

Institution: University of Sussex		
Unit of Assessment: 4 – Psychology, Psychiatry and Neuroscience		
Title of case study: Improving children's early years reading comprehension through policy, training and practice		
Period when the underpinning research was undertaken: 2000 – 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Jane Oakhill	Role(s) (e.g. job title): Professor of Experimental Psychology	Period(s) employed by submitting HEI: 1988 – ongoing
Period when the claimed impact occurred: Sep 2013 – Jul 2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact <p>By identifying the key skills and abilities that are causally linked to reading comprehension success for primary school students, Professor Oakhill has had significant impacts on policy in England on teaching and testing of reading skills. The research findings have fed directly into changes to the revised National Curriculum for English which came into effect in September 2014. Following that, all children are now tested on this element of reading in National Curriculum assessments (also known as Standard Attainment Tests, or SATs). As a result, impacts have followed on teaching policy, training and practice as well as requirements for teacher development and materials in this area. Successful training programmes that build on the results of this research have been developed, delivered and evaluated in the UK, USA and South America.</p>		
2. Underpinning research <p>Oakhill's research has identified the key skills and abilities that are causally linked to the development of good reading comprehension in primary school years. She has also investigated the problems of children with "Specific Reading Comprehension Difficulties" (SRCD). Such children (typically 3-10% of the population assessed) have average-to-good word reading skills but, nevertheless, have substantial difficulties in understanding what they have read. Oakhill has published more than 50 research studies in this area, which provide a detailed understanding of the development of reading comprehension and comprehension difficulties.</p> <p>Research studies conducted since 2000 have used experimental methods with children to see which skills are the best predictors of reading comprehension, and which skills and abilities differentiate good comprehenders from those with a Specific Reading Comprehension Difficulty. This research identified three core predictors of reading comprehension: inference/integration skills (ability to make links between sections of text and prior knowledge) (R1, R2, & R5), understanding text structure (in order to identify main themes) (R1, R5), and comprehension monitoring (knowing how to check understanding and rectify problems) (R1, R3 & R5). Each of these skills has been shown to be important in the prediction of reading comprehension, over and above the contributions of word reading, verbal ability and vocabulary, which are also predictors of reading comprehension ability (R1, R5 & R6).</p> <p>Oakhill's work has focused on establishing which of these skills are causally implicated in reading comprehension success in the longer term. Converging evidence from studies using a population of children matched on comprehension ability (R4) and a longitudinal study (R5) has shown that the three identified core skills are all likely to be causally implicated (either independently, directly or indirectly) in the development of comprehension skill over time. Thus, such skills are excellent candidates to be targeted and developed in young children to improve reading comprehension.</p>		
3. References to the research <p>R1. Oakhill, J. V, Cain, K. & Bryant, P.E. (2003). The dissociation of word reading and text comprehension: Evidence from component skills. <i>Language and Cognitive Processes</i>, 18, 443-468. https://doi.org/10.1080/01690960344000008</p>		

- R2. Cain, K., Oakhill, J. V., Barnes, M. A., & Bryant, P. E. (2001). Comprehension skill, inference-making ability, and their relation to knowledge. *Memory & Cognition*, 29, 850-859. <https://doi.org/10.3758/BF03196414>
- R3. Oakhill, J. V. Hartt, J. and Samols, D. (2005). Levels of comprehension monitoring and working memory in good and poor comprehenders. *Reading and Writing*, 18, 657-686. <https://doi.org/10.1007/s11145-005-3355-z>
- R4. Cain, K., Oakhill, J. V. & Bryant, P. E. (2000). Investigating the causes of reading comprehension failure: The comprehension-age match design. *Reading and Writing*, 12, 31-40. <https://doi.org/10.1023/A:1008058319399>
- R5. Oakhill, J. V. & Cain, K. E. (2012). The precursors of reading ability in young readers: Evidence from a four-year longitudinal study. *Scientific Studies of Reading*. 16, 91-121. <https://doi.org/10.1080/10888438.2010.529219>
- R6. Cain, K., & Oakhill, J. (2014). Reading comprehension and vocabulary: Is vocabulary more important for some aspects of comprehension? *L'Année Psychologique*, 114, 647-662. <https://doi.org/10.4074/S0003503314004035>
- R1, R2, R4, R5 and R6 funded by ESRC ('Children's comprehension difficulties: Questions of causality', PI: Oakhill, £188,920, 01/1995–12/1999, R000 23 5438). Kate Cain (now at Lancaster) was employed as a post-doctoral researcher on this ESRC grant. Total citations for R1-R6 = 1,228; average field-weighted citation index for R1-R6 = 5.605 (Scopus).

4. Details of the impact

The three skills that Oakhill identified as important in reading comprehension (R1-R6) have informed fundamental changes to the UK's National Curriculum, testing, and teaching practice. The research has also been used internationally as the basis of new educational programmes for teachers, parents, and pupils, enhancing engagement with – and support for – reading comprehension. This case study reports new impacts from the research which underpinned 'Changing policy and practice in teaching reading comprehension to children' in REF2014.

Informing changes to the National Curriculum in England and Wales

As described in the REF2014 case study, Oakhill contributed to the government's *Independent Review of the Teaching of Early Reading* published in 2006, acted as a consultant to the National Curriculum (Primary English) team at the Department for Education in London, and briefed Elizabeth Truss, Parliamentary Under-Secretary of State with responsibility for Education and Childcare in the Department for Education. As a result, Oakhill's research (R1-R6) underpinned revisions to the National Curriculum English Programme implemented in September 2014 (C1c, d). These changes to the curriculum have led to greater emphasis on the teaching of reading comprehension at Key Stages 1 and 2 (KS1, KS2). Specifically, educational policy in England, and resulting practice, now incorporates a focus on the development of the three core skills that Oakhill has found to support reading comprehension (inference/integration, understanding story structure, and comprehension monitoring). Requirements for each year-group outline what should be taught to support good reading comprehension, and include inference, using structure, and predicting what might happen next, all taken from the research.

In a letter confirming the extensive list of Oakhill's publications that were "*consulted to inform discussions during the writing of the new curriculum*," [text removed for publication], adds that this list "*does not fully reflect how influential your work was on the content of the programmes of study for English at primary school level*." She continues: "*your contributions... were absolutely invaluable*" and that Oakill's "*detailed, research-led commentary on the various drafts of the curriculum helped create the substantial improvements to the comprehension sections which are evident in the final draft*." (C1a). Additionally, [text removed for publication] outlines in her testimonial the numerous specific research insights from Oakhill's work that were "*key influences for me when I drafted the programmes of study for the National Curriculum*." (C1b).

These research-led revisions to the National Curriculum (2013/14) have also led to changes in the national curriculum assessments (SATs) taken by every child in England (excluding academy and free schools) at the end of Key Stages 1 & 2. These tests assess children's level of skill in the key areas identified by this research, most notably inference skills. The English

reading test framework from the Standards & Testing Agency, which is the guide for test developers (C2), shows that the ability to infer must now be tested, as well as the ability to make inferences being an indicator of skill level. Making and justifying inferences accounts for 16-50% of the test scores (C2, p12), jointly most important with 'retrieve and record information'. To complete the education policy cycle, the OFSTED inspection framework also considers the role of prediction and monitoring in comprehension teaching and acknowledges Oakhill's work (C3, p22).

Since September 2014, these changes have affected the education of several million children in England: all state (non-academy) schools in England have been required to adjust teaching to the requirements of the revised curriculum and tests. The changes have also created a need for materials and support for teaching reading comprehension, and better initial training and Continuing Professional Development (CPD) for teachers. This fundamental shift benefits all primary school children through better supporting reading comprehension skills, which make an important contribution to later educational achievement and associated longer-term employment status, opportunities and general wellbeing. Oakhill has also directly advised schools on how to implement the curriculum, and to further support reading comprehension (C4).

[text removed for publication] (formerly one of Her Majesty's Inspectors of Schools) wrote that their "*excellent work on understanding and teaching reading comprehension has fed directly into educational policy and practice in England.*" (C5), and in 2016 Professors Jane Oakhill and Kate Cain were finalists for Outstanding Impact in Society in the ESRC Celebrating Impact Prize.

Improving the teaching of reading comprehension and training for teachers

Oakhill's research has also underpinned and informed programmes designed to foster and improve reading comprehension skills in primary school children, six of which are outlined below. These programmes provide teachers with training in teaching reading comprehension, and materials to support their teaching.

Inference Training Programme

In November 2013, Leicester City Council first published an *Inference Training Programme* (developed by literacy advisor, Anthony Whatmuff) (C6). This programme drew on the research on inference-making in particular (R2, R3 & R5) for use in comprehension teaching across the UK. The contribution of Oakhill and colleagues' research is explicitly acknowledged on most pages of the training document, which outlines strategies for teachers to incorporate into group interventions at KS2 and KS3, such as encouraging the use of prior knowledge, generating questions about the text and asking pupils to summarise extracts to establish an overall gist of the text. In the manual, Whatmuff states: "*Inference training is adapted from the work of Oakhill [R2, R5] [which] shows the key role inference making plays in reading comprehension.*" (C7, p2).

Whatmuff is very influential in the CPD for teachers sector; there are currently more than 50 accredited trainers using the Inference Training programme, and it is in use in more than 2000 schools nationwide. The training document includes positive quotes from teachers and pupils regarding the success of the inference training, for example: "*it empowers the children and gives them more control and insight in their reading. They understand that there is much more to reading than decoding. For us adults, the training and teaching makes us understand the task of the reader much more. The pupils enjoy the sessions enormously.*" (C7, pp3-4). Impact data from 326 KS2 and KS3 pupils show impressive gains in reading comprehension (on standardised tests) following training: an average of more than 12 months' improvement in 12 weeks (C7, p3 & Table 1). An independent report (C8, pp67-68) summarises the gains in reading comprehension achieved by different cohorts after they had used the programme.

The LEE Comprensivamente programme

A group at the Universidad Nacional de San Martin, Buenos Aires, Argentina, developed a classroom intervention training manual and teaching book (*LEE Comprensivamente*; based on teaching the core skills identified in the research (R1-R6)). The Training Manual has 17 references to Oakhill's research papers (about 14% of all papers cited overall, and more than twice as many citations as the next most-cited author (7)).

More than 7,000 educational psychologists and teachers have been trained in the use of the *LEE Comprensivamente* and more than 16,000 individual programme booklets for children have

been purchased in Argentina (C9a). It is also widely used in other Spanish-speaking countries. Use of the programme resulted in significant improvements in vocabulary and reading comprehension (inference, understanding text structure, and monitoring) compared with non-intervention in schools in Argentina, regardless of socio-economic status (C9b).

Para Leer Mejor (PLM) programme

The PLM Programme (first published 2016) is based on the same theoretical principles and research findings as *LEE Comprensivamente*, but is aimed at younger children (6- to 8-year-olds). Drawing on the research principles of Oakhill and Cain (as referenced in the user's manual), the PLM manual contains eight references to Oakhill's research publications (C9a), including several of the key references (R5, R6). In total, 6,570 teachers and Educational Psychologists have been trained to deliver the PLM in Argentina, and more than 9,700 individual programme booklets for children have been purchased (2017-2020) (C9a). The PLM programme is also being rolled out across Latin America to Chile and Uruguay, as well as in Spain. A recent evaluation has shown significant improvements in reading comprehension and comprehension-related skills in a group of children who used the PLM programme, compared to controls (C9c).

Amplify Reading programme

Since 2017, Oakhill has been involved in the development of *Amplify Reading*, by working as an advisor to ensure that the programme development is informed by the research findings. The programme comprises tablet-based 'games' designed to support the skills and processes that underlie reading, and its "*theoretical base and the skills targeted... are grounded in*" and "*draw heavily on*" Oakhill's research (R1-R6). Details of Oakhill's contribution to the development of the programme are outlined in C10a (Table 1), which also confirms that "*Amplify Reading ... is currently used in over 600 districts and nearly 2,000 elementary schools in the U.S. by roughly 250,000 students in Grades Kindergarten-5*". An efficacy study showed "*statistically significant improvements*" for children using the materials, and found that the programme enables students to make "*better-than-expected progress... and helps close achievement gaps for English learners*" (C10a). Compared with those who did not use the programme, more *Amplify Reading* students made "above typical" progress from the beginning to the end of the year, measured with DIBELS Next Pathways of Progress. These significant effects were obtained with an average of fewer than seven hours of use of the programme (C10b).

Oxford University Press: Teaching Comprehension Pathway

Oakhill was invited to act as a series editor on the research-based Oxford Owl (Oxford University Press) school improvement pathway, specifically the Teaching Comprehension Pathway, in 2014, as a direct result of the increased focus on comprehension in the revised National Curriculum. The Pathway is aimed primarily at Heads and School Leadership Teams, but also includes resources available for teachers and parents, which "*increas[e] awareness of the importance of teaching core skills*" relating to simultaneous word recognition / reading comprehension (C11). The Pathway was launched in 2015 and, "*to date, has provided 1700 UK school leadership teams with the structure, research and resources to develop and monitor a whole-school improvement plan targeting reading comprehension across all year groups*" (C11).

Oxford University Press: Reading Buddy

Oakhill has provided advice and guidance based on her research (R1-R6) to assist with development of a computer-based *Reading Buddy* designed to support reading comprehension in both school and home settings. Oakhill's contribution to the development of this programme is outlined in C11. The impact of OUP's *Reading Buddy* has recently been independently assessed (C12) and the results of this impact assessment show positive results in terms of children's attitudes to reading (C12, p23) and also positive changes in children's approach to reading: better engagement and ability to reflect on their reading, and to use higher-order thinking skills (C12, p30). *Reading Buddy* has, thus far, reached about 800 schools, not only in the UK, but also in Australia, South Africa, India, Pakistan and Hong Kong (C11).

In addition to these impacts on six reading programmes, Oakhill's research has also been the basis for a widely-used teaching handbook, and an influential educational review in the US, both of which have further contributed to the impact of the research on the teaching of reading.

Handbook for teachers and teacher educators

The research findings have been distilled in a co-authored book entitled *Understanding and Teaching Reading Comprehension* (Oakhill, Cain & Elbro, 2014), which increases teachers' understanding and awareness of the importance of reading comprehension, and how to teach it. It summarises key findings from the research (R1–R6, and additional publications cited in the training programmes, above), together with recommendations for practice. The book was cited in the OFSTED Education Inspection Framework 2019 (C3), the Education Endowment Foundation's guidance reports: Improving Literacy in Key Stages 1 and 2 (C13), and in the Oxford Language Report 2018 (C12), which itself provides information for teachers. The book has been widely praised by teachers and other education professionals: "*Having read your work, I feel much more prepared to help our children become not only successful readers, but also lovers of literature. Thank you so much for all the help you have given us*" (English Coordinator and Year 3 Class Teacher, Shanghai) (C14). It has sold around 6,000 copies in the UK, 4,200 in Denmark, and has been translated into Brazilian Portuguese, Arabic, Korean and Italian.

Research report on the Teachers College reading materials

An investigative research report, co-authored by Oakhill (and whose research R3, R5, R6 informed its recommendations), examined the third most widely-used reading program in the US (developed by the Teachers College Reading & Writing project) (C15a). The study found a number of crucial failings in the *Units of Study* program, and was named by Edutopia as "*one of the most significant educational studies in 2020*" (C15b). Its findings caused the curriculum's lead author (Calkins) to admit that their approach needed "*rebalancing*" and she subsequently announced changes to their curriculum (C15c). The changes could affect the way in which millions of children are taught to read, not only in the US but in many other countries (the group works with teachers in at least 30 countries, including Mexico, Singapore and Japan).

5. Sources to corroborate the impact

- C1 a) Testimonial (Nov 2020) from [text removed for publication]; b) Testimonial (June 2019) from [text removed for publication]; and c) [Dept for Education announce new national curriculum](#) (Sept 2013), to be implemented Sept 2014; and d) [National Curriculum in England: English Programmes of Study](#) (2014).
- C2 Standards & Testing Agency (2015): [English reading test framework - National curriculum tests \(Key Stage 2\) from 2016](#)
- C3 [OFSTED Education Inspection Framework \(2019\)](#)
- C4 Testimonials from: a) Director of Literacy and b) CEO at multi-academy trust; c) a head teacher; d) & e) two class teachers (May/June 2018).
- C5 [ESRC Celebrating Impact Prize](#) (2016).
- C6 Testimonial (2020) from Tony Whatmuff, developer of *Inference Training*.
- C7 [Inference Training](#) information leaflet (November 2013-2015)
- C8 [What Works for Children & Young People with Literacy Difficulties](#), 5th Edition (2016).
- C9 a) Testimonial (Nov 2020) from Barbara Gottheil, developer of *Lee Comprensivamente* and *Para Leerte Mejor* programmes; b) Fonseca, L. et al. Published efficacy study of [Lee Comprensivamente](#) (2014); c) Musci, M. C. Published efficacy study of *Para Leerte Mejor* (2020) [in Spanish]
- C10 Amplify Reading: a) Testimonial from Director of Learning Science (2020); b) Impact Report (2019)
- C11 Testimonial (Nov 2020) from Head of Digital Product at Oxford University, including links to OUP Products and related documents (2020)
- C12 [Why Closing the Gap Matters: The Oxford Language Report](#) (2018).
- C13 Education Endowment Foundation. Two Guidance reports: Improving Literacy in Key Stages 1 (a) & 2 (b) (2017)
- C14 Email (2019) from English Coordinator and Year 3 Class Teacher, Shanghai.
- C15. a) [Comparing Reading Research to Program Design: An Examination of Teachers College Units of Study](#) (2020); b) Edutopia '[The 10 Most Significant Education Studies of 2020](#)' c) APM Reports '[Influential literacy expert Lucy Calkins is changing her views](#)' (Oct 2020).