Wellcome Trust grant with Hayiou-Thomas at York which will employ a full-time and two part-time post-doctoral researchers through 2014. The Centre for Reading and Language continues to function, including an assessment clinic for children with learning difficulties. Aspects of the work are being taken forward by Bowyer-Crane, Henderson Nash and Hayiou-Thomas in Psychology and Education. The first three of those researchers were involved as PhD students or post-docs in the work described here and are now lecturers.

3. References to the research

Note: Citation Counts were taken from Scopus on 24th September 2013.

- Bowyer-Crane, C., Snowling, M. J., Duff, F., Carroll, J. M., Fieldsend, E., Miles, J., et al. (2008). Improving Early Language and Literacy Skills: Differential Effects of an Oral Language versus a Phonology with Reading Intervention. *Journal of Child Psychology and Psychiatry*, *49*, 422-432. doi: 10.1111/j.1469-7610.2007.01849.x Citations: 44
- Burgoyne, K., Duff, F.J., Clarke, P.J., Buckley, S., Snowling, M.J., Hulme, C. (2012). Efficacy of a reading and language intervention for children with Down syndrome: a randomized controlled trial. *Journal of Child Psychology and Psychiatry*, *53*, 1044-1053. doi.org/10.1111/j.1469-7610.2012.02557.x Citations: 1
- Clarke, P. J., Snowling, M. J., Truelove, E., & Hulme, C. (2010). Ameliorating children's reading comprehension difficulties: A randomised controlled trial. *Psychological Science*, *21*, 1106-1116. doi: 10.1177/0956797610375449 Citations: 32
- Hatcher, P., Hulme, C., & Ellis, A. W. (1994). Ameliorating early reading failure by integrating the teaching of reading and phonological skills: The phonological linkage hypothesis. *Child Development*, *65*, 41-57. doi: 10.1111/j.1467-8624.1994.tb00733.x Citations: 692
- Hatcher, P. J., Hulme, C., & Snowling, M. J. (2004). Explicit phoneme training combined with phonic reading instruction helps young children at risk of reading failure. *Journal of Child Psychology & Psychiatry*, *45*, 338-358. doi: 10.1111/j.1469-7610.2004.00225.x Citations: 75
- Hatcher, P. J., Hulme, C., Miles, J. N. V., Carroll, J. M., Hatcher, J., Gibbs, S., et al. (2006). Efficacy of Small Group Reading Intervention for Beginning Readers with Reading-Delay: A Randomized Controlled Trial. *Journal of Child Psychology & Psychiatry*, *47*, 820-827. doi: 10.1111/j.1469-7610.2005.01559.x Citations: 51
- Hulme, C., Bowyer-Crane, C., Carroll, J., Duff, F., & Snowling, M.J. (2012). The causal role of phoneme awareness and letter-sound knowledge in learning to read: combining intervention studies with mediation analyses. *Psychological Science*, *23*, 572-577. doi: 10.1177/0956797611435921 Citations: 6
- Muter, V., Hulme, C., Snowling, M. J., & Stevenson, J. (2004). Phonemes, Rimes, Vocabulary, and Grammatical Skills as Foundations of Early Reading Development: Evidence from a Longitudinal Study. *Developmental Psychology*, *40*, 663-681. doi: 10.1037/0012-1649.40.5.665 Citations: 189
- Snowling, M.J., Goulandris, N. & Defty, N. (1996). A longitudinal study of reading development in dyslexic children. *Journal of Educational Psychology*, *88*, 653-69. doi: 10.1037/0022-0663.88.4.653 Citations: 40

Grants:

- 1996-1999 "Phonological skills and the prevention of reading difficulties" (with Peter Hatcher and Maggie Snowling). ESRC (£211,574)
- 2001 "Evaluating early literacy interventions" North Yorks County Council (with Snowling and Hatcher) Value £26,551
- 2003-2006 "The efficacy of two theoretically motivated interventions for children at risk of speech and language difficulties" Nuffield Foundation (Hulme, Snowling, Carroll & Miles) £218K. Researchers: Claudine Bowyer-Crane and Fiona Duff
- 2006-2009 "Efficacy of three theoretically motivated interventions for poor reading comprehension." ESRC (Hulme, Clarke & Snowling) £529K
- 2007-2012 Snowling, M.J., Hulme, C., & Hayiou-Thomas, E. Developmental relationships between dyslexia and specific language impairment Wellcome Trust Programme Grant. Researchers: Hannah Nash, Debbie Gooch, Lorna Hamilton, Ruth Levitt. £1,269K

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2008-2011 Snowling, M.J., Bowyer-Crane, C., & Hulme, C. Can pre-school training of oral language skills improve children's response to reading instruction? A randomized controlled trial (RCT). Nuffield Foundation Researcher Silke Fricke. £236,263.

4. Details of the impact

The research has impacted on both government policy and the teaching of language and literacy in schools and has led to changes in educational practice and improvements to beneficiaries (i.e., children, teachers) at both local authority and national levels.

4.1. Government policy. The research has influenced the direction of two major aspects of government policy through the **Rose Review (2009)** and the introduction of the **Phonic Screening Check (2012)**.

Snowling was a member of the expert advisory group for the **Rose Review (2009)** on 'Identifying and Teaching Children and Young People with Dyslexia and Literacy Difficulties'. The review drew heavily on York's work on the definition of dyslexia, the importance of early identification, and the effectiveness of interventions and provides guidance for professionals in schools and local authorities working with children with dyslexia and related literacy difficulties (approximately three children in every UK classroom). Following the Rose Review, the government set up the Dyslexia-SpLD Trust which provides advice for parents and schools and which launched an online tool 'Interventions for Literacy'. Those websites are regularly updated and provide resources for all concerned with children's reading difficulties. Following the recommendations of the Review, Snowling provided written guidance for the Special Educational Needs and Tribunal Service (this guidance continues to inform the now renamed Health, Education and Social Care Chamber of the First-Tier Tribunal). In July 2012 Snowling gave evidence concerning the effectiveness of interventions to an All-Parliamentary Group on Speech and Language Difficulties inquiring into the links between speech, language and communication needs and social disadvantage. The report from this inquiry was published in February 2013. Snowling is listed among the witnesses on p. 32 and her evidence is summarized on pp. 17-18.

Snowling was also a member of the expert advisory group developing the **Phonic Screening check**. This is a check on children's progression in phonics that is now being used to identify children who are delayed in reading development after six terms in school. The tests consists of words and nonwords which were carefully selected and graded by a panel of phonics experts, and then approved by an expert advisory group who were independent from the initial development (including Snowling, drawing upon her expertise in individual differences in children's early reading development). All Year 1 children in England (approximately 300,000) underwent screening in June 2012. The results are reported to parents and will lead to a more immediate plan for intervention for all children with reading-related difficulties. Statistics from the academic year 2011/2012 on the achievements of pupils in the phonics screening check have been released by the Department for Education.

4.2. Implementation of evidence-based interventions. The York Reading Intervention (RI) programme has been adopted by 382 schools in the North Yorkshire Local Authority (who part-funded the research) as a first-line approach to the treatment of reading difficulties. Since 2002 ~680 teachers and teaching assistants have been trained on a four-day programme delivered by members of the local authority. The local authority trains one teaching assistant in each school on a yearly basis and offers support to those who are delivering the intervention both to primary and secondary school pupils. North Yorkshire results for 2012 showed that the average gain in reading made by children is 10 months progress in reading over ten weeks: this translates as a ratio gain of 4.1 (a ratio gain of 1.0 means that the child is progressing at a normal/average pace but will not catch up with their peers) reflecting 'substantial progress'.

The York Reading Intervention programme is recommended in a number of publications on the Department for Education's (DFE) website. It has also been highlighted in the DFE's commissioned review 'What Works for Literacy Difficulties' (DFE, G. Brooks, 2013, p. 42), which informs schools' choices of intervention schemes for struggling readers at both primary and second school levels across the UK. The review is aimed at all UK Local Authority managers and consultants, primary and secondary strategy managers, head teachers, and subject leaders, SENCos and inclusion managers; beneficiaries include teachers, teaching assistants, and children at risk of reading difficulties in schools.

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Reading Intervention is also recommended by Down Syndrome Education International who carried out a randomized controlled trial with Snowling and Hulme to test the efficacy of the programme for children with Down syndrome. Following this research, DSEI produced a handbook outlining the programme for parents and practitioners. As of September 2013, over 1,000 copies of that handbook had been supplied to clients in 26 different countries. Within the UK, 11% of the target population of 6-10 year olds with Down syndrome have received individual copies.

5. Sources to corroborate the impact

Government Policy

1. Dyslexia-SpLD Trust <http://www.interventionsforliteracy.org.uk/>. The most relevant web pages can be found at <http://www.interventionsforliteracy.org.uk/interventions/list-view/the-reading-intervention-programme/>.
2. Rose Review 'Identifying and Teaching Children and Young People with Dyslexia and Learning Difficulties' (2009) <http://www.interventionsforliteracy.org.uk/rose-review/>
3. Phonics Screening Check (2012) <http://www.education.gov.uk/schools/teachingandlearning/assessment/keystage1/a00200415/year-1-phonics-screening-check-materials>
4. Phonics screening check 2011 pilot technical report. <http://media.education.gov.uk/assets/files/phonics%20screening%20check%202011%20pilot%20technical%20report.pdf>
5. House of Commons Science and Technology Committee. Evidence check 1: Early Literacy Intervention (2009-10). Ev. 87. <http://www.publications.parliament.uk/pa/cm200910/cmselect/cmsstech/44/44.pdf>
6. Snowling, M. J., Hulme, C., Bailey, A. M., Stothard, S. E., & Lindsay (2011). *Better communication research project: Language and Literacy Attainment of Pupils during Early Years and through KS2: Does teacher assessment at five provide a valid measure of children's current and future educational attainments? DFE-RR172a*. London: DfE. <https://www.education.gov.uk/publications/eOrderingDownload/DFE-RR172a.pdf>

Implementation of Evidence-based Interventions

1. York Reading Intervention <http://www.thereadinginterventionprogramme.org.uk/>
2. 'What Works for Pupils with Literacy Difficulties' (DFE G. Brooks, 2013) [http://www.interventionsforliteracy.org.uk/widgets/GregBrooks/What works for children four ed.pdf](http://www.interventionsforliteracy.org.uk/widgets/GregBrooks/What%20works%20for%20children%20four%20ed.pdf) (see pages 42, 89, 90 of pdf).
3. Down Syndrome Education International <http://www.dseinternational.org/en-gb/resources/teaching/rli/resources/>