

***Doctorate in Professional Educational,  
Child and Adolescent Psychology***

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Leading education  
and social research  
Institute of Education  
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## **UCL Institute of Education**

Doctorate in Professional Educational Child and Adolescent  
Psychology

**Examining the effectiveness of a multicomponent  
reading intervention for 6–7 year olds in the UK: a  
mixed methods matched pairs crossover trial.**

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## Abstract

Approaches to teaching reading in the UK are dominated by principles of systematic synthetic phonics (SSP). Phonics has a mixed evidence base and there is a significant body of evidence that supports alternative approaches, suggesting that they may be appropriate for children who do not respond to traditional phonics and who are likely to present with reading difficulties. Educational psychologists (EPs) in the UK are uniquely placed to support school staff in delivering alternative approaches to phonics. The primary objective of this research was to test whether a group intervention based on a balanced approach to reading, drawing on the simplicity principle, the most commonly occurring words, motivational beliefs and the use of real books impacted reading progress for children who have not responded to traditional systematic synthetic phonics. This was a mixed-methods crossover trial with quantitative measures to assess the effectiveness of the intervention and qualitative measures to explore pupil voice and adult's views of the intervention. 58 children from five schools in London took part in the study. Data were collected at three time points. 5 adults contributed to the qualitative data collected at the end of the study. Data were analysed using a mixture of parametric and non-parametric tests and reflexive thematic analysis. Results showed that children who took part in the intervention significantly improved in a broad range of reading measures including single word reading, accuracy and comprehension compared to the control group. Children indicated they enjoyed the intervention. Overarching themes from the qualitative data reflected the importance of psychosocial interactive learning processes, increased self-determination of the intervention facilitator, supported integrated approaches to teaching literacy and the structural integration of reading processes. This study provides much needed support for alternative methods of reading instruction. It has important implications for government policy around phonics and provides evidence for practical ways in which EPs can work at a systemic level to affect outcomes for children with reading difficulties.

## Impact statement

This research sought to investigate the effectiveness of a multicomponent reading intervention for six- and seven-year-old children in UK primary schools. The study achieved this by employing a mixed methods design to assess quantitative and qualitative data relating to the outcomes of the intervention. This is the first multicomponent reading intervention study that explores the voice of the child and reports on qualitative data gathered from key stakeholders. Presented alongside the reading assessment data collected, this affords a rich picture of the outcomes of the study providing breadth and depth of insight.

This research explores the role of the educational psychologist (EP) in supporting school staff to deliver interventions to support struggling readers where universal approaches fail. The outcomes of this study impact on policy and practice at a number of levels:

### ***Government policy***

Currently, approaches to the teaching of reading in the UK are dominated by systematic synthetic phonics. While this approach appears to be successful for the majority, around 1 in 5 children continue to have difficulties in reading according to government data. The distinct lack of other approaches means that children often continue to be taught through the same method. This research provides evidence of the effectiveness of alternative approaches which should be incorporated in statutory guidance about teaching reading.

### ***Practice in schools***

Similarly, schools should adopt alternative approaches to support struggling readers and be aware of the impact of continued reading related failure. The qualitative data in this study provide important insight about how to make an intervention successful, including increasing the

perceived competence, autonomy and belongingness of the adults delivering interventions (constructs related to self-determination theory). This research calls for the creation of a new role for teaching assistants in school: the Advanced Literacy Support Assistant (ALSA). This would create space for targeted support for children at a school level utilising the most effective approaches.

### ***Educational psychologists***

EPs work to support the systems around young people to affect change and influence positive outcomes. The most effective way that EPs can work is at a systemic level, particularly as there is currently a workforce crisis in the EP profession. This research provides evidence of how EPs can work to support groups of children with reading difficulties. This can be achieved through training (highlighting the best practices in the teaching of reading, the impact of reading difficulties on psychological constructs such as self-esteem and alternative practices) or through supporting the effective delivery of interventions through training groups of staff and providing ongoing supervision.

### ***Research and theory***

This research provides important evidence for theoretical understandings around the acquisition of reading skills, including providing support for well-founded reading theory. It also provides support for arguments made in the literature about the importance of the type of reading material provided to children, namely that real books often increase motivation and impact on reading related self-image. It paves the way for future larger scale studies that look at multicomponent interventions in rigorously designed research comparing different types of interventions.

# Contents

List of Figures.....	- 10 -
List of Tables.....	- 12 -
Chapter 1: Introduction to the thesis.....	- 14 -
1.1 Chapter overview.....	- 14 -
1.2 Setting the scene .....	- 14 -
1.3 Reading policy in the UK, USA and Australia .....	- 17 -
1.4 Reading difficulties and the role of the Educational Psychologist .....	- 20 -
1.4.1 Perspective of the researcher.....	- 24 -
1.5 Theoretical framework.....	- 26 -
1.6 Rationale for the topic selection.....	- 28 -
Chapter 2: The acquisition of reading .....	- 32 -
2.1 Chapter overview.....	- 32 -
2.2 Critical review of reading theory.....	- 32 -
2.2.1 Developmental models .....	- 32 -
2.2.1.1 The three-phase model .....	- 32 -
2.2.1.2 The four-phase model .....	- 34 -
2.2.3 The dual-route cascaded model of reading.....	- 36 -
2.2.4 The simple view of reading .....	- 38 -
2.3 Chapter summary .....	- 41 -
Chapter 3: Supporting reading difficulties – a systematic literature review .....	- 42 -
3.1 Chapter overview.....	- 42 -
3.2 Phonics and its evidence base.....	- 42 -
3.3 Literature review strategy .....	- 46 -
3.4 Systematic review of the evidence.....	- 51 -
3.4.1 Instructional approaches .....	- 51 -
3.4.2 Morphological approaches .....	- 56 -
3.4.3 Interventions drawing on rational analyses of content.....	- 58 -
3.4.4 Interventions focusing on emotional and regulatory factors .....	- 60 -
3.4.5 Multicomponent interventions.....	- 63 -
3.4.6 Intervention intensity and duration.....	- 67 -

3.4.7 Interventions: a role for EPs? .....	- 69 -
3.5 Pilot study.....	- 70 -
3.6 Summary .....	- 71 -
3.7 Research questions .....	- 72 -
Chapter 4: Methodology.....	- 73 -
4.1 Chapter overview.....	- 73 -
4.2 Philosophical reflections .....	- 73 -
4.3 Summary of position .....	- 75 -
4.4 Phase one: Experimental phase.....	- 76 -
4.4.1 Participants .....	- 76 -
4.4.1.1 Selection criteria and sampling .....	- 76 -
4.4.1.2 Participants and matching .....	- 77 -
4.4.2 Research design and attrition.....	- 78 -
4.4.3 Measures .....	- 80 -
4.4.4 Intervention training and supervision .....	- 84 -
4.4.5 Intervention content and structure .....	- 84 -
4.4.6 Quantitative data analysis .....	- 89 -
4.5 Phase two: Interview phase .....	- 91 -
4.5.1 Participants .....	- 91 -
4.5.2 Development of the interview schedule .....	- 91 -
4.5.3 Procedure .....	- 92 -
4.5.4 Qualitative thematic analysis .....	- 92 -
4.5.5 Reflexivity .....	- 95 -
4.6 Ethical considerations.....	- 96 -
Chapter 5: Results .....	- 98 -
5.1 Chapter Overview .....	- 98 -
5.2 Phase 1 Results .....	- 98 -
5.2.1. Background characteristics of the groups.....	- 98 -
5.2.2 RQ1: Impact of the intervention on reading outcomes.....	- 101 -
5.2.2.1 BAS3 Word Reading Subtest.....	- 102 -
5.2.2.2 YARC Accuracy Subtest .....	- 104 -
5.2.2.3 YARC Fluency Subtest.....	- 106 -
5.2.2.4 YARC Comprehension Subtest .....	- 107 -

5.2.2.5 Intervention attendance .....	- 109 -
5.2.3 RQ2: Children's views of themselves as readers .....	- 110 -
5.2.3.1 Pre-intervention .....	- 110 -
5.2.3.2 Post-intervention .....	- 111 -
5.2.4 RQ3: Children's views of the intervention .....	- 113 -
5.2.5 RQ4: Teachers' ratings of literacy related outcomes .....	- 114 -
5.3 Phase 2 Results .....	- 117 -
5.3.1 RQ5: Thematic analysis .....	- 117 -
5.3.2 Theme One: Psychosocial interactive learning processes.....	- 119 -
5.3.2.1 Holistic approach to reading.....	- 119 -
5.3.2.2 The joy of reading.....	- 120 -
5.3.2.3 Reading resilience.....	- 120 -
5.3.2.4 Relationships as a vehicle to develop an identity as a reader.....	- 121 -
5.3.3 Theme Two: Increased self-determination of the facilitator.....	- 122 -
5.3.3.1 Increased self-efficacy and autonomy of the facilitator .....	- 122 -
5.3.3.2 Empowerment through confidence and competence.....	- 123 -
5.3.4 Theme Three: Supported integrated approach to reading .....	- 124 -
5.3.4.1 Management commitment .....	- 125 -
5.3.4.2 Organisational factors .....	- 126 -
5.3.5 Theme Four: Structural integration of reading processes .....	- 126 -
5.3.5.1 Purposeful connection of written and spoken communication .....	- 127 -
5.3.5.2 Integrated reading processes .....	- 128 -
5.3.5.3 Universality of the approach .....	- 129 -
Chapter 6: Discussion.....	- 130 -
6.1 Chapter Overview .....	- 130 -
6.2 Reading outcomes (RQ1 and RQ5) .....	- 131 -
6.2.1 Word reading .....	- 131 -
6.2.2 Reading fluency .....	- 132 -
6.2.3 Reading comprehension.....	- 133 -
6.2.4 Generalisation of skills .....	- 134 -
6.2.6 Summary of reading outcomes.....	- 134 -
6.3 The voice of the child (RQ2, RQ3) .....	- 135 -
6.3.1 Children's views of reading .....	- 135 -



6.3.2 Children's views of the intervention .....	- 136 -
6.3.3 Summary of pupil voice .....	- 137 -
6.4 Class teacher's views of reading outcomes (RQ4) .....	- 137 -
6.4.1 Reading constructs .....	- 137 -
6.4.1.1 Intervention group .....	- 138 -
6.4.1.2 Wait-list control group .....	- 139 -
6.4.2 Summary of teacher views .....	- 139 -
6.5 Adult's views of the intervention (RQ5) .....	- 140 -
6.5.1 Psychosocial interactive learning processes .....	- 141 -
6.5.2 Increased self-determination of the facilitator .....	- 143 -
6.5.3 Supported integrated approach to teaching reading .....	- 144 -
6.5.4 Structural integration of reading processes .....	- 145 -
6.5.5 <i>Why</i> it works: a summary .....	- 146 -
6.6 Strengths and limitations of this study .....	- 147 -
6.6.1 Strengths of the approach .....	- 147 -
6.6.2 Intervention fidelity .....	- 148 -
6.6.3 Limitations .....	- 149 -
6.7 Implication of the findings .....	- 150 -
6.7.1 Implications at a macrosystem level .....	- 151 -
6.7.2 Implications at an exosystem level .....	- 152 -
6.7.3 Implications at a microsystem level .....	- 152 -
6.7.4 Theoretical implications .....	- 154 -
6.7.5 Dissemination of the findings .....	- 155 -
6.8 Future directions .....	- 156 -
6.9 Conclusion .....	- 157 -
7.0 References .....	- 159 -
8.0 Appendices .....	- 183 -

## List of Figures

FIGURE 1 PERCENTAGE OF CHILDREN REACHING REQUIRED STANDARD IN PHONICS

SCREENING TEST FOR THE ACADEMIC YEAR 2022/23 (DFE, 2023A)..... - 16 -

FIGURE 2 BRONFENBRENNER’S ECOLOGICAL SYSTEMS THEORY OF HUMAN DEVELOPMENT.

FROM *BIOECOLOGICAL PERSPECTIVES ON HUMAN DEVELOPMENT* BY U.

BRONFENBRENNER, *MAKING HUMAN BEINGS HUMAN* (PP. 106–173), SAGE

PUBLICATIONS LTD. .... - 27 -

FIGURE 3 PERCENTAGE OF CHILDREN REACHING REQUIRED STANDARD IN READING AS

DETERMINED BY TEACHER ASSESSMENT IN ACADEMIC YEAR 2022 / 23 (DFE, 2023A) - 29

-

FIGURE 4 A SCHEMATIC REPRESENTATION OF THE THREE-PHASE MODEL OF READING

ACQUISITION (FRITH, 1985). .... - 32 -

FIGURE 5 SCHEMATIC REPRESENTATION OF THE EHRI’S PHASES OF READING (EHRI ,1995). ...-

34 -

FIGURE 6 THE DUAL-ROUTE CASCADED MODEL OF VISUAL WORD RECOGNITION

(COLTHEART ET AL., 2001). .... - 37 -

FIGURE 7 A GRAPHICAL REPRESENTATION OF THE SIMPLE VIEW OF READING (GOUGH &

TUNMER, 1986). .... - 39 -

FIGURE 8 SYSTEMATIC LITERATURE REVIEW SEARCH STRATEGY. .... - 48 -

FIGURE 9 A SCHEMATIC OF THE RESEARCH DESIGN OF THE STUDY ..... - 79 -

FIGURE 10 THE ATTRITION RATES OF THOSE INCLUDED IN THE FINAL ANALYSES. .... - 80 -

FIGURE 11. BRAUN AND CLARKE’S (2006) STAGED APPROACH TO REFLEXIVE THEMATIC

ANALYSIS. .... - 93 -

FIGURE 12 SPLIT PLOT ANOVA DISPLAYING ESTIMATED MARGINAL MEANS FOR BAS3 WORD	
READING SUBTEST .....	- 103 -
FIGURE 13 SPLIT PLOT ANOVA DISPLAYING ESTIMATED MARGINAL MEANS FOR YARC	
ACCURACY SUBTEST .....	- 105 -
FIGURE 14 SPLIT PLOT ANOVA DISPLAYING ESTIMATED MARGINAL MEANS FOR YARC	
FLUENCY SUBTEST .....	- 107 -
FIGURE 15 SPLIT PLOT ANOVA DISPLAYING ESTIMATED MARGINAL MEANS FOR YARC	
COMPREHENSION SUBTEST .....	- 108 -
FIGURE 16 WORD CLOUD DISPLAYING THE MOST FREQUENTLY USED WORDS BY CHILDREN	
TO DESCRIBE THEIR VIEWS OF READING PRIOR TO THE INTERVENTION .....	- 110 -
FIGURE 17 WORD CLOUD DISPLAYING THE MOST FREQUENTLY USED WORDS BY CHILDREN	
TO DESCRIBE THEIR VIEWS OF THEMSELVES AS READERS / READING AFTER THE	
INTERVENTION. ....	- 112 -
FIGURE 18 WORD CLOUD DISPLAYING THE MOST FREQUENTLY USED WORDS BY THE	
CHILDREN TO DESCRIBE THE INTERVENTION .....	- 113 -
FIGURE 19 TEACHER RATINGS OF THE LITERACY RELATED CONSTRUCTS AT T1, T2 AND T3	
FOR THE INTERVENTION GROUP. ....	- 115 -
FIGURE 20 TEACHER RATINGS OF THE LITERACY RELATED CONSTRUCTS AT T1, T2 AND T3	
FOR THE WAIT-LIST CONTROL GROUP. ....	- 115 -
FIGURE 21 THEMATIC MAP FOR THE FOUR OVERARCHING THEMES AND ELEVEN	
CORRESPONDING SUBTHEMES IDENTIFIED DURING THE INTERVIEWS WITH THE	
INTERVENTION FACILITATORS. ....	- 118 -
FIGURE 22 THEME ONE THEMATIC MAP .....	- 119 -
FIGURE 23 THEME TWO THEMATIC MAP .....	- 122 -

FIGURE 24 THEME THREE THEMATIC MAP .....	- 125 -
FIGURE 25 THEME FOUR THEMATIC MAP .....	- 127 -

## List of Tables

TABLE 1 SUMMARY OF THE STUDIES INCLUDED IN THE SYSTEMATIC REVIEW .....	- 50 -
TABLE 2 CONTENT AND STRUCTURE OF THE READING INTERVENTION .....	- 87 -
TABLE 3 BACKGROUND CHARACTERISTICS OF THE CHILDREN WHO PARTICIPATED IN THE STUDY .....	- 99 -
TABLE 4 CHI-SQUARE ANALYSIS OF BETWEEN GROUP DIFFERENCE ON NOMINAL DATA POINTS .....	- 100 -
TABLE 5 T-TESTS ON BASELINE MEASURES AND DEMOGRAPHICS .....	- 100 -
TABLE 6 OUTCOMES OF READING MEASURES ACROSS STUDY .....	- 102 -
TABLE 7 POST HOC COMPARISONS - CONDITION * TIME (BAS3 WORD READING ABILITY SCORES).....	- 104 -
TABLE 8 POST HOC COMPARISONS - CONDITION * TIME (YARC ACCURACY SUBTEST ABILITY SCORES).....	- 106 -
TABLE 9 POST HOC COMPARISONS - CONDITION * TIME (YARC COMPREHENSION SUBTEST)- 109 -	
TABLE 10 TOTAL INSTANCES OF WORDS USED BY CHILDREN TO DESCRIBE THEIR RELATIONSHIP TO READING PRE-INTERVENTION .....	- 111 -
TABLE 11 TOTAL INSTANCES OF WORDS USED BY CHILDREN TO DESCRIBE THEIR RELATIONSHIP TO READING POST-INTERVENTION .....	- 112 -

TABLE 12 FREQUENCY OF WORDS USED BY CHILDREN TO DESCRIBE THE INTERVENTION .....-

114 -

TABLE 13 FRIEDMAN TEST ON LIKERT RATING SCALES BETWEEN DATA COLLECTION POINTS

(T1, T2 AND T3)..... - 116 -

TABLE 14 PAIRWISE POST-HOC COMPARISONS USING WILCOXON SIGNED-RANK TESTS OF

TEACHER RATED DATA..... - 117 -

# Chapter 1: Introduction to the thesis

## 1.1 Chapter overview

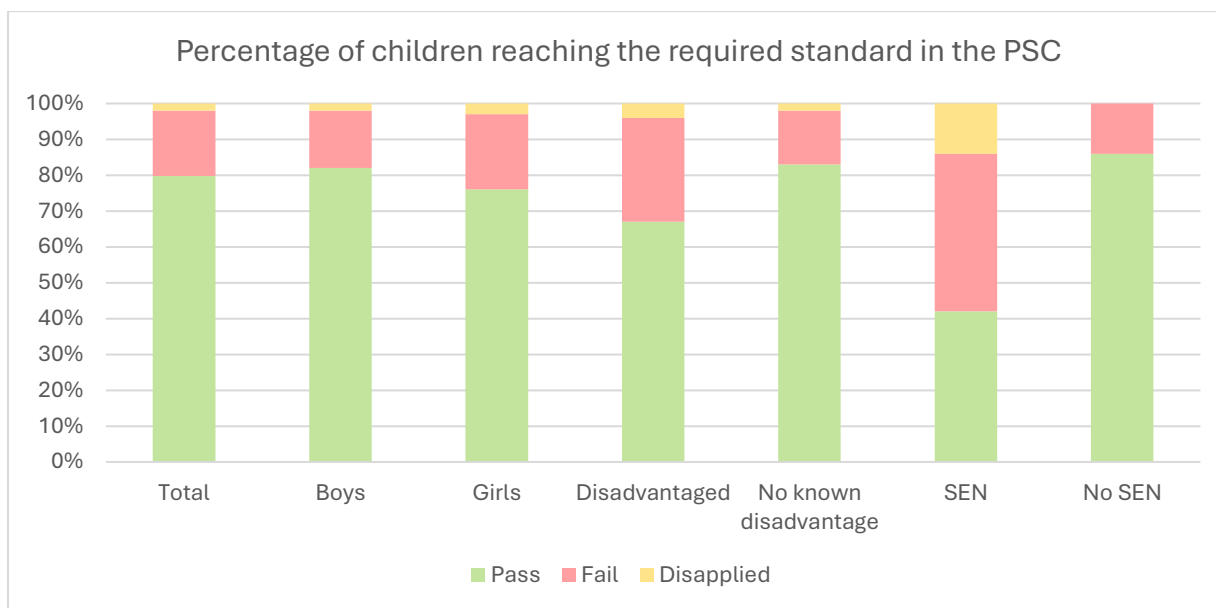
This chapter will begin by providing contextual information about the thesis. First, it will set the scene for reading in the UK by providing context about approaches to teaching reading and what the UK government's data communicate about the state of reading in the UK. It will provide a rationale for the thesis selection and explain the role of the educational psychologist, providing a judicious account of how this research is relevant to the profession of educational psychology.

## 1.2 Setting the scene

Reading is fundamental. The acquisition of the skills required to read are complicated and varied and, as such, research in the field of literacy development has a critical role to play. This is because the cost of illiteracy is great: the World Literacy Foundation (2015) estimated that the direct costs of illiteracy is \$1 trillion while the indirect costs (including contributing to inequality, poor physical and mental health and participation in crime to name a few) are far greater and far more difficult to enumerate. Consequently, the stakes are high, and debate about how children should learn to read has been contentious and dominated by vehement opinion. This debate is sometimes referred to as 'the reading wars.' Some argue for a phonics led approach (encapsulated by explicit teaching of the sounds that letters make) while others advocate a whole-language approach (emphasising the discovery of words and meaning more organically; Castles et al., 2018).

The teaching of reading in the UK has been dominated by teaching approaches guided by principles of systematic synthetic phonics (SSP), arguably since the Rose Review (Rose, 2006). The use of SSP programmes in UK schools was reinforced by a report by the Office for Standards in Education, Children's Services and Skills (Ofsted) on the practice of twelve "outstanding" schools (Ofsted, 2010). This was reenergised by the recent UK governmental mandate that all schools should have a government approved and validated phonics programme, all of which uphold the principles of SSP (DfE, 2021). The government's inspectorate, Ofsted, have additionally included criteria in the evaluation of school performance which includes expectations that schools teach SSP from the beginning of Reception, further reinforcing SSP as the singular approach to word reading (through decoding) in schools (Ofsted, 2022).

The UK government's message about phonics is clear. Schools, teachers and parents understand that children will be subject to statutory testing that takes place at the end of Year 1 (DfE, 2022b). Children must participate in the Phonics Screening Check (PSC) which ostensibly identifies those that have learnt to 'read' to an appropriate standard as well as those who require additional support (DfE, 2022b). The test is designed so that children *must* employ phonic strategies to be able to successfully reach the required threshold as half of the test words contained within the assessment are pseudowords meaning children must rely on the grapheme-phoneme correspondence (GPC) to decode.



**FIGURE 1** PERCENTAGE OF CHILDREN REACHING REQUIRED STANDARD IN PHONICS SCREENING TEST FOR THE ACADEMIC YEAR 2022/23 (DfE, 2023A)

Despite pressures from government, meaning that phonics has been the dominant approach for over a decade, national data for England from the Department for Education (DfE) show that a significant number of children are either disapplied (meaning they are unable to sit the test)<sup>1</sup> or fail the test (see Figure 1). In the most recent national data for the academic year 2022-23, 79% of children passed the PSC while 18% failed. Boys are disproportionately worse off with 76% passing the screening test compared to 82% of girls (DfE, 2023a).

These data indicate that a significant proportion of children find it difficult to learn to read through phonics instruction. Seeing the importance of reading as a skill for life and the

<sup>1</sup> It is ultimately the Head Teacher's responsibility to decide if a child will take the PSC. Typical reasons that a child might not take the test (or be disapplied) might include not having yet completed the first year of the National Curriculum (i.e., children that are working significantly below the expected standard), those who are selectively mute, children who use British Sign Language as their first language or pupils for whom English is an additional language that are still in the early stages of language acquisition. This advice was taken from the most up to date administration advice from the Department for Education (DfE, 2023b).



significant potential ramifications of not learning to read, this is a sobering fact. Individuals with reading difficulties are often flagged for extra support in schools, and this can sometimes be through further support using the same mode of instruction (i.e., more phonics). Current practice will be expanded upon in the subsequent section.

### 1.3 Reading policy in the UK, USA and Australia

This section will focus on international reading policy in the three most populous<sup>2</sup> English speaking nations worldwide. In the UK, the DfE has recently published guidance consolidating advice on the approach to reading that schools should adopt. In the 'Reading Framework' (DfE, 2023c), the DfE provides guidance for primary and secondary schools about the teaching of reading. The Reading Framework introduces a comprehensive approach to enhance reading proficiency and foster a love for reading among students. It prioritises phonics and reading fluency and emphasises the urgency with which all children need to gain the skill to decode, achieved predominantly through phonics instruction. Teachers are encouraged to read aloud to students regularly to model good reading practices and engage students with texts they might not choose independently. Vocabulary development is highlighted as crucial, with structured efforts to expand students' vocabulary throughout their education. The guidance also explicitly mentions fluency where the main method noted is through re-reading. Guidance in the UK also refers to quality books (although a definition of quality books is not given) and additionally refers to children being given books that are phonetically decodable to them. Importantly, the guidance does state that schools are advised to curate a core set of high-quality literature, including contemporary, classic, non-

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<sup>2</sup> Canada was not considered due to reading policy being directed at a state level and a significant proportion of the population living in a dual-language state.

fiction, fiction, poetry, and prose, and to refresh these selections regularly. Interestingly, the guidance mentions that teachers should “...be wary of restricting pupils to reading books from within one coloured level or band and labelling pupils as being on a specific colour,” (DfE, 2023b, p.97). A positive feature of the guidance is the focus on a reading-for-pleasure culture, which is deemed essential and involves activities like reading aloud, informal book discussions, and encouraging library use. A salient point in the updated guidance is the focus on disadvantaged pupils including those with SEND, citing multiple factors that might disadvantage pupils from these groups including attendance, home support and complex needs. The guidance states that schools have a duty to enable access to appropriate phonics schemes for these pupils.

The Centre for Literacy in Primary Education (CLPE) are critical of the guidance in parts, explaining that the extensive guidance requires that teachers and leaders have an in depth subject knowledge and reflect on the fact that this document is *guidance* and not statutory in nature (CLPE, 2023). While much of the advice contained within the Reading Framework highlights multiple approaches drawing on a range of methods, it is possible that there are issues relating to translation of policy to practice. For example, the existence of a high stakes PSC may impact on the pressure for teachers to adopt a singular approach to reading drawing on SSP and this could lead to phonics being taught in isolation from reading (Wyse and Bradbury, 2022). Additionally, government mandate requiring schools to have a validated phonics programme (DfE, 2021) means there is added pressure for school staff to use reading approaches that draw on principles of SSP.

In the USA, education is primarily a state and locally controlled matter and there does not exist statutory guidance across the country for the teaching of reading. As such, education

policies can vary significantly across states. However, there are some overarching principles and initiatives that have influenced reading instruction in the USA. Firstly, many states have adopted the Common Core Standards (CCSS; National Governors Association, 2010) which is a set of academic standards that include English language arts for pupils in Grade K-12 (ages 5 – 18). It provides a clear and consistent framework for pupils, detailing what they are expected to learn at each grade. The CCSS emphasises a balance between literature and information texts and discusses the development of reading through skills such as comprehension, fluency and vocabulary. Many states incorporate principles based on discrete teaching of phonics and phonemic awareness. Schools in the USA are also guided by legislation contained in the No Child Left Behind Act (2002) which emphasises accountability and requires schools to carry out annual assessments in reading. This means that schools need to show that pupils are making ‘adequate’ progress in reading. Similarly to the UK, there is a divide in the USA about the best approach to teaching reading. Practice and opinion are mirrored in the UK and the USA, where at one time or another either whole language or phonic based approaches dominated. The National Reading Panel (NRP; 2000), which remains one of the most influential pieces of guidance, determined that effective reading instruction requires the adherence to underlying principles including explicit teaching of: phonics, phonemic awareness, vocabulary, fluency and comprehension.

In Australia, teaching instruction is mandated by statutory guidance contained in the Australian Curriculum (ACARA, 2023). English is one of the key learning areas and standards are outlined with reference to grade levels. Phonics instruction has received recent attention and there is a growing emphasis on phonics instruction in Australian school. As with other English-speaking countries, Australia has a national assessment programme that measures

students' literacy skills and one of these components is in reading, where the results are used to monitor educational outcomes. Many of the remedial programs which are common in Australia, including MultiLit and MiniLit (MultiLit Research Unit, 2020) and Toe by Toe (Toe By Toe Reading Scheme, 1993), among others, incorporate principles of SSP as their main method of instruction. A recent review of MiniLit which is widely used in Australia as a remedial programme for struggling readers suggests that it is efficacious (Reynolds et al., 2021).

In summary, reading policies in the major global English speaking countries are dominated by principles of SSP. Guidance in the aforementioned countries also highlights the need for young people to be given ongoing support when they encounter difficulties learning to read and this support often, counterintuitively, follows the same principles as the original mode of instruction, namely SSP. As those with difficulties often encounter further disruption to their education over time (Boyes et al., 2018; Wilmot et al., 2023), these children are often those who are referred to educational psychologists (EPs) for further support. The role the educational psychologist (EP) plays will be expanded upon in the subsequent section.

## 1.4 Reading difficulties and the role of the Educational Psychologist

EPs work across a broad spectrum of needs and at an individual, group, systemic and family level (Hill, 2013). Cameron (2006) identified the core elements of EP practice as: consultation, research, assessment, intervention and training. EPs work within the statutory guidelines set out in the Special Educational Needs and Disabilities (SEND) Code of Practice (DfE, 2015). The SEND code of practice has significantly shaped the day-to-day practice of the EP while also providing protection of the status of the profession (Buck, 2015). EPs have a

statutory role in assessing the needs of a young person as part of the Education, Health and Care Plan (EHCP) process. This potentially impacts the perception of the EP as a professional whose sole duty is to carry out assessment and formulate provision (Buck, 2015).

Aaron et al. (2008) discuss the role of the psychologist in the diagnosis and treatment of reading difficulties in their paper which advocates a component model of reading (CMR)<sup>3</sup> as opposed to a discrepancy model. Under a discrepancy model, Aaron et al. argue that the psychologist's main function was to categorise those poor readers either with a learning disability or not. Meyer (2000) argues that the discrepancy model has limited practicability but acknowledges there are significant hurdles that need to be overcome in order to affect change in policy, of which psychologists, along with other established and influential groups, may play a pivotal role. Aaron et al. additionally reflected on the significant time that assessment of reading difficulties takes and discuss the potential benefits of a response to intervention model. A component model of reading may be more useful for the psychologist since it helps to inform intervention, rather than focusing on categorising and labelling.

In a recent paper, Gibbs and Elliot (2020) discuss the problematic use of labelling when it comes to reading difficulties and the somewhat polarised positions of different groups who

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<sup>3</sup> The component model of reading (CMR) asserts that literacy related abilities are affected by not only cognitive factors, but psychological and ecological factors also. These three domains are the overarching 'components' that have an impact on the acquisition of literacy skills. This model is helpful in understanding what is the cause of the literacy difficulty and is distinct to the discrepancy model which relies on cognitive factors and IQ to inform categorisation of reading difficulties. Each of the domains is further divided into separate components. In the cognitive domain, word recognition and comprehension are the components. In the psychological domain, it is components such as motivation and interest, locus of control, learned helplessness, learning styles, teacher expectation and gender differences that may influence reading difficulties. Finally for ecological components, factors such as the home environment, culture and parental involvement, classroom environment, peer influence, dialect and speaking English as a second language are the components that may impact on reading difficulties. The CMR envisages that an individual may have experienced difficulties acquiring literacy skills because of a deficit in any one of the aforementioned components.

either advocate for 'dyslexia' as a construct and specific instruction on that basis, or those who deny its existence. Issues of labelling and self-esteem should also be considered when addressing reading difficulties and there is sometimes a tension about the potential benefits or risks related to formal labelling (Taylor et al., 2010). This study refers to the definition of dyslexia provided by the BPS:

Dyslexia is evident when accurate and fluent word reading and/or spelling develops very incompletely or with great difficulty. This focuses on literacy learning at the 'word level' and implies that the problem is severe and persistent despite appropriate learning opportunities (BPS, 1999, p.18).

Stanbridge et al. (2023) discuss the understanding of literacy difficulties in a recent article that examines the historical, socio and political influences on the development of the construct of dyslexia. Stanbridge et al. assert that, as there is a broad consensus among researchers in literacy that 'dyslexic' readers cannot be accurately distinguished from those with general literacy difficulties, a paradigm shift in the understanding of this concept is necessary. The authors are careful to explain that they do not wish to say that "experiencing difficulties with literacy is not a very real and serious phenomenon," (Stanbridge et al., p.19). Instead, they question whether the use of the label of dyslexia demonstrates validity and is useful in practice. Authors reflect on the dominant discourses at a macrosystem level which have influenced popular beliefs and understanding of dyslexia, such as the recent call by a government minister for all children to undergo 'dyslexia screening' during primary school (Dyslexia Screening and Teacher Training Bill, 2023), or information that exists on influential websites such as the National Health Service website that calls for early 'diagnosis' of dyslexia (National Health Service, 2018). While authors accept that a paradigm shift in the

understanding of literacy difficulties has often been met with scepticism and flawed logic, they assert that one is needed in order to address issues of equity. They call for a move towards a new paradigm, stating that, “addressing literacy difficulties must involve an explicit move to systemic frameworks (that) must be consistent with most recent developments from academic research,” (Stanbridge et al., p.23).

This research will focus on reading difficulties in a broader sense since focusing on reading difficulties through the lens of dyslexia risks overlooking that children can have reading difficulties for a number of reasons. Two recent papers provide contemporary discussion around the definition of dyslexia and more broadly the nature of reading difficulties. In their paper entitled "Revisiting the Definition of Dyslexia," Catts et al. (2024) argue for a multifactorial understanding that integrates genetic predispositions and environmental factors, advocating for a dynamic model of reading difficulties that includes risk and resilience elements. This paper criticises the binary perspective of neurobiological versus environmental causes and underscores the need for early intervention and structured literacy instruction to address dyslexia's complex nature. In contrast, Snowling and Hulme (2024) emphasise retaining a definition based on behavioural elements like reading and spelling difficulties, warning against incorporating causal risk factors into the definition. Their paper highlights dyslexia as a dimensional disorder primarily characterised by phonological processing deficits while recognising the significance of rapid-automatized naming<sup>4</sup> (RAN) as a risk factor for reading fluency. The paper also calls for further research on comorbidities without conflating them with dyslexia. Together, these papers underscore the importance of

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<sup>4</sup> Rapid Automatized Naming (RAN) is the process of quickly naming a series of familiar visual stimuli such as letters, numbers, colours, or objects, which is used to assess the efficiency of accessing and retrieving phonological information from long-term memory.

a nuanced, evidence-based approach, balancing the need for a clear diagnostic framework with an understanding of multifaceted nature of reading difficulties.

Although this study is not directly concerned with those children recognised as having ‘dyslexia,’ the children who form the participants in this study are children who might be identified as having literacy difficulties (or suspected by school staff as being ‘dyslexic’) and as such may be referred to the EP. This study does not seek to explore in great detail the contentious issue of labelling or the role of the EP in that. Rather, it will show that EPs can make a significant contribution to the effective understanding of reading difficulties as a whole, and through research and collaboration, are in an advantageous position to influence practice, by supporting instruction and intervention for the benefit of those with reading difficulties.

#### 1.4.1 Perspective of the researcher

Traditionally, writing manuals have advised researchers to place themselves in the background of writing in order to provide a sense of objectivity and greater weight to the substance of an argument rather than the “mood and temper of the author” (Strunk & White, 1918, p.70). However, recent discourse in academia suggests a paradigm shift that rejects the blanket disapproval of first-person language in reporting in the social sciences. Raymond (1993) suggests that avoiding the use of *I* in academic writing is merely a “ploy [that creates] the appearance of objectivity” (Raymond, 1993, p.482). Feminist authors, such as Kirsch (1994), suggest that dropping the *I* has significant social, moral and political consequences and that historically, it has been a strategy to silence marginalised groups. Ultimately, the idea that removing the first-person renders objectivity is based on a fallacy that *true* objectivity can ever exist. The researcher’s own perspective on the ‘dyslexia debate’ is important for



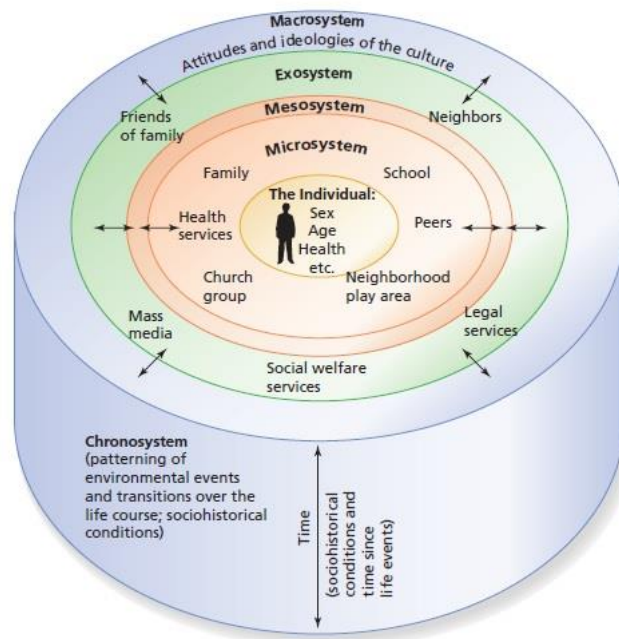
placing in context the rationale for the topic selection and the approach adopted in this thesis. Seeing the importance of this perspective and given what is outlined above, this account will adopt a first-person perspective, which will be limited to this portion of the thesis.

I draw on my experiences as a primary school teacher and theoretical perspectives such as systems theories (Bronfenbrenner, 2005; Katz & Kahn, 1969), social constructionism (Burr, 2015), labelling theory (Becker, 1963), social models of disability (Makin, 1995) and symbolic interactionism (Blumer, 1962). My experiences as a teacher influence my perspective on reading difficulties in that I recognise that some individuals find it harder to learn to read and this can be for a variety of reasons. Systems theories influence my perspective in that I understand that individuals exist in an ecosystem of varying layers that impact on behaviour and development. Drawing on social models of disability, I do not adopt a within-person view of so-called difficulties or disabilities, such as reading. Rather, I view outcomes in reading as a consequence of complicated and interacting systems around a child over time, including individually related cognitive development, and accept that disability is socially defined. Simultaneously, I accept that human society relies on interactions at a symbolic level, which includes language, and as such, certain terms necessarily exist to communicate socially constructed 'disorders,' for example, 'dyslexia.' My thinking about 'dyslexia' as a construct is influenced by labelling theory and systems theories that consider the properties of open and closed systems. As such, I accept that for some individuals, the use of a label such as 'dyslexia' is important and provides a tangible and explainable reason for their difficulty. However, understanding the properties of self-sustaining systems such as families, I also accept that this can be damaging and limiting to a person's capacity to make progress in reading. I reject a discrepancy model, favouring a component approach to reading

difficulties, but do not reject the use of the label of 'dyslexia.' I do believe, however, that historically changing definitions and decades of debate have led to confusion about what 'dyslexia' is and how to support individuals with reading difficulties. Consequently, my view is that 'dyslexia' as a term can be used if it is helpful for an individual, but that this must be accompanied by more clearly defined descriptions of the individual difficulties that a person is experiencing so that this may practicably inform intervention to support reading.

## 1.5 Theoretical framework

This research draws on Bronfenbrenner's ecological systems theory (2005) as its main heuristic for understanding the complex and interacting systems that exist around a developing child which have an impact upon all areas of development. The theory posits that it is essential to understand the various systems that exist around a person at different levels to be able to understand a young person's profile of strengths and difficulties. It is a paradigm shift, moving away from a within-person or medical model in viewing 'deficit,' which seeks to place the problem within a child, towards an approach that seeks to understand the interacting systems within which a person finds themselves. Further detail is provided in Figure 2.



**FIGURE 2** BRONFENBRENNER'S ECOLOGICAL SYSTEMS THEORY OF HUMAN DEVELOPMENT. FROM *BIOECOLOGICAL PERSPECTIVES ON HUMAN DEVELOPMENT* BY U. BRONFENBRENNER, *MAKING HUMAN BEINGS HUMAN* (PP. 106–173), SAGE PUBLICATIONS LTD.

This model can be usefully applied to reading difficulties and as such is an important theoretical framework in this study. At the microsystem level, this may refer to a family's approach to reading, parents' own experiences and attitudes around reading or more broadly, the home literacy environment (Sénéchal & LeFevre, 2014). At the school level, this might include the school's reading schemes and the role peers play. The exosystem refers to the wider systems such as mass media or local authority. For example, what information is reported in mass media impacting on a family's understanding of reading difficulties and in turn the understanding of the young person themselves. It may also refer to the support and guidance that is available at a local authority level and therefore teacher's own expertise and professional knowledge. The macrosystem refers to culturally held beliefs, such as the view that it is vital to learn to read in order to be a valued member of society and the shame that is related to having reading difficulties. Another important facet of this level of the ecosystem

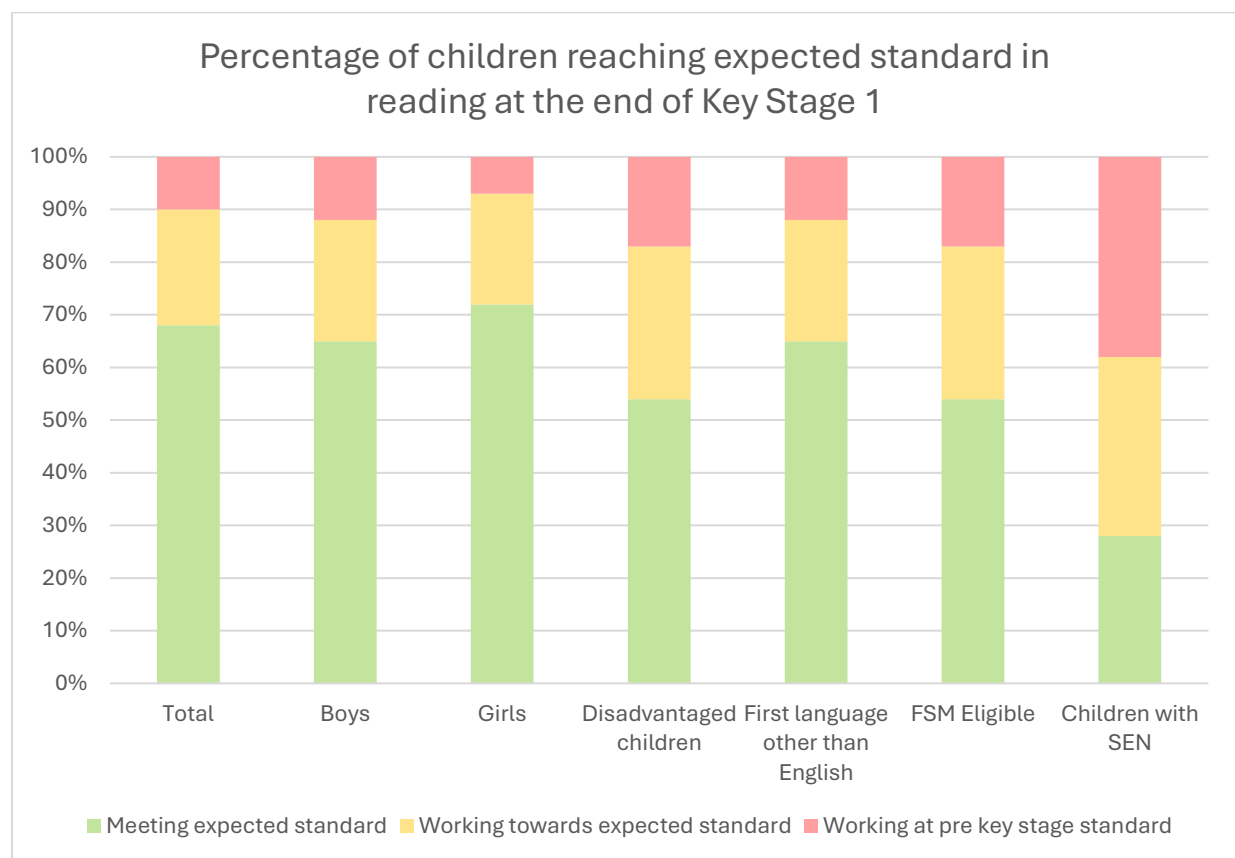
is the role of government agenda and the message from central government, through mandate such as the PSC and validated phonics programmes (DfE, 2022a; 2022b). The chronosystem was a later addition to the model which refers to the environmental changes that occur over time impacting the systems around an individual. In terms of reading, this might refer to changes in teaching practice, related to different teachers and changes over time in the amount and type of support that individuals are receiving at school.

This theoretical framework forms the basis of understanding the important role of the environment around a child and will be returned to in the discussion. It is beyond the scope of this study to explore *all* of the systems and, as such, it will seek to explore the important role that those in a young person's microsystem play (i.e., staff at school).

## 1.6 Rationale for the topic selection

In a recent critical review of research evidence, curriculum policy and teachers' practices for teaching reading through phonics, Wyse and Bradbury (2022) reported that out of 634 respondents, 66% of teachers described their approach to teaching reading as SSP 'first and foremost' while 27% used phonics combined with other emphases such as reading comprehension. Only 1% of the respondents indicated using whole texts with phonics derived from examples in the text. Wyse and Bradbury also report on the extent to which the existence of the PSC impacts on the practice of teaching, with 71% of respondents indicating that it did to a significant or to some extent. The authors also asked what kind of changes respondents to the survey would recommend with regards to the national policy on teaching and assessing reading. One teacher reflected that the assessment system had the potential to be very demoralising for children. Wyse and Bradbury further indicate that the high stakes PSC has led to extra phonics lessons, reduction on time spent on other literacy activities, more

pressure and additional workload for teachers, interventions to remove children in order to receive further phonics and more curriculum time spent on preparation for the PSC including practise tests. Authors point to a theme in the responses which indicates that teachers feel that they are spending more time focused on teaching phonics and less time teaching wider reading skills including comprehension, with phonics possibly being seen as a separate and discrete subject.



**FIGURE 3** PERCENTAGE OF CHILDREN REACHING REQUIRED STANDARD IN READING AS DETERMINED BY TEACHER ASSESSMENT IN ACADEMIC YEAR 2022 / 23 (DfE, 2023A)

National data from DfE provide an insight into reading progress in England in the academic year 2022-23 (see Figure 2). According to the DfE, children in schools in England should be taught to read via a SSP delivered through a validated programme until the end of Year 1 (DfE, 2022b). Those that fail to pass the PSC at that stage should be in receipt of a

targeted catch-up programme. By the end of Year 2, most children will have received at minimum 3 years of intensive phonics training. Nevertheless, in the most recent government data, 32% of children were still not reaching the required standard of reading by the end of Year 2. Boys tend to do worse with 35% not reaching the expected standard compared to 29% of girls. Similarly, for those children for whom English is an additional language, 35% of these children were not reaching the expected standard. For those children from disadvantaged backgrounds or who had SEND, the picture is far worse. A staggering 46% of children classed as disadvantaged and 72% of children with SEND were still not reaching the expected standard in reading by the end of Year 2. Similarly, the Organization for Economic Cooperation and Development (OECD) data indicate that, although UK students scored slightly above average in reading compared to other nations, advantaged students significantly outperformed disadvantaged students and many children, particularly those from disadvantaged backgrounds, “held lower ambitions than would be expected given their academic achievement” (OECD, 2018, p.5).

Given the state of reading in the UK, and the significant impact of factors such as whether a child has SEND or comes from a disadvantaged background, EPs have an important role to play. The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2019) has identified literacy as a human right which implies that it is an issue of social justice. Given their unique role, EPs are well placed to promote approaches to teaching reading when phonics fails. There is evidence to suggest that alternative approaches that draw on rational analyses of content, direct instruction and carefully selected materials (O’Connor & Solity, 2020a; Solity & Vousden, 2009; Vousden et al., 2011) can support children experiencing reading difficulties. This evidence will be reviewed in a later chapter more thoroughly. The

aim of this thesis is to investigate the extent to which an alternative approach to phonics is successful in supporting children who have not responded to traditional SSP.

## Chapter 2: The acquisition of reading

### 2.1 Chapter overview

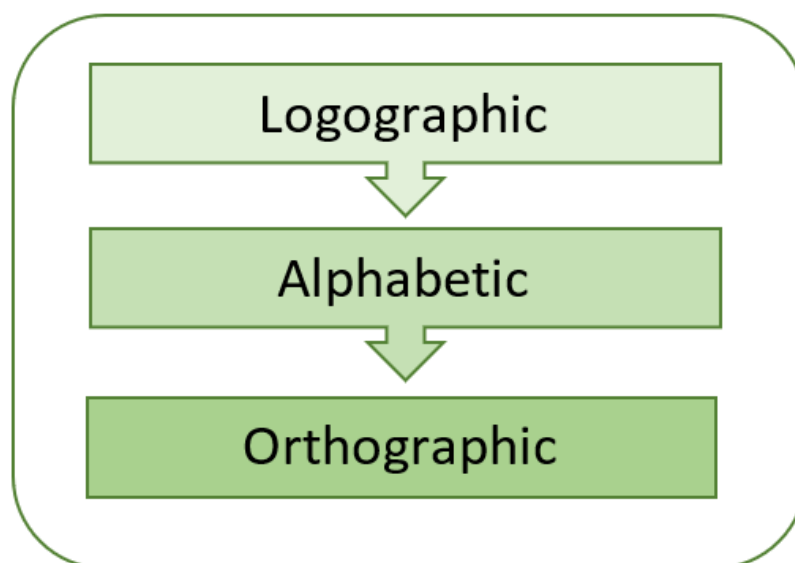
Models of reading have been developed to attempt to describe the processes of reading acquisition and the skills involved in learning to read. This chapter will give an overview of some of the main theoretical models and frameworks for reading, as well as providing reference to the skills underpinning reading, while providing a critique of their influence and impact.

### 2.2 Critical review of reading theory

#### 2.2.1 Developmental models

##### *2.2.1.1 The three-phase model*

Frith's (1985) three-phase model of reading is useful as a conceptualisation of the developmental stages that a child is likely to pass through when first learning to read.



**FIGURE 4** A SCHEMATIC REPRESENTATION OF THE THREE-PHASE MODEL OF READING ACQUISITION (FRITH, 1985).



The three-phase model consists of three distinct stages, as represented in Figure 4. The first stage is the logographic stage, where children begin to recognise familiar words based on their visual (or logographic) representation without having to rely on any other knowledge that has not yet been acquired. *Salient* visual features<sup>5</sup> are important in this stage. In the alphabetic stage, children begin to understand individual graphemes and phonemes, which enable them to produce novel words and nonwords. SSP aims to support the successful transition from the logographic to the alphabetic stage. It is the third and final stage that competent readers will eventually reach, and within this stage, instant recognition of words is possible without relying on phonological skills. This is achieved through internal representation of abstract letter strings (coinciding with ‘free’ or ‘bound’ morphemes) which can be combined to create an unlimited set of words.

The model asserts that typically developing individuals move through the stages deploying different strategies which coincide with their developmental phase. However, not all individuals learning to read will pass through these phases so seamlessly. Frith’s model is successful insofar as giving an oversight of reading acquisition at the word level but pays little attention to other skills involved in successful reading including higher-order reading skills such as comprehension. It is additionally limited by the importance it places on the role of phonics instruction. It presupposes that phonics knowledge (i.e. the alphabetic stage) is

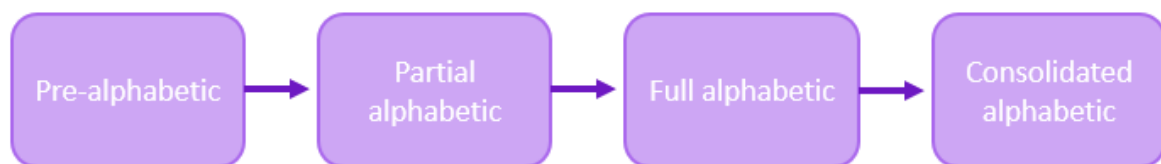
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<sup>5</sup> Visual saliency is the subjective perceptual quality of an object (such as a word or letter string) which makes it stand out among items in its surrounding proximity. Attention is often directed to visually salient stimuli and biological systems may have evolved to be able to attend rapidly to salient stimuli since it would be evolutionarily advantageous. Some scholars argue that visual saliency allows individuals to process information that might otherwise be overwhelming, complex and busy (Itti & Koch, 2000). Salient features in the context of reading can be thought of as the key pieces of visual information that enable individuals to rapidly recognise letters strings as words. Salient visual features are individual and personal since what a person is drawn to visually will be unique to them.

essential in transitioning to the orthographic phase. Approaches to teaching reading that do not rely on alphabetic instruction are known to be successful in reading endeavours (Share, 2008) and therefore this model, while influential, is limited. Additionally, Ramus (2004) highlights the case of languages such as Chinese where individuals learn to build their orthographic lexicon directly based on their interactions at a logographic level suggesting that the model may not be applicable across orthographies.

#### *2.2.1.2 The four-phase model*

Ehri's Four-Phase Model of Reading Development (Ehri, 1995) outlines the stages through which individuals progress in acquiring reading skills (see Figure 5).



**FIGURE 5** SCHEMATIC REPRESENTATION OF THE EHRI'S PHASES OF READING (EHRI ,1995).

In the pre-alphabetic phase, learners possess a rudimentary understanding of the alphabetic principle, relying on visual cues and memorisation of whole words. Recognition of letter-sound relationships is limited, with an emphasis on sight word recognition. Advancing to the partial alphabetic phase, readers develop a more sophisticated understanding of letter-sound correspondences, particularly in the initial and final positions of words. Increased phonemic awareness is evident, and systematic phonics instruction becomes crucial. The full alphabetic phase is characterised by a comprehensive understanding of the alphabetic principle. Readers recognise and use almost all GPCs, demonstrating advanced phonemic awareness and decoding proficiency. In the consolidated alphabetic phase, readers achieve

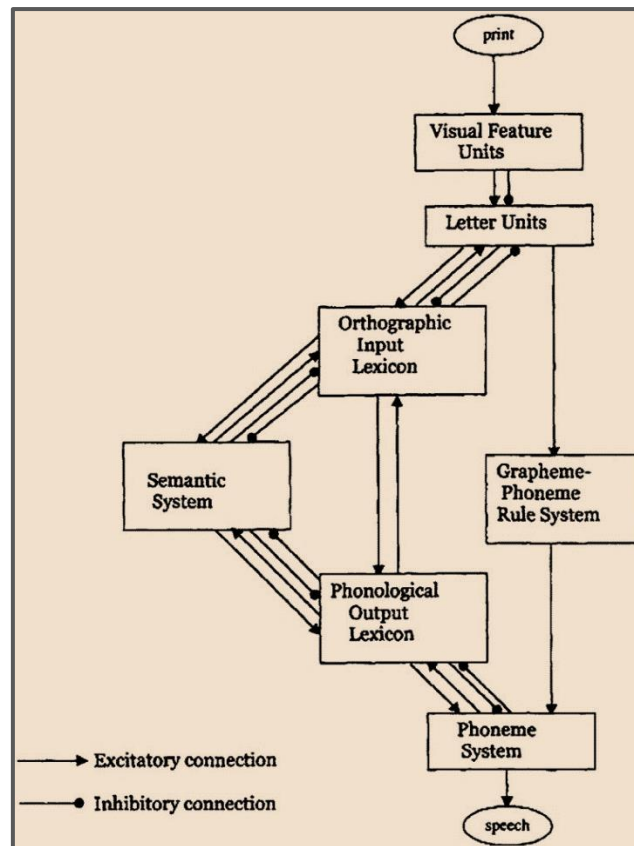
automaticity in word recognition, resulting in rapid and accurate decoding. Cognitive resources are freed up for higher-order thinking, leading to improved comprehension.

Ehri's model provides a nuanced framework for educators and researchers to understand the sequential development of reading skills, with a specific focus on the acquisition of letter-sound relationships and the evolution from basic reading strategies to advanced, automatic reading processes. Ehri's model has contributed significantly to understanding the sequential stages of reading acquisition. However, the model has been criticised for its emphasis on decoding skills to the relative neglect of higher-order comprehension skills. Reading comprehension is a multifactorial process, influenced by vocabulary, background knowledge, and cognitive strategies. Critics argue that a more comprehensive model should integrate decoding within a broader framework of comprehension. Additionally, the model tends to focus on cognitive aspects while overlooking motivational and affective factors that play integral roles in reading development.

Both of the aforementioned developmental models of reading have received some criticism. The static nature of the models' phases has been criticised because they appear to suggest a unidirectional progression through discrete phases. However, it is more likely that the stages are marked by the strategies that are most dominant and that there is some considerable overlap in these strategies while skills are developing. For example, Ramus (2004) argues that alphabetic reading is never completely abandoned since it is often required for new words. Rather, Ramus argues, the *more* the orthographic lexicon grows, the *less* alphabetic strategies are used.

### 2.2.3 The dual-route cascaded model of reading

The dual-route cascaded (DRC) model of reading (Coltheart et al., 2001) provides further evidence of the crucial interplay between visual processing, phonic skills and language in reading acquisition. This model builds upon the three-phase model (Frith, 1985) by proposing that individuals utilise two distinct routes to read words. The model explains that visual features of a word are initially detected before being identified as abstract letter units. At this stage, the model suggests that individuals use one of two routes to reach the phoneme output system, which simply means correctly producing a word. One route is the sub-lexical route, which utilises the grapheme-phoneme rule system (letter-sound rules) to lead directly to the phoneme output system. The lexical route involves the recognition of a word at an orthographic level before linking it to the semantic system, or the lexicon, to enable the accurate recognition of the word. Words are then linked to knowledge of how the word sounds, thus allowing an individual to produce the written word (see Figure 6).



**FIGURE 6** THE DUAL-ROUTE CASCADED MODEL OF VISUAL WORD RECOGNITION (COLTHEART ET AL., 2001).

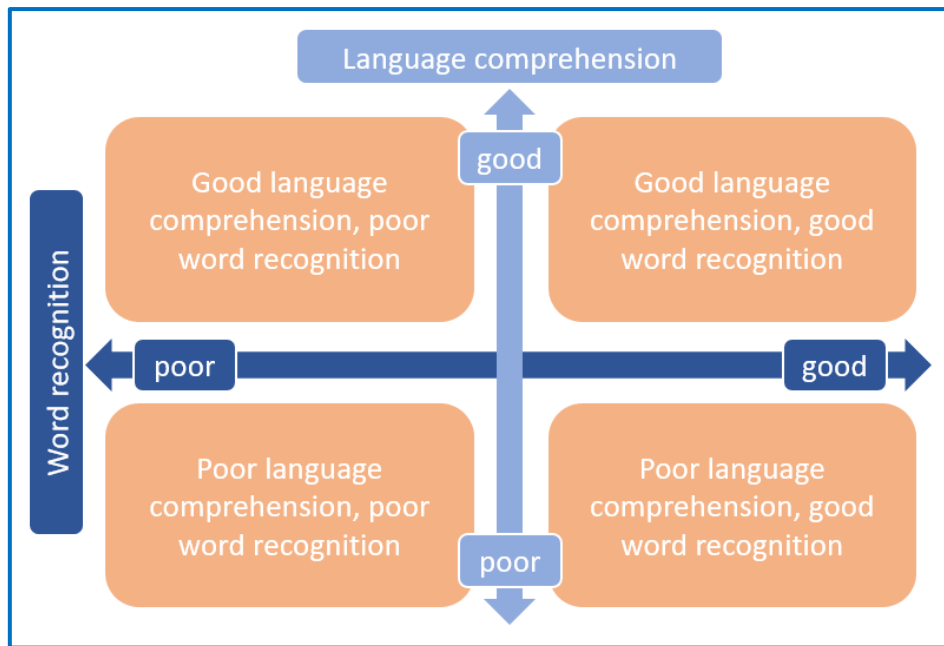
When considering an early reader employing the sub-lexical route, this model would suggest that an individual would make efforts to recognise and read new words using unassimilated letter-sound correspondences, or those that have yet to be assimilated into the semantic system, and therefore carry no orthographic value to the individual. The lexical route, however, relies on visual recognition of whole words or orthographic units (such as syllables) entering the semantic system, linking to word meaning, and ultimately the phoneme output system. The lexical route is less cognitively demanding and the one that readers will purportedly progress towards through repeated exposure to text, ultimately leading to increased fluency. The model recognises and emphasises the critical role of language: individuals who can quickly recognise and recall words using the visual detection

pathway must rely on a lexical store and therefore must have knowledge of the word's meaning.

The relationship between the lexical store and language knowledge is interdependent: individuals must be exposed to and be able to access a wide range of language to develop language skills and expand their lexical store. The model also emphasises the importance of using “salient visual features” in initial decoding attempts (Masterson et al., 1992). Support for the dual-route theory is provided by Jobard et al. (2003) who conducted a meta-analysis of 35 neuroimaging studies that looked at word and pseudoword reading. Jobard et al. reported that their meta-analysis showed evidence of neural networks that responded to different word types, indicating that there are separate brain regions reactive and therefore involved in the two routes to read words.

#### 2.2.4 The simple view of reading

Gough and Tunmer (1986) developed a framework that aimed to conceptualise reading difficulty by considering word reading (or decoding) and language comprehension, proposing that reading skills develop as a result of both. These skills are considered to be two distinct, yet interrelated, capacities (see Figure 7 below).



**FIGURE 7** A GRAPHICAL REPRESENTATION OF THE SIMPLE VIEW OF READING (GOUGH & TUNMER, 1986).

This framework features two overlapping continuums that create four quadrants representing different reading profiles with varying strengths and areas of difficulty. Individuals with strong decoding skills and language comprehension are classified as “good readers,” while those with strong decoding but poorer language skills are referred to as “poor comprehenders,” or hyperlexic in the original model. According to their model, Gough and Tunmer identified individuals in the quadrant with strong language comprehension but poor phonological skills as “dyslexic,” while they describe a third type of reading difficulty, which they refer to as the “garden variety” type, who are those individuals for whom both language comprehension and decoding is challenging.

Although the simple view of reading has been criticised for oversimplifying the complex processes involved in reading development, it has proven to be a powerful and influential framework in understanding reading difficulties, particularly as it does not simply reduce reading to the singular process of decoding. In fact, Nation (2019) noted that the

model has had significant impact since its inception over thirty years ago, particularly in promoting an understanding of the relationship between spoken language and decoding skills in the development of reading ability.

A more complete understanding of the skills that underpin reading is provided by the Scarborough Reading Rope (Scarborough et al., 2001). This model interweaves two primary strands: word recognition and language comprehension, each comprising multiple subcomponents. The word recognition strand includes phonological awareness, decoding, and sight recognition of familiar words, which are foundational for automatic and fluent reading. The language comprehension strand encompasses background knowledge, vocabulary, language structures, verbal reasoning, and literacy knowledge, all contributing to the deeper understanding of text. As these individual components develop and strengthen, they intertwine to form a robust and resilient "rope" that supports proficient reading. The Reading Rope underscores the necessity of addressing both decoding and comprehension skills in a balanced and integrative manner to foster reading proficiency. Muter et al. (2004) provided support for this notion in a longitudinal study which found that word recognition skills were consistently predicted by early measures of letter knowledge and phoneme sensitivity. Vocabulary knowledge, rhyme skills, and grammatical skills did not have a direct predictive effect on word recognition. Conversely, reading comprehension was influenced by prior word recognition skills, vocabulary knowledge, and grammatical skills. These findings imply that different sets of skills are critical at various stages of reading development but ultimately, as the Scarborough reading rope would suggest, are all important for reading development.



The Scarborough reading rope highlights the important interplay between language comprehension, encompassing a range of higher order reading skills, and word recognition including phonological awareness. Stanovich (2009) expands on this important relationship in their discussion about reading ability and the Matthew effect. The Matthew effect can be conceptualised simply as “the rich get richer, the poor get poorer.” Stanovich draws comparisons in reading and highlighted the vital role that language exposure plays in the development of reading skills. Hart and Risley (1995) estimated that children from language-rich backgrounds entering school will have heard approximately 32 million more words than their peers from less language-rich backgrounds. If reading is to be understood as an interplay between word decoding and language comprehension, it is therefore reasonable to assume that those children that have been exposed to less language, written or spoken, are going to be at a disadvantage when they begin to learn to read. This understanding has important implications for the teaching of reading.

## 2.3 Chapter summary

This chapter has outlined major theoretical models of reading development. In doing so, it has provided some account of why children may encounter difficulties when learning to read. While the theories outlined above provide an account of some of the processes involved in acquiring the skills to read, they do little in the way of guiding *practice* when individuals have difficulties with reading. This will be the focus of the next chapter.

## Chapter 3: Supporting reading difficulties – a systematic literature review

### 3.1 Chapter overview

This chapter will focus on approaches to reading when individuals are facing reading difficulties. It will begin by taking a critical look at the main approach to teaching reading in primary schools in the UK, namely SSP and will move on to look at alternative approaches when phonics has not been successful. A systematic literature review<sup>6</sup> of evidence around alternative approaches to support reading difficulties will be presented which aims to give a rationale for the approach adopted in this research.

### 3.2 Phonics and its evidence base

The Education Endowment Foundation (EEF) state that SSP approaches aim to develop children's understanding of the relationship between written letters and the sounds they make. Its aim is to systematically teach the relationships between these letters and sounds and emphasises the importance of decoding words by sounding them out and combining them, or 'blending.' Togerson et al. (2006) suggested that phonics enables children to make better progress in reading than no phonics, is superior to analytic phonics<sup>7</sup> and that the

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<sup>6</sup> The systematic literature review will look exclusively at alternative approaches to supporting reading development for those who are identified as having reading difficulties and that draw on strategies beyond phonics.

<sup>7</sup> Analytic phonics is an instructional method for teaching reading and writing that involves identifying the common phoneme in a set of words that contain the phoneme under study, rather than pronouncing individual phonemes associated with specific graphemes. For instance, in the context of reading, individuals might examine words such as "pat," "park," "push" and "pen" and identify the common phoneme. Similarly, for writing, children rely on inferential learning to realise that the initial phoneme in /pɪg/ is the same as that in /pæt, pɑ:k, pʊʃ/ and /pen/ and must be written with a specific grapheme.

emphasis on 'coding' (i.e., the relationship between grapheme and phoneme) enabled children to make better progress than whole language approaches. The EEF (2022a) synthesised 121 studies which included studies that took place in 109 primary schools and 10 secondary schools, concluding that phonics as an approach for word reading has a high impact for a very low cost. Synthesising the effect sizes for the aforementioned number of studies, the EEF conclude that SSP equates to an average of five additional months' progress over the course of the year.

Bowers (2020) states that there appears to be a general consensus among those in schools and indeed in academic circles that reading instruction through phonics is more effective than other approaches, such as whole language approaches. Solity (2020) discusses the pervasive state of flux in academic circles with regards to reading approaches in what is sometimes referred to as 'the reading wars.' Solity discusses three phases of the reading wars which reflect this state of flux. In phase 1, practice was influenced by the Plowden Report (CACE, 1967) which recommended immersion in high quality books and drew on Piagetian theory purporting that children would learn to read when they were ready. In phase 2, after criticism that standards in reading had dropped due to a lack of a rigorous and systematic approach, a focus on phonics increased. This was reinforced by national reports in the UK and the USA (National Reading Panel, 2000; J. Rose, 2006, 2009). Phase 3, according to Solity, can be seen as the full and firm embedding of phonics as the single approach to teaching word reading in primary schools in the UK, initiated by an Ofsted report on the practice of 12 outstanding schools (Ofsted, 2010) and the reaffirmation of this position with government mandate in 2020 (DfE, 2021). This section will take a closer look at some of the robust research into phonics instruction to provide an overview of the evidence and therefore a way forward for the systematic literature review presented later in this chapter.

The EEF recently added to their evidence base on specific SSP approaches in an efficacy trial of reading programmes guided by the principles of SSP in one of the largest control trials of reading approaches conducted in the UK. Pupils in 131 schools received phonics instruction through one of two programmes; Read Write Inc. (RWI; n=4,914) or Fresh Start (n=2,748; EEF, 2022). This was a cluster randomised control trial (RCT) meaning that participants were randomised at the school level. This trial, although published in 2022, was conducted between 2016 and 2018. Key findings from this study indicated that children in receipt of RWI phonics made, on average, one month's additional progress when compared with children in other schools. Those who received Fresh Start made two months *less* progress when compared to their peers. This efficacy trial had some flaws, including issues with the implementation of the schemes and fidelity to the programmes, which is common in intervention studies. Additionally, authors refer to the additional benefit for individuals in receipt of free school meals (FSM; a measure that can broadly indicate those from a lower socio-economic status) which are made on the basis of small subgroups of pupils. While authors point to the fact that participants made extra progress in phonics, these skills were arguably not generalised, since additional measures of reading outcomes are reported to have low to moderate security ratings and none of the children made any additional progress in writing. This report provides additional insight into the effectiveness of approaches drawing on SSP as an intervention for young people who are at risk of or who are already experiencing reading difficulties. Fresh Start is described as a 'catch-up' literacy programme that uses principles of SSP delivered daily for an hour. The participants in this trial were pupils in Years 5 and 6. Since these children would have already received initial teaching through SSP, this approach is, arguably, counter intuitive. In fact, this trial provides evidence that the use of

remedial phonics programmes when children have already been in receipt of phonics instruction leads to worse outcomes in national tests of reading and writing (EEF, 2022b).

Bowers (2020) takes a critical look at the evidence supporting the notion that SSP is a superior method of reading instruction in a review of 12 meta-analyses that assessed the efficacy of SSP. Bowers refers to the NRP's findings (NRP, 2000) which have been cited 24,000 times and which continue to be used as support for SSP approaches. Ehri et al. (2001) concluded that "[SSP] instruction helped children learn to read better than all forms of control group instruction," (Ehri et al., 2001, p.393). Bowers states that these claims may be unfounded since there are significant limitations with this study, including the lack of evidence that "poor readers" were not supported to develop their reading skills through SSP. Criticisms are also levelled at the NRP report on the basis that it lacked rigorous control through comparisons with unsystematic phonics. In summarising the meta-analyses, Bowers asserts that the claims that systematic phonics is better than other methods, including whole language or structured word enquiry including morphological approaches, are unfounded. The author does state, however, that learning grapheme-phoneme correspondences may remain important for beginner readers.

Fletcher et al. (2021) are critical of Bowers's assertions, identifying several issues with Bowers's conclusions. These issues included problems of definition (in that they assumed that phonics approaches are driven predominantly by phonology rather than meaning) and the assumption of a "phonics-first" approach, disagreeing with Bowers that phonics-first represents the widespread view of practitioners. Additionally, Fletcher et al. suggest that Bowers might not be asking the right question and refer to the reading wars which ostensibly pits phonics against whole language approaches. Bowers uses broad terms such as

“alternative reading methods” and authors contend that Bowers attempts to make simple comparisons between unimodal approaches (e.g. phonics / morphology / meaning) which they believe is an outmoded comparison. This claim is made on the basis that most reading approaches tend to embrace the complexity of teaching reading through a combination of approaches that incorporate explicit instruction about GPC and a range of practices aimed at improving fluency, comprehension and language. Both authors, however, agree that there may be some publication bias in the evidence that has been presented leading to an overrepresentation of phonics as the gold standard in reading instruction.

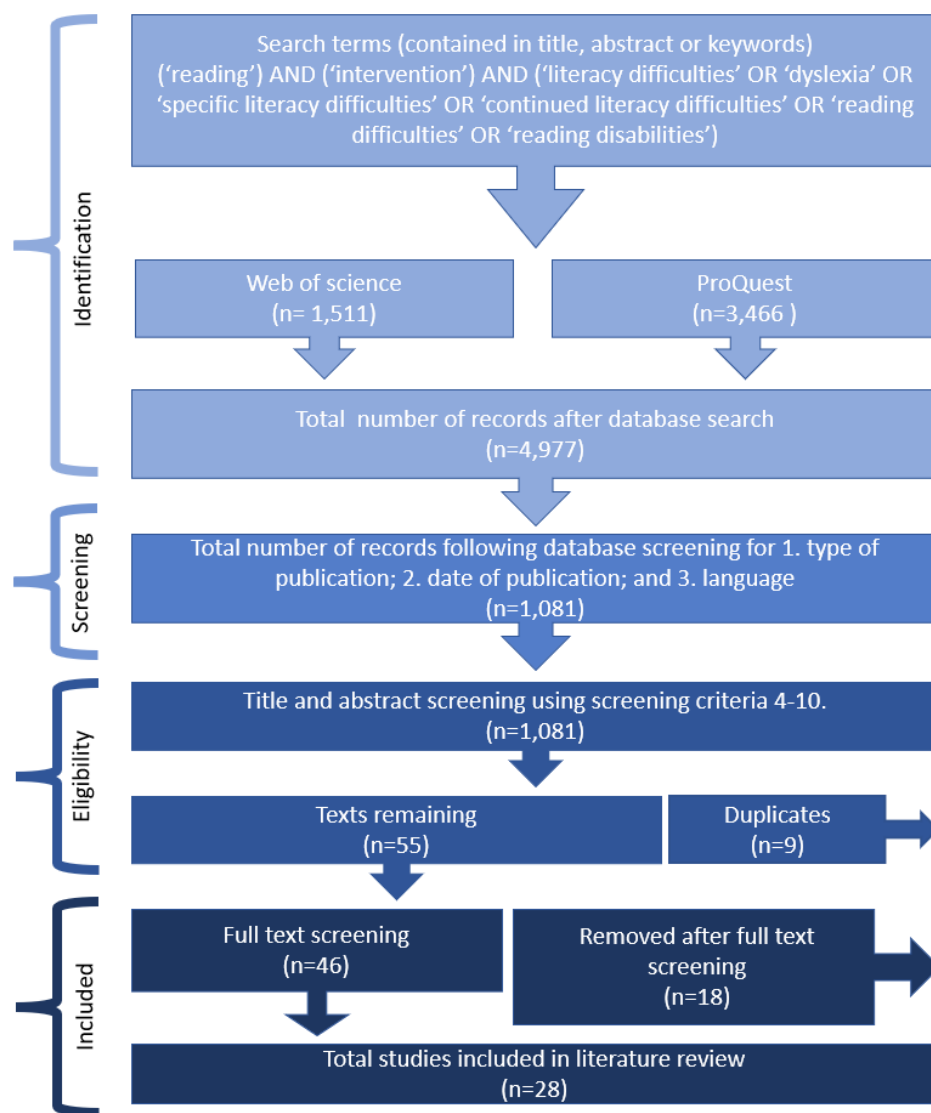
The evidence base for phonics is mixed. Given the nature of reading policy and practice in UK schools, and the exposure that children have to reading through phonics as a result of governmental mandate (DfE, 2021; 2022b), it can be comfortably assumed that children receive a large amount of direct instruction through phonics. For those children who continue to present with literacy difficulties, other methods of instruction may be necessary. The following section will review the evidence into interventions using alternative methods to phonics supporting individuals identified as having reading difficulties.

### 3.3 Literature review strategy

In order to get a clear understanding of the evidence base for interventions to support young people with reading difficulties that do not use a phonics first approach, a systematic literature review was conducted. The systematic literature review had the following research question:

*What are the effects of reading interventions, excluding phonics instruction, on the reading accuracy and overall reading ability of children aged 5-11 years in the UK, USA, or Australia?*

Two of the largest databases for educational and psychological research were searched ('ProQuest' and 'Web of Science'). Preliminary searches were carried out in order to refine the search terms and as a result, a definitive search was reached. Boolean operators were used in order to ensure that the search was appropriately targeted as well as ensuring that appropriate literature was included. The search was limited to reading interventions that focused on reading difficulties (which were encapsulated by combined Boolean operators to cover the varying terminology in the literature, for example, dyslexia, specific literacy difficulties and continuing reading difficulties). Figure 8 provides detailed information about the steps involved in the systematic literature review, the terms used and the outcomes at each stage.



**FIGURE 8** SYSTEMATIC LITERATURE REVIEW SEARCH STRATEGY.

Inclusion and exclusion criteria were determined in order to establish which studies would be included in the review. Studies were included if they featured in a peer-reviewed journal and were written in English. In order to ensure that the most contemporary literature was included, studies published after 2009 until 2024 were included. Since this is a very large body of evidence, and given the significant impact on the teaching of reading of the independent Rose Review (2006) and Rose Report (Rose, 2009), this was deemed an appropriate start date for the review. Full screening criteria, including the type of study,



intervention and outcomes measured in the study can be found in Appendix <sup>i</sup>. This study was concerned with understanding the evidence base for supporting young people experiencing literacy difficulties at primary school age (four to eleven years in the UK), and as such, research including participants outside of that age bracket was excluded. Research needed to have taken place in the UK, the US or Australia where the first language is English and the principal approach to teaching reading is through phonics.

The search took place in February 2023 and remained open until January 2024. After database screening of abstracts and titles using inclusion criteria 1-4, 1,081 articles were returned. The title and abstracts of these articles were then reviewed using inclusion criteria 5-9 which resulted in 46 articles (after removing duplicates). After full text screening, 28 studies remained. A summary of the studies that remained is provided in Table 1 below.

**TABLE 1 SUMMARY OF THE STUDIES INCLUDED IN THE SYSTEMATIC REVIEW**

Author/s	Year	Country	Participants (N)	Age (School year)	Intervention /study type
Apel and Diehm	2014	US	158	K*, Grades 1-2	Morphological
Benner et al.	2022	US	213	Grades 5-8	Instructional
Chen and Savage	2016	US	38	Grade 1-2	Rational analysis of content
Daki and Savage	2010	UK	14	Year 6	E&R^ factors
Denton et al.	2010	US	182	Grade 1	Instructional
Denton et al.	2021	US	48	Grades 2-4	E&R factors
Donegan et al.	2020	US	342	Grade 4	Multicomponent
Donegan and Wanzek	2021	US		Multi	Meta-analysis
Dunford and Hill	2023	UK	5	Year 5	Rational analysis of content
Duff et al.	2014	UK	145	Year 1	Instructional
Gellert et al.	2021	US	332	Grade 5	Morphological
Georgiou et al.	2021	US	48	Grade 3	Morphological
Lettington and Hill	2022	UK	8	Year 3	Rational analysis of content
Maynard et al.	2010	US	224	Grade 1	Instructional
Miciak et al.	2018	US	484	Grade 4	Multicomponent
O'Connor and Solity	2020	UK	3	Year 4	Rational analysis of content
Roberts et al.	2018	US	419	Grades 3-5	Multicomponent
Roberts et al.	2021	US	108	Grades 4-5	E&R factors
Skocic Mihic et al.	2022	Australia		Multi	Mapping study
Toste et al.	2017	US	59	Grades 3-4	Multicomponent
Toste et al.	2019	US	109	Grade 4-5	Multicomponent
Vaughn et al.	2016	US	485	Grade 4	Rational analysis of content
Vaughn et al.	2019	US	280	Grades 4-5	Instructional
Vaughn et al.	2022	US	128	Grades 3-4	E&R factors
Wanzek et al.	2017	US	451	Grade 4	Multicomponent
Wanzek et al.	2020	US	306	Grade 4	Multicomponent
Wolgemuth et al.	2014	Australia	308	Year 1	Instructional
Young	2018	US	50	Grades 2-3	Instructional

\*K = Kindergarten, ^E&R = Emotional and regulatory

Rather than presenting the studies in chronological order, they will be presented in a manner that allows for clarity of understanding using sub-headings to guide the reader (Wakefield, 2014).

## 3.4 Systematic review of the evidence

### 3.4.1 Instructional approaches

Denton et al. (2010) reported the effectiveness of a small group reading intervention for 'at-risk readers' in 31 schools with varying contexts. The study drew on methods used in an earlier RCT (Mathes et al., 2005) that used Responsive Reading Instruction (RRI). The RRI approach incorporated daily 40-minute sessions for around thirty weeks delivered by trained teachers, with a focus on direct and explicit teaching of phonic skills, text reading strategies and modelling and instructional scaffolding. The lessons were designed in response to the needs of the children taking part. In this large-scale efficacy study, 182 students (*M* age 6 years, 6 months) received the RRI intervention while 240 students (*M* age 6 years, 7 months) were in the typical school practice group. Authors assert that the main focus of the activities in the intervention, when analysed, were word study, fluency and comprehension. This study reported that individuals in the experimental condition improved in measures of word reading and comprehension compared to the control group, although results were mixed for phonological awareness. Authors point to the fact that teachers in the typical school practice condition may have spent a larger portion of time engaged in phonics instruction and as such, this group may have improved in the skills related to explicit phonic teaching. However, they did not improve in word reading. This study had a large pool of participants where 91% of at-risk readers who received the intervention were able to read adequately by the end of Grade 1 (ages 6-7). Despite that, its sample may not be entirely representative since the schools disproportionately underrepresented individuals from disadvantaged backgrounds. Additionally, the authors indicated that their exclusion criteria included pupils with "severe retardation," those with English as an additional language (EAL) and individuals experiencing

“emotional disturbance” among other factors. This alludes to a discrepancy model approach to identifying children with reading difficulties (Meyer, 2000), which is generally rejected by academics who argue that a component model is superior for identifying intervention (Aaron et al., 2008). It limits the applicability of this intervention since it has been reported that individuals from disadvantaged backgrounds have disproportionately worse reading abilities (DfE, 2022a). Since individuals from low SES families are often exposed to less language in the first years of life compared to their more advantaged peers (Hart & Risley, 1995; Stanovich, 2009), and early reading experiences are known to be related to later reading outcomes (Sénéchal & LeFevre, 2014), this has implications for the usefulness of this research.

Duff et al. (2014) evaluated the effectiveness of a daily 9-week intervention for children ( $n=145$ ,  $M_{age}=6$  years) at risk of dyslexia or those identified as potentially benefiting from extra support in a UK based RCT. The intervention consisted of alternate group and individual sessions which were tailored to respond to the needs of the child. The group sessions focused on storybook reading and explicit instruction of two or three target words using multi-contextual and interactive teaching methods. This study did not observe long term benefits for word reading measures, although there was a positive effect on letter knowledge, phoneme awareness and vocabulary. It is possible that the duration of the intervention was insufficient to see effects on literacy.

Maynard et al. (2010) reported on a intervention that sought to improve reading measures through repeated shared storybook reading, comparing ‘rich’ and ‘basic’ instruction to incidental exposure. This study included three groups of first grade pupils (ages 6-7) from 12 classes (total  $n=224$ ). One group received rich instruction, another basic instruction and the final group received no instruction. The intervention, in essence, involved teaching target

words during shared reading of a storybook, either in an extended manner, providing context and opportunities for rehearsal or through basic instruction, which was less involved. Participants received large group instruction for three 20-30 minute sessions in one week. Authors reported significant effects of instruction type, with rich instruction rendering the most positive outcomes. This study is limited in its applicability to word reading and perhaps is most significant in its application to supporting children to develop vocabulary and inferencing skills. However, since many of the children in the study were from disadvantaged backgrounds, perhaps one of the strengths of this approach is its suitability in addressing Matthew effects (Stanovich, 2009). This was a whole class approach and thus it is not clear whether this approach would work at a targeted level. Additionally, the amount of intervention time is not in line with what is known from extensive evidence to be sufficient to have a lasting impact (EEF, 2021).

The studies outlined above broadly compared instructional interventions with control groups receiving typical school practice. While this approach is useful in terms of identifying if an intervention is successful, it does not provide an account of why it might have been successful. Benner et al. (2022) sought to overcome this problem by comparing two instructional interventions (one based broadly on phonic principles, and another that extended the phonics based material to include development of strategies that aim to enhance flexibility in word reading strategies, particularly for longer words). The intervention was delivered to children in Grades 5-8. The subgroup ( $n=107$ ) receiving the additional support made significantly more progress in basic word reading skills than the group ( $n=106$ ) receiving only phonics instruction. This design allows the authors to tease out which parts of the intervention were most successful in producing significant results. Additionally, this study

highlights the need for flexible approaches when children are experiencing pervasive reading difficulties.

Young (2018) reported on a reading intervention (*Reading Two Impress*) that drew on principles derived from the Neurological Impress Model (NIM; a form of paired reading where a more competent reader assists a student by reading ahead alongside them, first described by Heckleman, 1966) and repeated readings (Samuels, 1979). The intervention was delivered individually to participants ( $n=50$ ) and involved selecting texts above a child's independent and instructional level reflecting a young person's interest, reading a page or paragraph together, reading slightly ahead of the pupil and asking the child to then reread the paragraph aloud independently. This pattern is continued for twenty minutes (3 days per week for six weeks). Authors reported a moderate effect size on measures of independent reading levels, although these gains were not necessarily maintained over time, with follow-up tests indicating a decrease in measures. Authors are quick to dismiss this as they also observed decreases in measures in the control group and were unable to find *any* reporting in previous studies where experimental and control groups both decrease in scores in the follow-up. Caution should be executed when interpreting the results of this study since it comes from a small group, the effects were not maintained and the authors' rationale for decreases in gains over time are spurious. However, it does provide a somewhat interesting insight into what role the adult plays in an intervention and alludes to the importance of the adult providing reassurance and a safe learning environment from which the learner is able to take risks.

Vaughn et al. (2019a) examined the effectiveness of an intervention designed to improve word reading and comprehension in a RCT with 280 fourth and fifth grade students. The intervention targeted automaticity through a mixture of systematic decoding instruction for

multisyllabic words, recognition of word patterns (including morphological approaches) and sight words. There were additional components to the intervention that centred on expository and narrative texts with both “stretch” texts (above a child’s instructional level) and fluency texts within a child’s instructional level. Children received on average 44.4 hours of instruction, though the intervention was designed to be delivered daily for 30-45 minutes. Interestingly, the reading material in this study were non-fiction texts as the researcher’s wanted to promote the application of reading to academic study. Outcomes were significantly better for the intervention group compared to the control group for measures of word reading and fluency. Researchers highlight that the focus on multisyllabic words was particularly useful for older readers. While this study was powerful in terms of its sample size and design that included randomisation, it did not investigate the language or cognitive profiles of the participants. This type of data would have allowed authors to interrogate the data to ascertain for whom this particular approach was most successful.

Instructional approaches appear to have variable success. Intervention fidelity is not, however, addressed in the studies outlined above. This may be a critical factor in understanding the effectiveness of interventions to which researchers should pay close attention. For example, Wolgemuth et al. (2014) noted that implementation fidelity accounted for between 1.8% and 15% of the variance of students’ scores in an Australian RCT with 308 students (*M* age = 5.8 years) using a computerised instructional approach (ABRACADABRA). This study highlights the need for the researcher to draw out information regarding the fidelity of an intervention in order to draw conclusions.

The studies outlined above focus on instructional methods. The content of the interventions varied and was often based on the target skill that was required. A critique of

these approaches could be the lack of meaning attached to the target skill which may make it more challenging for children to generalise the skill they have learnt. Another approach that will be explored whose focus is on creating meaning is a morphological approach.

### 3.4.2 Morphological approaches

Morphological approaches underscore the value of understanding language structure and origin. In a study that investigated the effects of a morphological awareness intervention for children from low SES homes, Apel and Diehm (2014) reported that participants randomly assigned to a small group intervention demonstrated small gains in literacy abilities. The participants (n=158 kindergarten, first and second grade students) either received the intervention for eight weeks (four times a week for 25 minutes) or were in the control group. The intervention involved explicit teaching about morphology, including understanding root words and a range of activities centred on improving understanding about affixes. One of the strengths of this study was its inclusion of students from low-SES backgrounds, which is noteworthy given what is known about the relative disadvantage faced in reading by those from low-SES groups (Hart & Risley, 1995). This potentially represents a limitation of the study as well, since it may only be generalisable to individuals from low-SES schools. Knowing that individuals from low SES backgrounds might already be at a disadvantage in terms of their word knowledge, the intervention might not be so successful when applied to general populations. Authors were not able to carry out follow-up tests and, as such, it is unclear whether these beneficial outcomes remain in the long term. However, international support for morphological approaches (see Gellert et al., 2021) indicates that morphological approaches produce large short-term effects on segmenting which has a positive impact on reading. Interestingly, in this study, it was noted that children were able to approximate meanings of pseudo words containing well-known root morphemes, indicating that the



approach was impactful in terms of generalising skills beyond the directly taught components of the intervention.

Georgiou et al. (2021) argue that morphological approaches cannot be viewed as a panacea much like many other individual approaches. In their study, participants ( $n=48$ , Grade 3) took part in a structured word inquiry (SWI) intervention or a phonics intervention. SWI involved instruction around the meaning of a word, related words, word parts including prefixes and suffixes and grapheme functionality. Neither of the interventions impacted word reading. This was an interesting finding in relation to the phonics group since the participants in this study were in Grade 3 and had already received a high degree of phonics instruction throughout their normal schooling. Authors add that the participants who were recruited were those with the most significant and pervasive reading difficulties. The phonics instruction was not successful in supporting reading development, even with the added intensity and frequency of the instruction. Both groups outperformed the control group in a test of morphological relatedness which authors claim may be more advantageous in the long run (drawing on the 'binding agent model' which proposes that targeting interrelations of etymology, orthography and phonology have longer lasting representations at a lexical level; Kirby & Bowers, 2017). This study highlights the complexity of drawing inferences from research with a very discrete focus. The design strengths allow conclusions to be drawn about the benefit of including approaches to reading which are sensitive to the morphophonemic nature of English (which phonic approaches are perhaps not). It also pays attention to a critical question in reading intervention research: what is the 'silver bullet,' and does it, in fact, exist? The *amount* and *type* of content may play a pivotal role in the success of an intervention and could be a feature of an intervention worth paying close attention to.

### 3.4.3 Interventions drawing on rational analyses of content

Chen and Savage (2016) discuss the *simplicity principle* in a RCT of an intervention that sought to teach the most common complex GPCs to 38 first- and second-grade students. Authors drew on research into the most commonly occurring GPCs (Solity & Vousden, 2009; Vousden, 2008). This research reported that there are 64 GPCs that, when combined with exception words, support the greatest generalisation of taught reading skills. This has been referred to as the *simplicity principle* which purports that content should be carefully selected so that it has optimal impact and avoids the delivery of content that produces diminishing returns on reading outcomes and can lead to *catastrophic interference* of already learned content to little or no effect (Solity et al., 2000; Solity & Vousden, 2009). The intervention, which consisted of thirty 20-minute sessions, taught the 36 most complex GPCs using popular children's fiction. There were two conditions in the trial, one that focused on locating and highlighting the GPCs through direct instruction and the word usage condition (the control group) which focused on using words in a sentence. Teaching was reinforced by spelling target words containing GPCs. Authors reported significant improvements for the group who received direct instruction based on the simplicity principle and the data indicated that second graders responded better. Authors also reported significant impacts on reading motivation. This study provided a promising insight into the positive impact of direct instruction drawing on a rational analysis of content. It was the first to report on behavioural data of an intervention drawing on the theoretical perspective of Vousden et al. (2011). One of its strengths is its inclusion of a control group that was beyond that of a *business-as-usual* control which potentially reduces Hawthorne effects.

Another study that reported on an intervention that emphasised multi-syllable word reading of common words which also had an element of building word knowledge was that of Vaughn et al. (2016). In this large scale RCT study with 485 participants in the fourth grade, children received an intervention for 35 minutes five times a week for sixteen weeks. The intervention comprised building vocabulary knowledge, text reading using narrative and expository texts and word study (which involved instruction of target words drawn from lists that were updated in response to student knowledge). The study reported gains in standard scores of reading that exceeded those that would be expected without intervention. Authors concluded that intensive intervention might be necessary for those experiencing reading difficulties and that interventions should focus on the individual profiles of the learner. One of the strengths of this study was the inclusion of participants through screening of a much larger group, meaning that those that were in receipt of the intervention ultimately were the ones with the most significant reading difficulties. This study was limited due to the control group receiving the same intervention but delivered by school staff as opposed to the researcher. As such, no between group differences were noted and authors' assertions that the gains observed were related to the intervention may thus be compromised.

The studies above indicate that intervention design should include careful selection of the content and instructional methods have varying success. While one study sought to investigate the impact of the interventions on behavioural methods, little attention was paid to emotional and regulatory factors in the design of the interventions. Self-esteem is reported to be negatively impacted in those with reading difficulties (Boyes et al., 2018; Wilmot et al., 2023) and therefore should be explored in remedial attempts.

### 3.4.4 Interventions focusing on emotional and regulatory factors

Daki and Savage (2010) reported on the effect of a solution-focused brief therapy (SFBT) intervention for young people with persistent reading difficulties. This RCT, whose participants ( $n=14$ ,  $M$  age= 11 years, 4 months) had dyslexia or other mild intellectual disability, investigated the extent to which SFBT improved reading skills and other problems relating to reading difficulties (such as self-esteem and behavioural difficulties). SFBT purports to support individuals to overcome adversity by identifying the resources they have at their disposal and focusing on solutions to enable positive futures (De Shazer, 1988; De Shazer et al., 1986). Participants received six SFBT sessions that provided them with the opportunity to identify reading resources and strategies and provided experiences of reading in an engaging environment. Daki and Savage (2010) reported that individuals in the experimental condition made gains in listening comprehension and reading fluency. It was additionally reported that individuals made progress in their competence beliefs about reading. This study, however, did not focus on explicitly teaching reading related skills and thus is limited in its applicability to those children experiencing difficulties at an early stage of reading acquisition. Its sample size was relatively small and therefore it lacks in external validity and generalisability. Additionally, SFBT approaches are heavily reliant on language, and while attempts to make it more accessible were achieved by the researchers (namely by using visuals), this approach would be difficult to achieve with those young readers whose language is not yet fully developed (Ratner et al., 2012).

Denton et al. (2021) investigated the feasibility of an intervention for children with significant reading difficulties, including dyslexia. This was a small-scale study with 48 students in Grades 2 to 4 and given the nature of a feasibility study, it followed an iterative

process with collaborators including interventionists and special education teachers. The intervention (Idea Detectives) included elements of word study, text reading and instruction around comprehension. What was somewhat unique about this study was its inclusion of an approach drawing on self-regulatory ideas including those linked with emotional self-awareness and the rehearsal of positive self-statements and teaching around growth mindset (namely, the belief that abilities and intelligences can be developed through dedication, effort and learning; Dweck, 2015). The authors report that there were not significant gains for the intervention group but did report that teachers and interventionists were positive about the intervention. There were a number of anecdotal reports of improvements in generalising of skills, for example, and the not so readily captured constructs such as the children's self-regulation skills. It provides some evidence that it may be useful to include this type of approach, or at least one that targets emotional factors related to reading, in an intervention. Conversely, interventions targeting, constructs such as self-esteem, resilience and emotional regulation in individuals with Dyslexia (see Boyes et al., 2021) may provide evidence for positive outcomes on the constructs that they *target*. This, however, may confound the role of this approach on the outcomes in *reading* and as such, it is important to pay attention to whether studies report on that detail.

Theorists have noted the high co-occurrence of reading difficulties and what is sometimes referred to as 'problem behaviours,' (namely, externalising or internalising behaviours, oppositional behaviour or low mood and anxiety). Some theorists have suggested that reading difficulties may cause behavioural problems (Griffiths & Snowling, 2002), while others suggest it could be the other way round (Roeser et al., 2001). The causal mechanism is complex, and it is likely that the origins of each of these phenomena are interdependent and

bi-directional in nature where a negative cycle of reading related difficulties and behaviour problems perpetuate further instances of both. What is important to note is the impact of this on outcomes in reading interventions. Roberts et al. (2021) investigated the extent to which problem behaviours were associated with responses to a multicomponent reading intervention. Authors identified a subsample of a larger sample in receipt of the intervention (Vaughn et al., 2019b). It was reported that higher levels of 'problem behaviour' were correlated with worse reading outcomes. The study is limited firstly because it collected the behavioural data retrospectively and secondly because the intervention was not designed to target the 'problem behaviours' described by the researchers. However, it does highlight the significant role that emotional factors play in responses to instruction and provides a case for targeting them directly.

The effects of targeting emotional factors related to reading must be considered in line with the type of intervention that is being delivered and studies often fail to provide adequate controls to be able to tease this difference out. This is because many studies, such as the aforementioned, compare reading interventions with an element of emotional instruction within a typical reading intervention against a business-as-usual control. One study that did attempt to look more discretely at the impact of the emotional instruction element was that of Vaughn et al. (2022). This study, with 128 Grade 3 and 4 pupils, had three conditions: two of the groups received a reading intervention with either anxiety management (AM) instruction of math fact practice and the other was the control group. The anxiety management instruction broadly drew on principles of cognitive behavioural therapy (Fenn & Byrne, 2013). Participants in the AM group made significant gains in reading comprehension compared to the control although the group that received math instruction

also outperformed the control group and there were no significant effects on other measures of reading. Authors noted that the descriptive data indicates that the AM group appeared to do better and importantly that reading anxiety moderated the effect of AM instruction. This study's strength lies in its inclusion of a third group also receiving a reading intervention, indicating that the effects of the AM instruction were due to that itself rather than the reading intervention more broadly.

The picture outlined so far is that a variety of methods show signs of effectiveness at targeting reading difficulties. While this is promising, it also presents a question of *what* to include when designing an intervention. One method of overcoming this is using a multicomponent approach, where various evidence-based approaches are drawn on in one intervention.

### 3.4.5 Multicomponent interventions

Multicomponent interventions draw on a range of theoretical principles. Toste et al. (2017) reported on the efficacy of a multimodal intervention whose content centred on multisyllabic word reading alongside motivational beliefs training. This RCT had three conditions: multisyllabic word reading alone, a combination of multisyllabic word reading and motivational beliefs training and a business-as-usual control for 59 third and fourth graders. Multisyllabic word reading interventions typically include morphological instruction and authors contended that this is an important element of instruction for struggling readers, particularly those that are slightly older, since they are likely to encounter more words with multiple syllables as they engage with increasingly complex text. It was asserted that skilled readers use elements of morphological knowledge when reading unfamiliar words. This study also drew on ideas about motivation and the increased experiences of failure that individuals

who have reading difficulties are bound to have had. Chapman and Tunmer (1997) discussed the strong evidence that less skilled readers have more negative motivational beliefs, and discussed the notion that this could be linked to reading experiences and development of self-concepts around reading. Motivational beliefs were targeted in this intervention through scaling activities and the use of positive self-talk and generated self-motivated statements. This study reported positive effects of both multisyllabic word reading and motivational beliefs training. There was no difference in both treatment groups, however, the results indicated that the group that received motivational beliefs training outperformed both groups in terms of how they attributed success. Importantly, the effects noted in this study were replicated in a later study by the same authors (Toste et al., 2019) with a larger group of 109 fourth and fifth grade students providing strong support for the approach.

This study has some strengths, particularly relating to its design and the use of multiple treatment conditions. Authors claim that the study offers tentative support for the use of explicit instruction based on motivational beliefs. It does not, however, discuss the mechanism by which motivational beliefs training purports to support reading development. For example, it does not address whether the training received in this intervention aligned with Conradi et al.'s (2014) hierarchy of motivation and as such whether it was goals, beliefs or predisposition that was effectively addressed to have a positive impact on reading. Additionally, authors only had one measure of "motivational beliefs," which was the attribution of success or failure, and arguably this does not measure the broader concept. Nonetheless, it is an interesting indication about the possible impact of targeting individuals' beliefs about themselves as readers.



Wanzek et al. (2017) reported on a multicomponent intervention for 451 Grade 4 students using an intervention named 'Passport to Literacy' which authors report is a widely used programme in the USA. It is designed to be implemented for one school year with up to 120 lessons broken into twelve 10-day 'adventures.' The programme incorporates elements that target phonics, word recognition, fluency, vocabulary and comprehension. It uses metacognitive approaches including, for example, strategies to break larger words down into constituent syllables, sight word reading and word families among other things. The intervention also included an element of teaching to understand text. Authors reported that the treatment group (compared to a control group who received a school-based intervention) significantly improved on measures of reading comprehension but there were no significant effects on word reading. Authors reflect that the effect sizes for reading comprehension are large at 0.38, exceeding the effect size criteria set by the What Works Clearinghouse (2020). However, this is limited to reading comprehension probably because, while the intervention is multicomponent in its approach, there is limited focus on in-depth vocabulary instruction and their analyses revealed that on average, the proportion of the intervention dedicated to text reading and decoding was 17% and 12% respectively. One of the strengths of this study was its high degree of fidelity and dosage. The study additionally included a large range of EAL individuals. However, given that the majority of them were Hispanic, the findings from this study may not be generalisable to students from other backgrounds or indeed for non-EAL children. Moreover, the approach may not be generalisable to children from language backgrounds with different orthographies. Nonetheless, this approach was successful in achieving accelerated progress in reading comprehension (however, not for word reading).

In a continuation of the previous study, Wanzek et al. (2020) discussed the effectiveness of a multicomponent reading intervention in a large scale reading study with 306 pupils in Grade 4 who were assigned to either an intervention group or control. They received instruction through the 'Voyager Passport' programme. This focused on a variety of strategies aimed at improving word recognition (such as decoding single syllable words at the beginning moving on to multisyllabic words later). The other portion of the intervention focused on strategies for understanding text including vocabulary instruction. The authors recruited participants who scored below the 15<sup>th</sup> percentile in a measure of reading which means that they had a broad range of participants included and did not limit their sample to those who had a reading difficulty defined by a label. This study reported significant gains in word reading but, importantly, also reported significant gains in reading fluency, which is often a measure that reading interventions fail to make an impact on. This study reported that the intervention was delivered with a high degree of fidelity which represents a strength in this particular field of study. Authors failed, however, to measure any impact of the intervention on language comprehension which may have afforded greater insight into the 'why it worked' aspect of the study, particularly as the intervention focused on vocabulary instruction. This is an important question; particularly as other studies have suggested that instruction about word meaning does have a positive impact on word reading. Austin et al. (2022) explain this effect through Connectionist models and the Lexical Quality Hypothesis<sup>8</sup> (Perfetti & Hart, 2002; Seidenberg, 2005).

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<sup>8</sup> Connectionist models broadly hypothesize that the overlapping domains of phonology, orthography and etymology or meaning have the greatest impact on reading. The Lexical Quality Hypothesis proposes that being able to accurately process words with a degree of flexibility is facilitated by high quality representations in the three aforementioned domains which is only made possible through reading experience.

Multicomponent interventions appear to be effective. It is important to note that not all multicomponent studies report significant gains in reading measures. For example, Roberts et al. (2018) examined the effectiveness of a multicomponent after school reading intervention and reported no significant effects on any measures of reading. This research raises the question the legitimacy of using afterschool time as an opportunity to intensify reading instruction, providing a sound rationale for intervention contained within school time. The question around timing in interventions is an important one which will be expanded upon subsequently.

### 3.4.6 Intervention intensity and duration

An important question about the intensity with which interventions should be delivered is discussed in a study by Donegan et al. (2020). In this RCT, authors delivered two sequential interventions at different levels of intensity. The intervention, 'Passport,' centred on two major components whose strategies were either word study (instruction around letters and sounds, word parts and decoding strategies) and reading for meaning, (instruction around vocabulary and reading comprehension strategies such as predicting, sequencing, asking and answering, summarising and clarifying). Authors reported that those with the most significant reading difficulties only responded when they were in receipt of the intervention with a higher degree of intensity of delivery. However, caution must be taken when interpreting the results of this study, since the authors are attempting to compare two separate groups (each with their own control group) with one another. It is therefore not possible to draw causal inferences about these outcomes. Additionally, the authors relied on the practitioners in schools to identify the children with the most severe reading difficulties (termed as individuals with 'reading disability' in this paper) and as such, this may not be an accurate representation since no formal testing took place. Nonetheless, it is an important

and interesting finding that points to the notion that *dosage* has an important role to play in any intervention.

Miciak et al. (2018) reported on the effect of a one year versus two year intensive reading intervention for 484 Grade 4 pupils from 17 schools in the southwestern United States. Students were assigned to a one-year condition, two-year condition and a business-as-usual control. The intervention in the first year comprised of instruction related to vocabulary, word study and text reading and in the second year, there was an added self-regulation component. Text-based reading included different types of text aimed to improve understanding through a mixture of choral / partner / independent reading and summarising frequently and easier texts with reduced levels of unfamiliar words. Word study included phonic strategies, whole word sight reading and explicit vocabulary instruction. In the second year, self-regulation was taught which comprised of children setting goals of numbers of new words to learn and reflecting on goals related to motivational beliefs about oneself. Students in the two-year condition made significant gains in word reading and fluency compared to the one-year group and the control group, although these effects were not present in reading comprehension. Despite that, this study does report on an interesting point: that the addition of a 'self-regulatory' component, based on targeting motivational beliefs, appears to have a beneficial outcome in terms of some measures of reading. Interestingly, authors discuss the difficulty in capturing gains in reading comprehension due to what they refer to as diminished malleability of reading comprehension. They discuss the change to the 'task' of reading comprehension over time, with earlier texts being limited in their complexity meaning word-level skills are often highly predictive of reading comprehension which changes with more complex texts that require more advanced language and background knowledge. Authors are

tentative in the conclusions they draw from this study, warning that no single study should form the basis of decision making, particularly with something a ‘high stakes’ as reading. Rather, they should be interpreted in the context of the body of evidence. They point to an important point that can be taken away from the body of evidence: that there is “no silver bullet to remediate years of difficulty in reading” (Miciak et al., 2018, p. 15). They additionally discuss the significant impact of publication bias, reflecting in great detail on the importance of reporting on studies with null effects. This is a particularly salient point when one takes into consideration the inflation of effect sizes that are produced by meta-analytic studies that draw on research that is already biased in its account due to bias in publications favouring the reporting of studies with significant results.

#### 3.4.7 Interventions: a role for EPs?

Two recent small-scale studies have provided some interesting insight into the practical role that EPs can have in the design and implementation of reading interventions in schools. A study by O’Connor and Solity (2020b) examined the extent to which an intervention based on instructional psychology and teaching the most relevant content (adopting the ‘simplicity principle’) impacted on reading outcomes. The study reported that the three children included made progress in a range of standardised measures of reading. Similarly, Dunford and Hill (2023) reported that five children, all of whom spoke English as an additional language, made progress in their ability to read the most commonly occurring words after having taken part in an intervention that taught that content directly and used visual methods as the main mode of instruction. Both of these studies highlight the importance of including ‘real’ books which are known to contain a more realistic representation of the most commonly occurring words (Solity & Vousden, 2009; Vousden et al., 2011). While these case studies were small in their sample and lacking in valid control groups, they do provide

promising insights into methods that could be used to enhance reading outcomes. Further investigation is warranted using a larger sample size and with a valid control to assess the validity of this approach.

### 3.5 Pilot study

In a pilot study that sought to refine the research questions for this thesis, the author carried out a single case study with eight pupils (*M* age at the beginning of the study: 7 years, 9 months) in a community school in an inner London local authority. The study sought to investigate an approach similar to one described in a small scale case study reported by O'Connor and Solity (2020b). Lettington and Hill (2022) designed an intervention for eight children with persistent reading difficulties in a school in a LA in London. The intervention taught the 100 most commonly occurring words through direct instruction, used 'real' books for reading material and applied principles derived from paired reading to support the application to reading of skills learnt in the intervention. The intervention was designed to be delivered daily for 10 weeks, but due to issues with staffing, the intervention was delivered significantly less than that and in total under half of the intervention was delivered. Despite that, all but one of the children made gains in measures of word reading and comprehension and some made advancements in their fluency. Additionally, measures of confidence and views of reading, obtained through the Progress in International Literacy Study scales (PIRLS; Mullins et al., 2017) indicated that the pupils felt more confident and that they did not enjoy reading less after the intervention. Following the implementation of the intervention, an interview was carried out with the facilitator which afforded great insight into the practicalities of the delivery of the intervention. These insights informed some of the adaptations to the current study, including the mode of delivery (such as resources being

provided in a digital format) and some of the practical aspects (such as the intervention being crafted in an 'off the shelf' format).

### 3.6 Summary

A recent mapping study from Skocic Mihic et al. (2022) explored the types of interventions used to support struggling readers. Current trends in reading interventions, according to authors, include strategies focusing on self-regulation processes and the use of ICT to support delivery. The current review of literature has shown that there are promising, and alternative, ways to support the development of reading skills that do not draw directly on SSP. These may be worth developing further. It would appear that a balanced and broader approach might be appropriate to support individuals experiencing reading difficulties, and that this approach should be multi-faceted rather than drawing on one single approach, such as phonics. Evidence from meta-analyses provides a powerful argument that reading interventions should address “multiple aspects of foundational reading” (Gersten et al., 2020, p.418). Donegan and Wanzek (2021) share this view, adding from their own meta-analysis that interventions which were multicomponent in their approach predicted significant effects on standardised measures of reading. Authors added that interventions in smaller groups were associated with larger effect sizes. As such, evidence from the literature review and drawing on reading theory would suggest that the content of a successful reading intervention should be multicomponent in nature. There is a clear rationale for content being carefully selected, drawing on the simplicity principle, and that in order to support generalisation, the intervention materials should be judiciously selected to reflect real world literature. A significant proportion of the studies reviewed discuss the importance of dosage and point to the notion that individuals already experiencing difficulties may require a more

intensive approach. Emotional factors are also important and, seeing the significant impact that reading difficulties has on the development of self-esteem and confidence, any approach to support struggling readers should include a method of promoting positive reading self-image.

### 3.7 Research questions

The present study had the following research questions and hypothesis:

1. To what extent does a multicomponent reading intervention impact the reading ability of 6–7-year-olds, as measured by standardised measures of word reading, fluency and comprehension?
  - a. *It was hypothesised that a multicomponent reading intervention would significantly improve the reading ability of 6–7-year-olds, as evidenced by higher scores on standardised measures of word reading, fluency, and comprehension compared to a control group receiving standard reading instruction.*
2. What is the impact of the intervention on children's views of themselves as readers?
3. What are the children's views of the intervention?
4. How do the objectives of the intervention generalise to contexts outside of the intervention and how do teachers rate literacy related outcomes of the children participating?
5. What are the views of the adults who acted as facilitators or who were involved in the organisation and delivery of the intervention?



## Chapter 4: Methodology

### 4.1 Chapter overview

The following chapter will give an overview of the methodological perspective of this research. It will begin by providing detail about the researcher's epistemological perspective and therefore the epistemological position that was adopted in this research. Subsequently, it will detail the methodology employed in this mixed-methods study.

### 4.2 Philosophical reflections

In order to carry out meaningful research, researchers must engage in considerations of philosophical positioning (Crotty, 2020). Moon and Blackman (2014) discuss the four levels to consider from a philosophical perspective: epistemology (the theory of knowledge; distinct from ontology which refers to our understanding of reality), the theoretical perspective of the researcher, methodology (the rationale for the research) and method, which refers to the procedures and strategies for collecting data. The philosophical considerations will be outlined in the aforementioned order to demonstrate how they are connected.

With regards to epistemology, this thesis took a critical realist perspective. A critical realist perspective asserts that there is a 'real' world and an 'observable' world (Shipway, 2010). According to this perspective, there is an independent truth that cannot be observed and may be described as independent from human constructions. However, knowledge and understanding, as we know it, is constructed through our own experiences and therefore through what is, indeed, observable. This position can be applied to individual experiences of reading and applies to the participants in both phases of this study. The researcher accepts

that elements of external reality exist, such as the intervention materials and the books that children read, but individual experiences of those external resources will be constructed by an individual.

In terms of the theoretical perspective, this thesis adopted a position of pragmatism. Pragmatism asserts that knowledge is valuable when it is applicable and beneficial for humankind (Creswell & Clark, 2017). Pragmatism is compatible with a critical realist epistemology as it allows for consideration of multiple perspectives, incorporating individually constructed realities. Its flexibility allows the researcher to ascribe meaning and shape action-focused outcomes based on observable and subjective truths. Pragmatism is additionally compatible with this research as one of its core aims is to provide useful and applicable knowledge to real-world EP practice.

Regarding the methodology, this research deployed a mixed-methods design (O’Cathain et al., 2010; Teddlie & Yu, 2007). This is compatible with the epistemological and theoretical positions since it was important to collect both qualitative and quantitative data in order to best represent the multiple perspectives of the participants. Mixed methods allow for the collection of the more readily captured ‘observable’ truths at the same time as the more nuanced and subjective individual truths.

Finally, regarding the methods, standardised ‘observable’ assessments formed the basis of the quantitative data to measure reading ability. This could be thought of as an independent observable truth, although those adopting a social constructivist view (Burr, 2015) might contend that this simply represents a human construction of a function. While the aforementioned could arguably represent a more objective and observable truth, this thesis was not positivist in its approach and, therefore, understanding individual experiences

and constructions was an important facet of the research. Qualitative data, gathered through interviews with adults and more creative means of capturing the voice of the young person (which will be elaborated upon in subsequent sections) helped to shape the understanding of responses to this study by providing context around individual experience.

### 4.3 Summary of position

This thesis began by outlining in Section 1.5 an important theoretical framework that provides a lens with which to view the complicated and interacting factors that contribute to the outcomes in reading observed in children. Bronfenbrenner's (1979, 2005) ecological systems theory is the main heuristic employed in this study to understand and frame those factors. The epistemological position of the researcher was then explored and a justification of how this aligns with the methodology was provided. Critical realism allows a researcher to explore the multiple constructions that are present at the various layers of the systems around a child and mixed methods research provides the tools to explore those constructions. The following sections will outline the methods that were used in this study. This will be done in two parts. First, Phase One will outline the quantitative methods used in this study, providing context about the sample, measures and detail about how data were obtained, focusing primarily on the outcomes of the intervention. Following this, Phase Two will explore the qualitative methods employed, which focuses predominantly on the implementation of the intervention, giving an outline of the approach adopted and important information relating to reflexivity.

## 4.4 Phase one: Experimental phase

### 4.4.1 Participants

#### *4.4.1.1 Selection criteria and sampling*

This study was concerned with practical methods to support young people who are beginning to experience reading difficulties. In the UK, children receive intensive phonics instruction, often beginning in Nursery (3-4 years). Schools have a statutory duty to deliver a validated phonics programme from Reception (4-5 years; DfE, 2021) and by the end of Year 1 (5-6 years), children will have received two years, at minimum, of intensive phonics instruction. As children undergo a statutory PSC at the end of Year 1 (DfE, 2022b), Year 2 was deemed an appropriate age to identify children who were not able to meet the threshold to pass the PSC and therefore those children who are experiencing reading difficulties.

All primary schools in two local authorities in South London were contacted and invited to take part in the research, having been provided an overview of what the research entailed. A further school from a different local authority, with whom the researcher had had previous contact, was also approached to take part. In total, five schools (four primary schools and one infant school) in three local authorities in London consented to take part. Out of the schools, three were graded 'Good' by Ofsted, one was 'Outstanding,' and one was awaiting inspection following academy conversion<sup>9</sup>. The percentage of children with SEN (including those with SEN support and an EHCP) averaged 12.4% with a range of 9.7%-14.1%. The percentage of children for whom English was an additional language averaged 40.34% with a

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<sup>9</sup> Schools in England may apply to 're-open' as an academy or a new school. The DfE states that "upon conversion to academy status the existing school closes and a new school opens in its place. Although little may have changed, the academy converter is a new legal entity." As such, previous inspections are not valid (DfE, 2020).

range of 17.5%-58.3%. The main contact in the schools that consented to take part consisted of three Special Educational Needs Coordinators (SENCOs) and two literacy coordinators. These individuals, in consultation with class teachers, selected children to be invited to take part in the study. The inclusion criterium for the present study was:

1. the lowest achieving children in reading as measured by the PSC

The only exclusionary criteria applied was:

1. children who would not be able to access the materials visually due to a visual impairment.

Schools were asked to commit to the delivery of the intervention (see *Section 4.5.5* for further detail about the intervention) with the minimum delivery expected to be 3 sessions per week. Schools that participated needed to be able to resource an additional adult who was willing to take part in the training, supervision and who consented to take part in a post-intervention interview (phase two: see section 4.5).

#### *4.4.1.2 Participants and matching*

A total of 58 Year 2 children (*M* age at baseline: 6 years, 8 months) were recruited to take part in this study. Twenty-five of the participants were female (45%) and 29 of the children (53%) were registered as having EAL (as measured by centrally held school data). Participants were split in to two groups at the school level (the intervention group and the wait-list control). The groups were matched initially based on their performance on a standardised scores on the single word reading scale from the British Ability Scales (BAS-3, Elliot & Smith, 2011; see section 4.5.3 for the full description of measures) using a principle

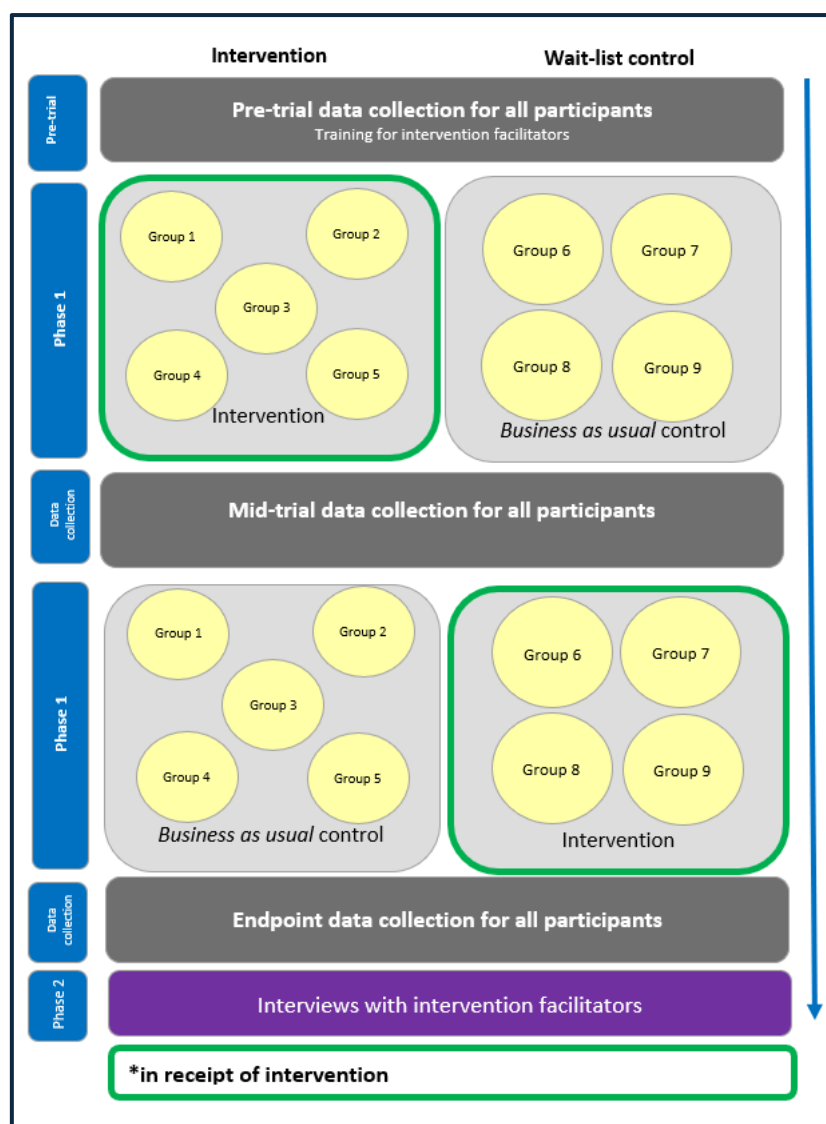
of best fit<sup>10</sup>. Matching individuals then formed two groups that were also matched to ensure that there was an even split of individuals for whom English was an additional language. An example of the pairs matched at the school level is provided in Appendix <sup>ii</sup>. Given the size of the sample, it was deemed necessary to form the matched pairs at a school level rather than at a whole group level. This is because forming pairs from the entire sample level may have resulted in groups formed of children from different settings, or unevenly split groups which would have impacted on the feasibility of the delivery. Randomisation was also considered as a method of forming the groups at the school level, but given the size of the overall sample, and the considerable variability between participants, it was concluded that this would have resulted in more variance in the groups and, as such, a matching process was deemed a more appropriate way of forming comparable groups.

#### 4.4.2 Research design and attrition

This study was an embedded mixed methods matched pairs crossover trial. A schematic of the research design can be found in Figure 9.

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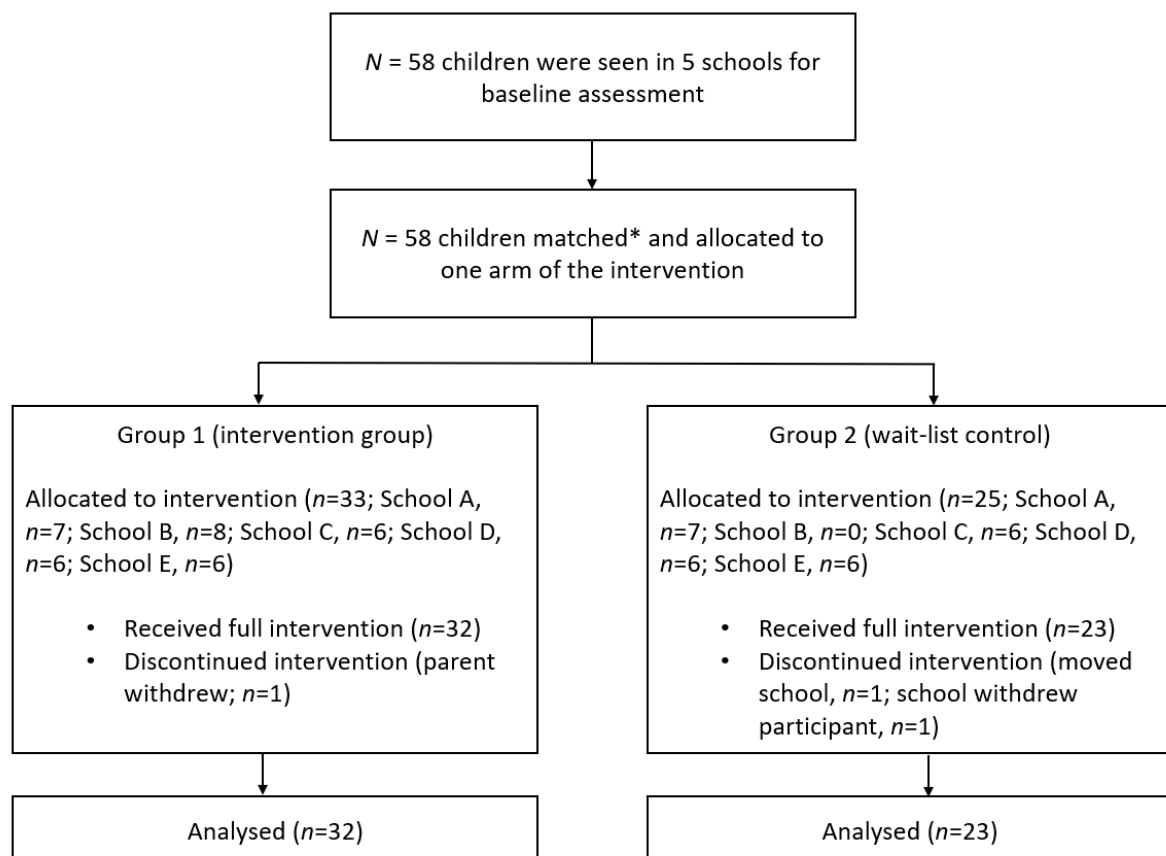
<sup>10</sup> Given the size of the groups, it was not *always* possible to match the groups to the exact same standardised score. As such, a principle of best fit was used in order to ensure that the two groups were evenly matched overall and that the matching participants were the two closest pairs out of the group as a whole.



**FIGURE 9** A SCHEMATIC OF THE RESEARCH DESIGN OF THE STUDY

Following a period of recruitment, 5 schools were identified as candidates for participation in the study. School staff selected children based on the inclusion criteria and all eligible children whose parents had provided informed consent were assessed (Time 1: pre-trial data collection) on the measures detailed in section 4.4.3. The intervention group received the intervention for 10 weeks during the Spring term while the wait-list control group received teaching as normal (i.e., 'business as usual'; children were in receipt of no further intervention). Following this, data were collected again (Time 2: mid-point data

collection) which represented the end of the intervention for the intervention group. The wait-list control group then went on to receive the intervention for 10 weeks during the summer term. Finally, all children were assessed again (Time 3: end-point data collection). In total, 58 children were recruited. However, 55 children were included in the final analysis. Detail of attrition rates with accompanying justification is provided in Figure 10.



*\* During recruitment, School B expressed a wish to include two groups. However, due to staffing constraints, they were only able to facilitate one group. It was felt that it would be unethical to withdraw this group from the study and therefore, they remained in receipt of the intervention. However, there were no matched pairs for this group.*

**FIGURE 10** THE ATTRITION RATES OF THOSE INCLUDED IN THE FINAL ANALYSES.

#### 4.4.3 Measures

Measures were taken to gain an insight into the efficacy of the intervention from multiple perspectives, in line with the epistemological perspective of the thesis. Demographic measures were collected at the outset of the study which included; i) age, ii) sex, iii) whether



the individual spoke EAL, iv) whether they had received speech and language therapy, v) whether they were in receipt of pupil premium, and vi) the home language. Initially, a single baseline measure was taken for the purposes of profiling the participants for further data analysis:

1) ***The British Ability Scales 3 (BAS3) Word Definitions sub-test*** (Elliot & Smith, 2011b):

the BAS3 word definitions scale is an individually administered norm-referenced standardised measure which can give an indication of a child's expressive language ability. Words are dictated to children and they are required to provide a definition with words presented in order of increasing complexity until a discontinuation point (determined by the number of errors). It is appropriate for children aged from 6 years 0 months to 17 years 11 months. Raw scores are converted to T scores ( $M=50$ ,  $SD=10$ ). "Word definitions" has a reliability of 0.85 (Elliot & Smith, 2011a). A measure of language ability was taken to profile students and provide a measure for further exploratory analysis.

The following measures were taken at all three time points: time point 1 ( $t_1$ ), time point 2 ( $t_2$ ), and time point 3 ( $t_3$ ). All measures were taken within a two-week window of the timescale outlined above. For both standardised reading measures (the York Assessment for Reading Comprehension; YARC and the BAS3), the tests have two sets (set A and set B). To avoid practise effects, tests were administered alternately, meaning that no child received the same test within a six-month window<sup>11</sup>. As such, each child completed Set A at the pre-

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<sup>11</sup> Although the intervention was delivered over a 10-week period, this happened over the course of the spring and summer terms with co-occurring holidays. This meant that the intervention group received the intervention during the spring term and the wait-list control received the intervention during the summer term to accommodate the full 10-weeks intervention time. Due to the school holidays, this resulted in actual test administration in January, April and July. As such, no participant received the same text within a 6-month window.

trial data collection, Set B at the mid-trial data collection and Set A at the end-trial data collection. The following measures were taken:

- 2) ***The British Ability Scales 3 (BAS3) Word Reading sub-test*** (Elliot & Smith, 2011b): the BAS3 word reading test is an individually administered norm-referenced standardised measure of single word reading for children aged from 6 years 0 months to 17 years 11 months. The test requires individuals to read words increasing in difficulty until a stopping point is reached (determined by the number of errors individuals make in blocks of ten words). Raw scores are converted to standard scores ( $M=100$ ,  $SD=15$ ). Single word reading has a reliability of 0.98 (Elliot & Smith, 2011a).
- 3) ***The York Assessment of Reading Comprehension (YARC)*** (M. J. Snowling et al., 2012): the YARC is an individually administered norm-referenced standardised measure of reading ability. The primary aged version was used for this sample as it is standardised for children aged 4 years, 0 months to 10 years, 11 months. The test requires children to read two separate passages aloud which, depending on the level of difficulty, may be timed. All children read the same initial story and progressed up to the next level of difficulty or down to the easier passage dependent on their performance. Children must then answer a series of questions about the text, giving an indication of the child's ability to understand what they have read. The test renders three separate standardised scores ( $M=100$ ,  $SD=15$  on all scores): reading accuracy, fluency and comprehension. For fluency, a standard score can only be obtained if a person scores below a pre-determined number of errors (usually 15) on each of the passages. Reliability for accuracy ranges from 0.75-0.87 for accuracy dependent on the passage, from 0.94-0.95 for fluency and 0.62-0.77 for reading comprehension (M. J. Snowling et al., 2012).

- 4) ***Teacher ratings of children's abilities:*** the class teachers (distinctive from those individuals delivering the intervention) of each of the participants were asked to complete a 10-point Likert rating scale for each of the children at the three different time points. Teachers were asked to consider how they would rate the individual child at "this moment in time" with reference to a number of literacy and self-esteem related constructs. An example of the rating scales is provided in Appendix <sup>iii</sup>.
- 5) ***Children's views of themselves as readers:*** children were asked to draw images of themselves reading and to choose three words to describe themselves in relation to reading. This task was deliberately open to not influence children's views. Having drawn themselves reading, children were asked to provide any words that came to mind when they thought about reading. This was viewed as an appropriate means of gathering pupils' views since many of the children taking part in this study were experiencing difficulties with literacy and language. As such, expressing their views in a more formal interview style may have been challenging. Illustrations are recognised as an important and appropriate means for children to communicate their emotions (Malchiodi, 1998).
- 6) ***Children's views of the intervention:*** children's views of the intervention were captured at the end-point ( $t_2$  or  $t_3$ ). These views were captured through using a photo of the intervention with an empty space for children to write their thoughts about it (see Appendix <sup>iv</sup> for an example). Children could dictate these if they wished.
- 7) ***Attendance:*** intervention facilitators were asked to complete an attendance register.

#### 4.4.4 Intervention training and supervision

The individual delivering the intervention (the facilitator) was invited to attend face-to-face training delivered by the researcher. The facilitators were all teaching assistants with experience in the role ranging from 6 years – 24 years. The training detailed the content of the intervention as well as detail about the delivery method and ensured that facilitators were aware of the purpose of the study, what they were required to deliver and the limitations on what they were able to do. For example, facilitators were instructed to maintain the boundaries of the intervention by not delivering any of the content to other children outside of the participants in the study. The main school contact (i.e., the SENCO or literacy lead) also received training about the intervention. Intervention facilitators from all schools received regular group supervision provided by the researcher. The supervision drew on the psychological understanding of the role of supervision in school with the objective of facilitating group readiness, an opportunity to be heard, a space for conversation and reflection and an opportunity to reflect on individual wellbeing (Ellis & Wolfe, 2019). In total, the facilitators received 8 hours of instruction each about the delivery of the intervention (3 hours of initial training face-to-face + 30 minutes online supervision every other week). Facilitators were required to keep a register of attendance and were encouraged to keep notes about the successes and challenges of the intervention in order to inform post-study interviews (although this was not monitored by the researcher).

#### 4.4.5 Intervention content and structure

The intervention was named ‘We Are Readers’ with the objective of reinforcing reading related self-image. It was designed to be delivered daily to a small group (6-8 children) for thirty minutes over a course of 10 weeks. It was adapted drawing on evidence from

approaches developed by an Educational Psychology Service in the UK (Staffordshire County Council, 2021) with the following fundamental principles:

- the content delivered to children with reading difficulties should be carefully selected and targeted (sometimes referred to as the *simplicity principle*; Chen & Savage, 2016) with the main content consisting of the 100 most commonly occurring words (Vousden et al., 2011).
- instruction should follow principles derived from instructional psychology (i.e., teaching skills to high fluency, separation of skills that are readily confused, teaching the most useful strategies first, distributed practice, teaching new skills directly and explicitly and interleaved learning; Ward et al., 2017). To achieve this, new content was presented alongside previously learned content and the most commonly occurring words were taught first. Distributed practice was achieved by delivering the intervention for 30 minutes daily. New content was delivered through direct instruction.
- reading materials should be 'real' books, as opposed to reading scheme books, which are known to contain a realistic representation of the most commonly occurring words in children's and adult's literature (Solity & Vousden, 2009).
- instruction should utilise whole word visual methods drawing on the theoretical perspective that participants may benefit from direct mapping of orthography based on logographic interactions (Frith, 1985), and participants will need to have an understanding of the meaning of the word in order to encourage transition to the lexical route of word reading (Coltheart et al., 2001).

- the intervention should seek to reinforce positive reading self-image and reinforce reading related self-esteem as individuals with reading difficulties are known to have lower self-esteem (Boyes et al., 2018; Riddick et al., 1999; Wilmot et al., 2023).
- the intervention should be highly repetitive and structured so that the demands on the participants are low and the focus of the intervention will be the content, drawing on cognitive load theory (Plass et al., 2010).
- participants should have an opportunity to practise the skills they have learnt using real books in an effort to generalise skills, drawing on principles of the instructional hierarchy (Haring & Eaton, 1978), with the support of the adult delivering the intervention drawing on principles of paired reading (Topping, 1987). For further information about paired reading, see Appendix <sup>v</sup>

The intervention followed a highly structured format which was repetitive in nature. The intervention was delivered on an interactive whiteboard using PowerPoint presentations that were prepared by the researcher. An example of one session is provided in the Appendix <sup>vi</sup>. The structure of an intervention session is outlined in Table 2 and further detail is provided below.

**TABLE 2 CONTENT AND STRUCTURE OF THE READING INTERVENTION**

	Time (min)
1. Welcome and reminder of the intervention structure	1 min
2. Motivational beliefs statement	2 minutes
3. Instruction of commonly occurring digraphs (new digraph presented daily)	4 minutes
4. Reading words containing target digraph	4 minutes
5. Introduction of commonly occurring words (interleaved, 2 new words daily)	5 minutes
6. Definition of the newly learned words	5 minutes
7. Application – reading ‘real’ books	10 minutes

1. The welcome and reminder of intervention structure included reference to the symbols used to denote the expectations of the intervention. Symbols were used throughout the intervention to avoid any text being presented that was *not* the main content.

2. In this section of the intervention, participants had an opportunity to practise generated motivational statements: “we are ... readers” with a positively reinforcing word placed daily within the title of the intervention (i.e. “we are amazing / brilliant / fantastic readers”). There were ten different motivational words which were presented sequentially throughout the trial. The words were piloted during the pilot study.

3. Following this, for the first 35 sessions, individuals were taught the 35 most commonly occurring digraphs. This was achieved through direct instruction using “my turn, your turn.” The adult modelled recognising the digraph and children were required to repeat.

4. Subsequently, individuals applied the focus digraph to reading words containing the target digraph. This portion of the intervention drew on principles derived from SSP and as such, children were required to segment and blend.

5. The next portion of the intervention introduced two of the most commonly occurring words (see Appendix <sup>vii</sup>) in children and adult's literature (Vousden et al., 2011). These new words were delivered alongside already learned words. The mode of instruction drew on principles of direct instruction using visual whole word recognition (achieved primarily through 'my turn, your turn,' where children responded as a group). Content was interleaved allowing new content to be delivered alongside already learned content. Initially, two new words were added per day. Once a maximum number of thirteen words were included, the two words that had appeared for the longest time were removed and two new words were inserted. This pattern was repeated, and all words received equal exposure throughout the intervention.

6. Following this, word meaning was reinforced through using the word in a sentence. It was an important feature of the intervention that participants understood the meaning of the word. However, since many of the words were not easily definable due to being articles and connective words, it was contended that the main mode of transmitting the meaning of a word would be to see it and to practise using it in context (e.g., for the word 'back,' adults said 'the camel has a hump on its back,' 'we went out of the back door,' 'he walked back to the car,' 'will you back the car into the parking space?'). Children were then able to create their own sentences which allowed the intervention facilitator the opportunity to assess whether the participant had understood the meaning.

7. The final portion of the intervention was the reading section where participants self-selected a desirable book from a selection of 'real' books. Intervention facilitators provided support to children, who read individually, on a rotating basis ensuring that all children read with the support of the facilitator twice, on average, throughout the week. It was assumed that the 'real books' contained many of the target words, since it is known from literature



that these words are the most commonly occurring in children and adult's books (Solity & Vousden, 2009; Vousden, 2008; Vousden et al., 2011).

#### 4.4.6 Quantitative data analysis

This section will outline the statistical tests that were used to draw inferences about the data in turn, providing a rationale for the choice of test. To understand whether there were differences between the group, Chi-Square analyses were performed on the categorical data points (e.g., sex of participant, whether the child was registered as having EAL, pupil premium status and whether the child had been in receipt of speech and language therapy). For comparisons between the groups on baseline measures (e.g., verbal scales and word reading scales of the BAS3 and baseline measures of the YARC), simple T-tests were performed. For the BAS3 word reading and word definitions subtests, ability scores were compared. For the YARC, due to the complicated nature of the raw score data, ability scores were used for all comparative analyses. This is because for the accuracy score, which is reached through a combination of two texts (that may not be the same for all participants since the starting text is determined by the child's reading ability), the raw scores are not an accurate representation of the child's performance. For the fluency score, which is determined by calculating the amount of time it takes to read a text relative to its length, individuals must reach a certain level of accuracy to receive a score, while the lowest level text does not produce a fluency score. As such, raw scores do not reflect an individual's performance on the task. For the purposes of consistency across the sub-scores of the YARC, comprehension ability scores were also used in the analyses.

To answer research question 1, which addressed the effectiveness of the intervention, a two-way repeated measures analysis of variance (ANOVA) was performed on the BAS3 word

reading subtest and the YARC accuracy, fluency and comprehension subscales. Assumptions of the analyses were checked including tests of normality of distribution. To check for differences between scores at  $t_1$ ,  $t_2$ , and  $t_3$ , and between groups, post-hoc pairwise analyses were performed on the data. This test was deemed appropriate given that there is no non-parametric equivalent and that the size of the groups approximate the size necessary for inferential statistics based on central limit theorem<sup>12</sup> (Rosenblatt, 1956). Comparative analyses were performed on the data removing the group that had no matched pairs and this produced the same effects. As such, this group was left in the comparative analyses.

To answer research question 2, children's responses were collated and a sentiment lexicon was created. Positive words were scored +1, neutral words were scored 0 and negative words were scored -1. To ensure this was done accurately, the sentiment lexicon was blind inter-rated by an independent researcher. This produced two scores for each participant representing the sentiment of the words they used before and after the intervention (with a negative score representing a negative sentiment and a positive score representing a positive sentiment). The difference in these two scores was analysed using a paired samples T-test.

To answer research question 3, the words that children used to describe the intervention were rated as positive or negative. These words were blind inter-rated by an independent researcher. The number of positive words was compared with the number of negative words using a paired-samples T-test.

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<sup>12</sup> Central limit theorem states that when you take a sufficiently large number of random samples from any population with a finite mean and variance, the distribution of the sample means will approximate a normal distribution, regardless of the shape of the original population's distribution.

To answer research question 4, Likert rating scales collected at *t1*, *t2* and *t3* were analysed using Friedman's test to assess if there were any main differences over time. There is no non-parametric equivalent that allows for the pairwise analysis of data collection points between groups. As such, in order to look for differences between data collection time points, Wilcoxon Signed-Rank Tests were used on pairs of data timepoints for the groups separately.

## 4.5 Phase two: Interview phase

### 4.5.1 Participants

Participants were obtained using homogenous purposeful sampling. This involves selecting participants who share common characteristics relevant to the research question in order to gain rich and in-depth data relevant to the research question (Miles & Huberman, 1994). It consisted of the facilitators of the intervention ( $n= 5$ ). Participants were recruited at the beginning of the study and provided informed consent to take part in the interview. The participants represented each of the schools that took part in the study.

### 4.5.2 Development of the interview schedule

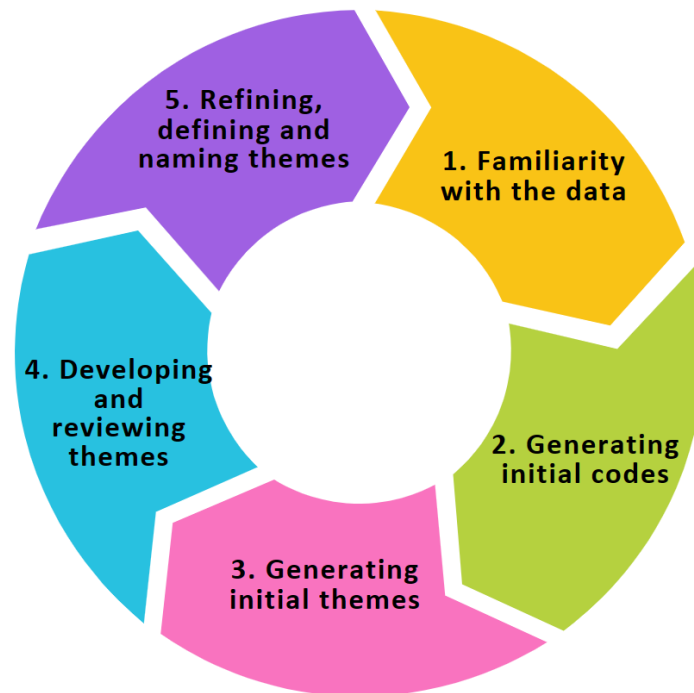
The interview schedule was developed in consultation with and under the supervision of experienced researchers in the field of reading and with experience of practical application of psychology. As such, the questions were designed to elicit views of adult participants with reference to the effectiveness of the intervention, the strengths of the intervention, any potential barriers or weaknesses in the intervention and general reflections having delivered the intervention. The full semi-structured interview schedule is provided in Appendix <sup>viii</sup>. The interview was piloted during the pilot study.

### 4.5.3 Procedure

The interviews occurred within two weeks of the delivery of the intervention following data collection at  $t_3$  (or data collection at  $t_2$  for School B who did not have a wait-list control). Interviews were conducted over Microsoft Teams and lasted approximately 30 minutes. The interview took the form of a semi-structured interview and, as such, participants were presented with the same questions with prompts being offered dependent on the respondent's response to the question (e.g., a prompt was not offered if a participant had already addressed the prompt in their response). Interviews were audio-recorded and transcribed using Microsoft Teams transcription which was later manually verified by the researcher.

### 4.5.4 Qualitative thematic analysis

In order to ascertain what the themes were in the data, a qualitative data analysis was performed using reflexive thematic analysis (TA; Braun & Clarke, 2006, 2019, 2021). This approach to qualitative analysis was chosen as it aligns with the epistemological positioning of this paper, namely one of critical realism. This method appreciates that individuals are likely to have had their own experiences resulting in their own personal constructions of the experience of the intervention. However, by analysing these individual experiences, it allows the researcher to identify underlying themes and patterns across the participants in order to create shared meaning. The researcher used Braun and Clarke's systematic approach to TA which follows five stages followed by the write-up. The stages are displayed in Figure 11 below.



**FIGURE 11.** BRAUN AND CLARKE'S (2006) STAGED APPROACH TO REFLEXIVE THEMATIC ANALYSIS.

In stage 1, familiarity with the data, the researcher must read the qualitative data and familiarise themselves with it. In stage 2, the researcher begins to generate initial codes that represent the main information contained in the data. In stage 3, the researcher begins to build initial themes that encompass these codes. Once the initial themes are developed, the researcher must review the themes and ensure that they are a good fit for the codes that have been generated. Finally, in stage 5, the researcher refines those themes and ensures that they are representative of the data. Names are given to the themes in this stage. The authors highlight that the process, while being staged, is not necessarily sequential and should be considered fluid and bi-directional. (Braun & Clarke, 2021). This allows the researcher to move between the stages as necessary. The approach adopted was inductive since there was no theoretical framework that would have been appropriately applied to the data to inform a deductive approach. Additionally, it allowed the researcher to draw out

observations from the data and allow themes to emerge and be generated. Furthermore, the approach was latent as opposed to semantic in its level of analysis as the researcher was interested in the underlying psychological processes being explored and communicated. This was deemed appropriate given the researcher's experience in the practical application of psychology and allowed the analysis to gain a deeper level of understanding of what participants were communicating beyond what was being directly said.

The researcher took part in ongoing research consultation groups which afforded the opportunity of reflecting on emerging themes and sought out supervision from an experienced researcher to guide the process. A total of 38 discrete codes were colour coded and removed from the transcripts so that they could be physically manipulated by the researcher and grouped according to emerging themes (an example of the process is provided in Appendix <sup>ix</sup>). As initial themes emerged, many of the codes were grouped together and the researcher revisited the transcript data in order to develop and review the themes. Through this process, the codes were combined into initial themes that could be grouped together. These began to shape the overarching themes. It emerged that the initial approach to the themes had resulted in categorisation. Morse (2008) is critical of some approaches to thematic analysis which confuse categories with themes. Morse explains that categories can best be thought of as a collection of similar data organised together which enable the researcher to identify the characteristics of data. She goes on to explain that themes, on the other hand, is better thought of as meaningful essence which runs throughout the data. Bearing this criticism in mind, the data and initial categorisation was revisited and regrouped in order to better capture the essence of what was being said. As a result, final themes were reached and went through a process of renaming, ensuring that the names captured the

underlying psychological principle, as well as the essence, of what was being discussed by the participant.

#### 4.5.5 Reflexivity

Reflexivity in research refers to a researcher's ability to reflect and critically engage with the material they are researching. Patnaik (2013) states that "directing enquiry towards the self is central to the researcher's bringing out the inter-subjectivity inherent in qualitative work" (p. 98). In other words, the researcher must acknowledge the intersubjective nature of the topic they are interested in researching and the impact, therefore, on their interpretation of the data. Practicing reflexivity in research involves the researcher being aware of their background, their philosophical positioning and their assumptions, conscious or unconscious, and ensuring that they are able to interrogate the impact of what they are bringing to the analysis (Finlay & Gough, 2008). In order to ensure that qualitative research is credible, trustworthy and is as objective as possible, researchers must demonstrate that they have been reflexive in their approach as it is regarded as a critical component of qualitative research (Braun & Clarke, 2021; Finlay & Gough, 2008).

Earlier in this thesis, in Section 1.4.1, the researcher outlined their position with regard to dyslexia and reading difficulties in general. This position, along with the experiences, values and beliefs of the researcher that have informed this position, were additionally highlighted. An awareness of one's positioning is an essential component of reflexivity (Patnaik, 2013), and this researcher took steps to ensure that the qualitative analysis employed in this study adhered to the principles of reflexive thematic analysis (Braun & Clarke, 2019). The data were analysed in sufficient time to allow for reflecting on themes and refining them. Feedback from research supervisors was sought to allow for further transparency and reflection, which is

particularly important given the intersubjective nature of this type of analysis. Furthermore, to ensure that the themes reached were valid, a selection of the data were inter-rated by a second researcher and codes were cross-referenced and discussed.

## 4.6 Ethical considerations

Both phases of this study were conducted in line with the British Psychological Society (BPS, 2018) Guidelines for Research Projects. In addition, ethical approval was granted from two ethics reviewers on behalf of University College London, Institute of Education's ethics committee. The schools' Head Teachers also consented to the children taking part following the dissemination of information regarding the study. Although this intervention was not beyond what would typically be provided for children in schools, parents were given an information sheet and the opportunity to opt-out and, at a later stage, written informed consent was gained. School staff who took part in the interview phase were also given an information sheet and provided written informed consent to take part.

Although it was not essential, BPS guidelines state that it is good practice to obtain informed assent from children partaking in a study. Bearing in mind that this was a study focusing on individuals with reading difficulties, this information was provided using a one-page profile containing visuals that explained the purpose of the researcher's involvement in child friendly language and was delivered in a sensitive manner in order to not damage participants' views of themselves as readers or their general self-esteem. Children were then able to decide whether they wanted to take part in the study and were able to opt in or out of taking part in the reading assessments. If a child said that they did not want to do the reading activity, this was respected by the researcher and is reflected in the minimal amount of 'missing' raw data highlighted in the results section. In line with good practice for EPs,



children were informed that they could opt-out of working with the researcher at any time, and this was reinforced by repetition of the sentiment that children had the right to withdraw at any time. Data collection sessions were short (approximately 15 minutes), and breaks were incorporated between tests where children could take part in short games. The intervention itself consisted of typical classroom activities and as such, was deemed not to provoke additional or unnecessary anxiety.

# Chapter 5: Results

## 5.1 Chapter Overview

This chapter will give an overview of the results. First, the results of Phase 1 of the research (pertaining to the outcomes of the intervention) will be explored. Within this section, characteristics of the two groups of children that took part in the intervention will be explored. Subsequently, the chapter will be organised in order of the research questions. The results of Phase 2 of the study (pertaining to the qualitative data reflecting the views of the adults who delivered the intervention) will be presented in the final section of the chapter.

## 5.2 Phase 1 Results

### 5.2.1. Background characteristics of the groups

The following analysis seeks to understand the background characteristics of the two groups and presents analyses of the baseline measures (i.e., performance on the assessments at  $t_1$ ). By exploring the baseline measures, an understanding of whether the two groups were comparable can be reached. Demographic information about the participants in Phase 1 of the study is presented in Table 3 and Chi-square analyses performed on categorical data are presented in Table 4.

**TABLE 3 BACKGROUND CHARACTERISTICS OF THE CHILDREN WHO PARTICIPATED IN THE STUDY**

	Intervention (n=32) N (%)	Wait-list control (n=23) N (%)	Total	
			N	%
Sex				
Male	18 (56)	13 (56)	31	56
Female	14 (44)	10 (44)	24	44
English as an additional language				
Yes	15 (47)	12 (52)	27	49
No	17 (53)	11 (48)	28	51
Pupil premium				
Yes	8 (25)	6 (26)	14	26
No	24 (75)	17 (74)	41	74
Speech and language support				
Yes	6 (19)	3 (13)	9	16
No	26 (81)	20 (87)	46	84
Attendance to intervention	33.7 (67.6)	32.5 (65.0)	33.2	66.5
Home language				
English	18 (56)	13 (57)	31	56
Spanish	3 (9)	2 (9)	5	9
Mauritian	1 (3)	0 (0)	1	2
Bengali	1 (3)	0 (0)	1	2
Kurdish	1 (3)	0 (0)	1	2
Romanian	2 (6)	0 (0)	2	4
Farsi	1 (3)	0 (0)	1	2
Urdu	1 (3)	1 (4)	2	4
Bulgarian	1 (3)	1 (4)	2	4
Malayalam	1 (3)	1 (4)	2	4
Vietnamese	1 (3)	0 (0)	1	2
Kannada	0 (0)	1 (4)	1	2
Tamil	0 (0)	1 (4)	1	2
Cantonese	1 (3)	1 (4)	1	2
Portuguese	0 (0)	1 (4)	1	2
Russian	0 (0)	1 (4)	1	2
Pashto	0 (0)	1 (4)	1	2

**TABLE 4 CHI-SQUARE ANALYSIS OF BETWEEN GROUP DIFFERENCE ON NOMINAL DATA POINTS**

Group	Test
Sex	$\chi^2(1)=.000, p=.984$
EAL status	$\chi^2(1)=.150, p=.698$
Pupil premium status	$\chi^2(1)=.008, p=.927$
Speech and language therapy	$\chi^2(1)=.318, p=.573$

As can be seen in Table 3, the chi-square analyses revealed no significant difference between groups on sex, EAL status, pupil premium status and whether or not the child had been in receipt of speech and language therapy.

Table 5 reports the means and standard deviations for the baseline (*t1*) measures taken. Independent samples T-tests were performed on each of the measures shown and revealed that there were no significant differences in any of the baseline measures indicating that the groups were comparable.

**TABLE 5 T-TESTS ON BASELINE MEASURES AND DEMOGRAPHICS**

Group	Intervention <i>n</i> = 32		Wait-list control <i>n</i> = 23		T-test
	<i>M</i> ( <i>SD</i> )	Range	<i>M</i> ( <i>SD</i> )	Range	
Age (months)	79.53 (3.45)	73-87	80.49 (3.84)	75-88	$t(53)=.958, p=.343, d=.28$
BAS3 Word Reading <sup>a</sup>	71.23 (27.84)	10-130	63.77 (26.37)	10-104	$t(51)=.981, p=.331, d=.27$
BAS3 Word Definitions <sup>a</sup>	52.23 (20.75)	10-89	51.77 (21.26)	10-105	$t(50)=.078, p=.938, d=.02$
YARC Accuracy <sup>a</sup>	29.11 (7.18)	15-45	27.75 (8.2)	10-42	$t(46)=.606, p=.546, d=.29$
YARC Fluency <sup>a</sup>	26.78 (19.09)	2-65	25.70 (16.77)	2-56	$t(26)=.149, p=.883, d=.39$
YARC Comprehension <sup>a</sup>	25.64 (8.99)	1-40	26.25 (5.99)	14-37	$t(46)=.263, p=.794, d=.29$

Note. <sup>a</sup> ability scores used

All T-tests on baseline measures revealed no significant differences between groups. As the tests performed on all data points (shown in Table 3 and 4), indicated that there were no significant differences between the groups, it can be reasonably concluded that the groups were comparable in their composition.

### 5.2.2 RQ1: Impact of the intervention on reading outcomes

Mean scores along with standard deviations and range of the main measures taken to assess the effectiveness of the intervention on reading ability are presented in Table 6 below.

**TABLE 6 OUTCOMES OF READING MEASURES ACROSS STUDY**

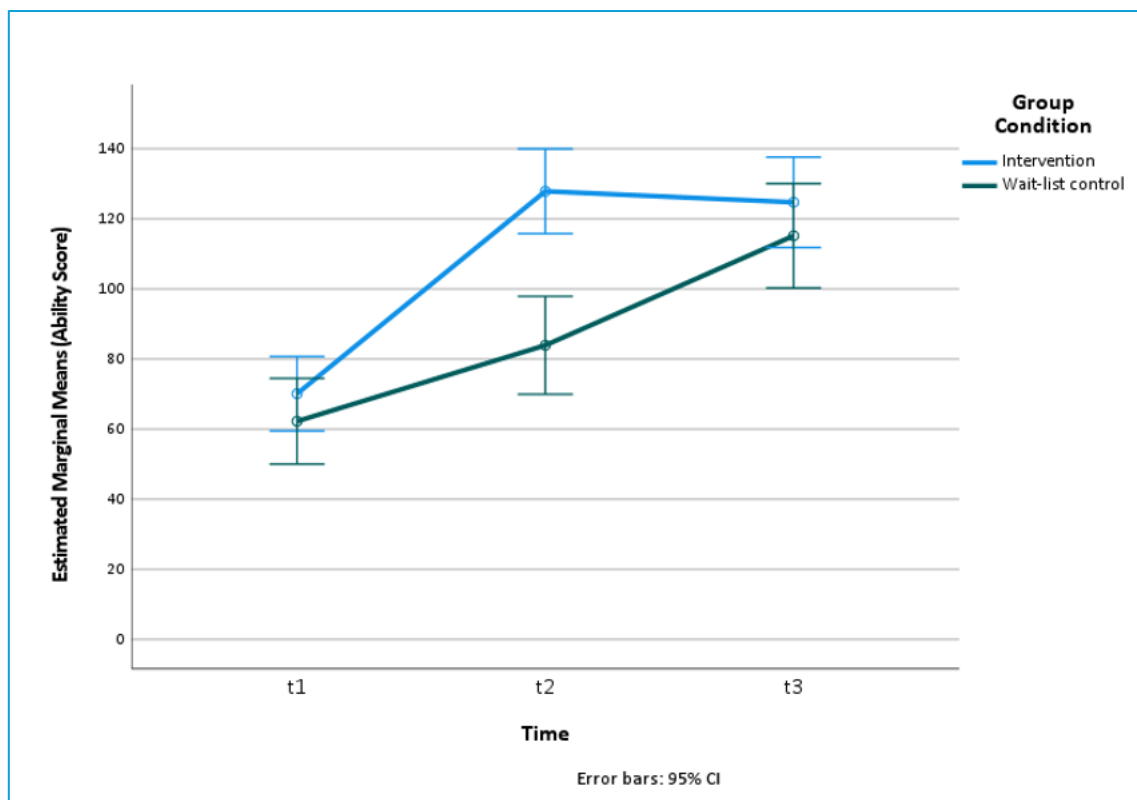
Reading measures		Intervention <i>n</i> =32		Wait-list control <i>n</i> =23	
		<i>M</i> ( <i>SD</i> )	Range	<i>M</i> ( <i>SD</i> )	Range
Single Word Reading <sup>a</sup>	<i>t</i> 1	71.23 (27.84)	10-130	63.77 (26.37)	10-104
	Missing	<i>n</i> =1		<i>n</i> =1	
	<i>t</i> 2	128.07 (31.79)	34-186	83.86 (28.75)	10-139
	Missing	<i>n</i> =1		<i>n</i> =1	
	<i>t</i> 3	125.47 (33.01)	33-176	115.05 (32.90)	24-171
Reading accuracy <sup>a</sup>	Missing	<i>n</i> =2		<i>n</i> =1	
	<i>t</i> 1	29.11 (7.18)	15-45	27.75 (8.20)	10-42
	Missing	<i>n</i> =4		<i>n</i> =3	
	<i>t</i> 2	39.72 (7.08)	26-57	23.55 (7.16)	15-35
	Missing	<i>n</i> =3		<i>n</i> =3	
Reading fluency <sup>a</sup>	<i>t</i> 3	41.0 (7.27)	23-59	37.56	20-54
	Missing	<i>n</i> =4		<i>n</i> =5	
	<i>t</i> 1	26.78 (19.09)	2-65	25.70 (16.77)	2-56
	Missing	<i>n</i> =14		<i>n</i> =13	
	<i>t</i> 2	31.45 (18.78)	0-64	27.89 (19.42)	0-52
Reading comprehension <sup>a</sup>	Missing	<i>n</i> =3		<i>n</i> =14	
	<i>t</i> 3	38.59 (17.60)	2-67	32.94 (19.18)	2-61
	Missing	<i>n</i> =5		<i>n</i> =6	
	<i>t</i> 1	25.63 (8.99)	1-40	26.25(5.99)	14-37
	Missing	<i>n</i> =4		<i>n</i> =3	
	<i>t</i> 2	42.07 (9.82)	28-60	22.5 (8.9)	1-49
	Missing	<i>n</i> =3		<i>n</i> =3	
	<i>t</i> 3	42.07 (9.26)	19-55	38.06 (9.79)	25-58
	Missing	<i>n</i> =4		<i>n</i> =5	

Note: <sup>a</sup> ability scores

#### 5.2.2.1 BAS3 Word Reading Subtest

For the BAS3 word reading subtest, a two-way (Group: Intervention vs. Waitlist control x Time: *t*1 vs. *t*2 vs. *t*3) repeated measures ANOVA was performed on ability scores. Mauchly's test indicated that the assumption of sphericity had been violated ( $p = .015$ ), and therefore degrees of freedom were corrected using Huynh-Feldt estimates of sphericity,  $\epsilon=.91$  (Greenhouse-Geisser  $\epsilon>.75$ ). The ANOVA on ability scores on the BAS3 word reading subtest

revealed that there was a significant main effect of group,  $F(1, 47) = 5.713, p=.021, \eta_p^2 = .11$ , a significant main effect of time,  $F(1.8, 86.1) = 245.56, p<.001, \eta_p^2 = .84$ , and a significant interaction of group and time,  $F(1.8, 86.1) = 32.74, p<.001, \eta_p^2 = .41$ . The estimated marginal means are displayed in Figure 12.



**FIGURE 12 SPLIT PLOT ANOVA DISPLAYING ESTIMATED MARGINAL MEANS FOR BAS3 WORD READING SUBTEST**

Post-hoc pairwise comparisons are displayed in Table 7. The results indicated that the intervention group improved in word reading between  $t1$  and  $t2$ , representing a significant increase in word reading scores following the intervention. Although the average score for this group was higher at  $t3$  compared to  $t2$ , this difference was not significant, indicating that the intervention group maintained their gains at the follow-up data collection point. The wait-list control improved in word reading between  $t2$  and  $t3$  and also improved significantly between  $t1$  and  $t2$  when they were not receiving the intervention. The intervention group performed significantly better on word reading than the wait-list control at  $t2$ , indicating that

the group in receipt of the intervention performed significantly better than the control group. Both groups scored significantly better at the end of the trial than before the trial began and there was no significant difference in the two groups scores at t3.

**TABLE 7 POST HOC COMPARISONS - CONDITION \* TIME (BAS3 WORD READING ABILITY SCORES)**

		Mean Difference	SE	t	Cohen's d	p <sub>bonf</sub>
Intervention, t1	Wait-list control, t1	7.857	9.036	0.870	0.251	1.000
	Intervention, t2	-57.750	3.294	-17.530	-1.845	< .001 ***
	Wait-list control, t2	-13.810	9.036	-1.528	-0.441	1.000
	Intervention, t3	-54.607	3.294	-16.576	-1.744	< .001 ***
	Wait-list control, t3	-45.048	9.036	-4.985	-1.439	< .001 ***
Wait-list, control, t1	Intervention, t2	-65.607	9.036	-7.260	-2.096	< .001 ***
	Wait-list control, t2	-21.667	3.804	-5.696	-0.692	< .001 ***
	Intervention, t3	-62.464	9.036	-6.913	-1.995	< .001 ***
	Wait-list control, t3	-52.905	3.804	-13.908	-1.690	< .001 ***
Intervention, t2	Wait-list control, t2	43.940	9.036	4.863	1.404	< .001 ***
	Intervention, t3	3.143	3.294	0.954	0.100	1.000
	Wait-list control, t3	12.702	9.036	1.406	0.406	1.000
Wait-list control, t2	Intervention, t3	-40.798	9.036	-4.515	-1.303	< .001 ***
	Wait-list control, t3	-31.238	3.804	-8.212	-0.998	< .001 ***
Intervention, t3	Wait-list, control, t3	9.560	9.036	1.058	0.305	1.000

\*\* p < .01, \*\*\* p < .001

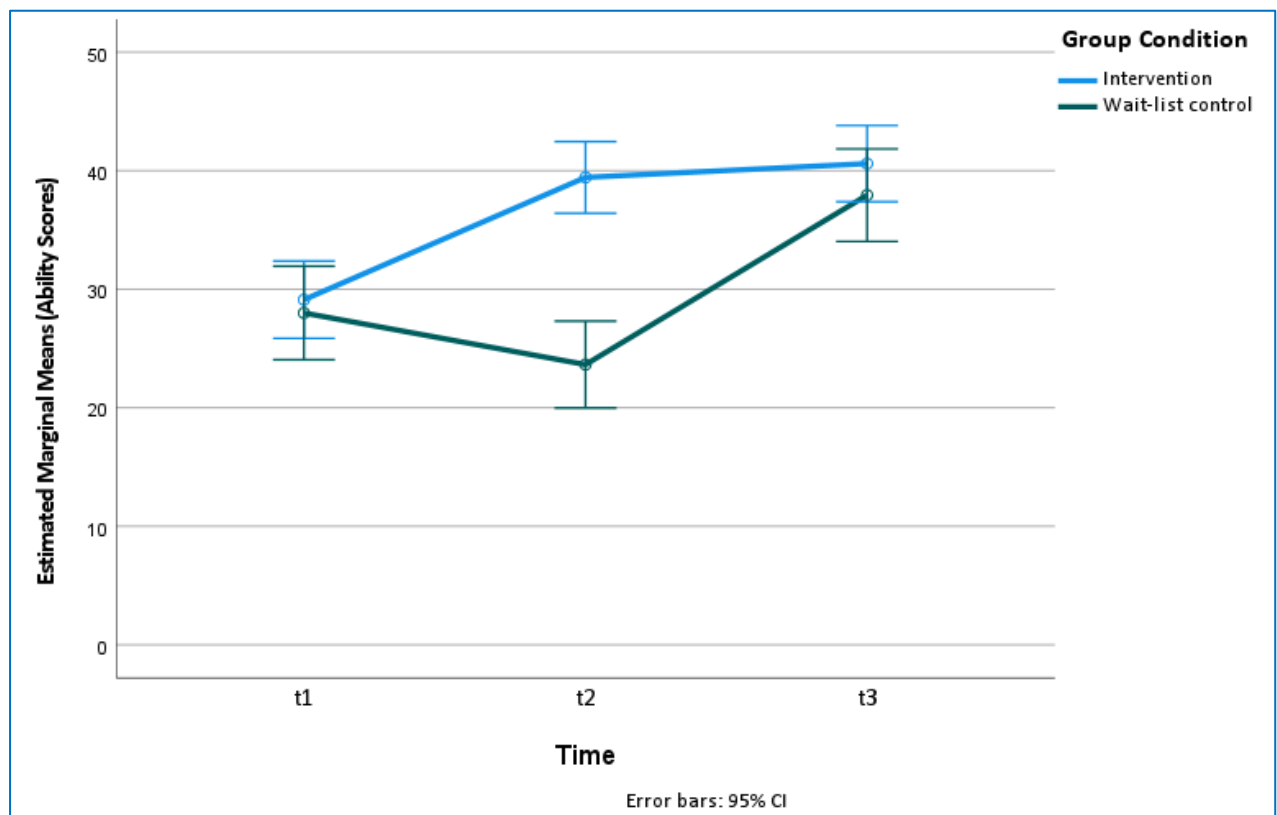
Note. P-value adjusted for comparing a family of 15

#### 5.2.2.2 YARC Accuracy Subtest

A two-way (Group: Intervention vs. Waitlist control x Time: t1 vs. t2 vs. t3) repeated measures ANOVA was performed on ability scores on the YARC accuracy subtest. Mauchly's test indicated that the assumption of sphericity had been violated ( $p = .002$ ), and therefore degrees of freedom were corrected using Huynh-Feldt estimates of sphericity,  $\epsilon = .82$  (Greenhouse-Geisser  $\epsilon > .75$ ). It revealed that there was a significant main effect of group,  $F(1, 40) = 10.054, p = .003, \eta_p^2 = .201$ , a significant main effect of time,  $F(1.7, 80)$



=44.384,  $p < .001$ ,  $\eta_p^2 = .526$ , and a significant interaction of group and time,  $F(1.7, 80) = 23.615$ ,  $p < .001$ ,  $\eta_p^2 = .371$ . Average scores are displayed in Figure 13.



**FIGURE 13 SPLIT PLOT ANOVA DISPLAYING ESTIMATED MARGINAL MEANS FOR YARC ACCURACY SUBTEST**

Post-hoc pairwise comparisons are displayed in Table 8 below. The results indicated that the intervention group improved in accuracy between  $t1$  and  $t2$ , representing a significant increase in accuracy scores following the intervention. There was no significant decrease between  $t2$  and  $t3$  indicating that the intervention group maintained their improvement in accuracy scores at the follow-up data collection point. The wait-list control improved in accuracy between  $t2$  and  $t3$  representing a significant increase in accuracy scores following the intervention but did not improve between  $t1$  and  $t2$  when they were not receiving the intervention. The intervention group performed significantly better than the wait-list control at  $t2$ , indicating that the group in receipt of the intervention performed

significantly better than the control group. There was no significant difference in the two groups scores at  $t_3$ .

**TABLE 8 POST HOC COMPARISONS - CONDITION \* TIME (YARC ACCURACY SUBTEST ABILITY SCORES)**

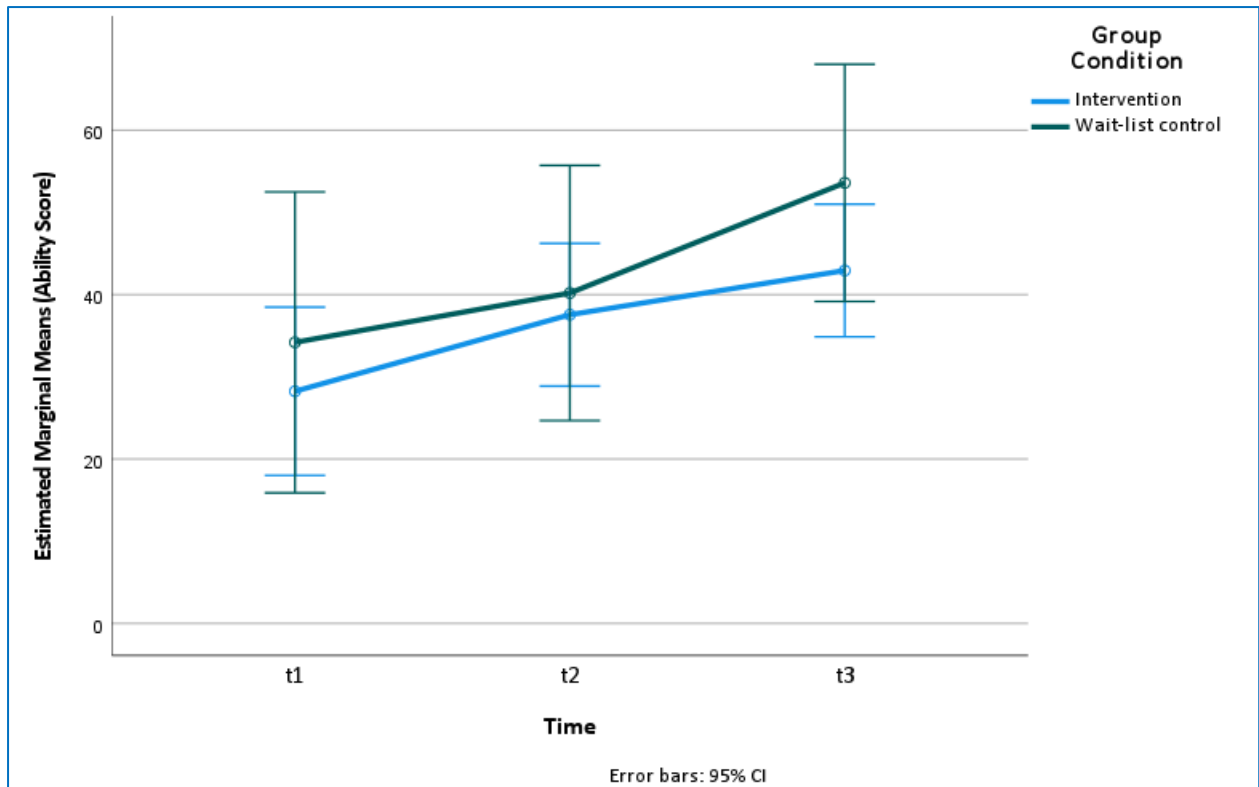
		Mean Difference	SE	t	Cohen's d	$p_{\text{bonf}}$
Intervention, $t_1$	Wait-list control, $t_1$	1.120	2.464	0.455	0.143	1.000
	Intervention, $t_2$	-10.320	1.493	-6.912	-1.317	< .001 ***
	Wait-list control, $t_2$	5.473	2.464	2.222	0.698	0.440
	Intervention, $t_3$	-11.480	1.493	-7.689	-1.465	< .001 ***
	Wait-list control, $t_3$	-8.821	2.464	-3.581	-1.126	0.009 **
Wait-list control, $t_1$	Intervention, $t_2$	-11.440	2.464	-4.644	-1.460	< .001 ***
	Wait-list control, $t_2$	4.353	1.811	2.404	0.555	0.278
	Intervention, $t_3$	-12.600	2.464	-5.115	-1.608	< .001 ***
	Wait-list control, $t_3$	-9.941	1.811	-5.491	-1.269	< .001 ***
Intervention, $t_2$	Wait-list control, $t_2$	15.793	2.464	6.411	2.015	< .001 ***
	Intervention, $t_3$	-1.160	1.493	-0.777	-0.148	1.000
	Wait-list control, $t_3$	1.499	2.464	0.608	0.191	1.000
Wait-list, control, $t_2$	Intervention, $t_3$	-16.953	2.464	-6.881	-2.163	< .001 ***
	Wait-list control, $t_3$	-14.294	1.811	-7.895	-1.824	< .001 ***
Intervention, $t_3$	Wait-list control, $t_3$	2.659	2.464	1.079	0.339	1.000

\*\*  $p < .01$ , \*\*\*  $p < .001$

Note. P-value adjusted for comparing a family of 15

### 5.2.2.3 YARC Fluency Subtest

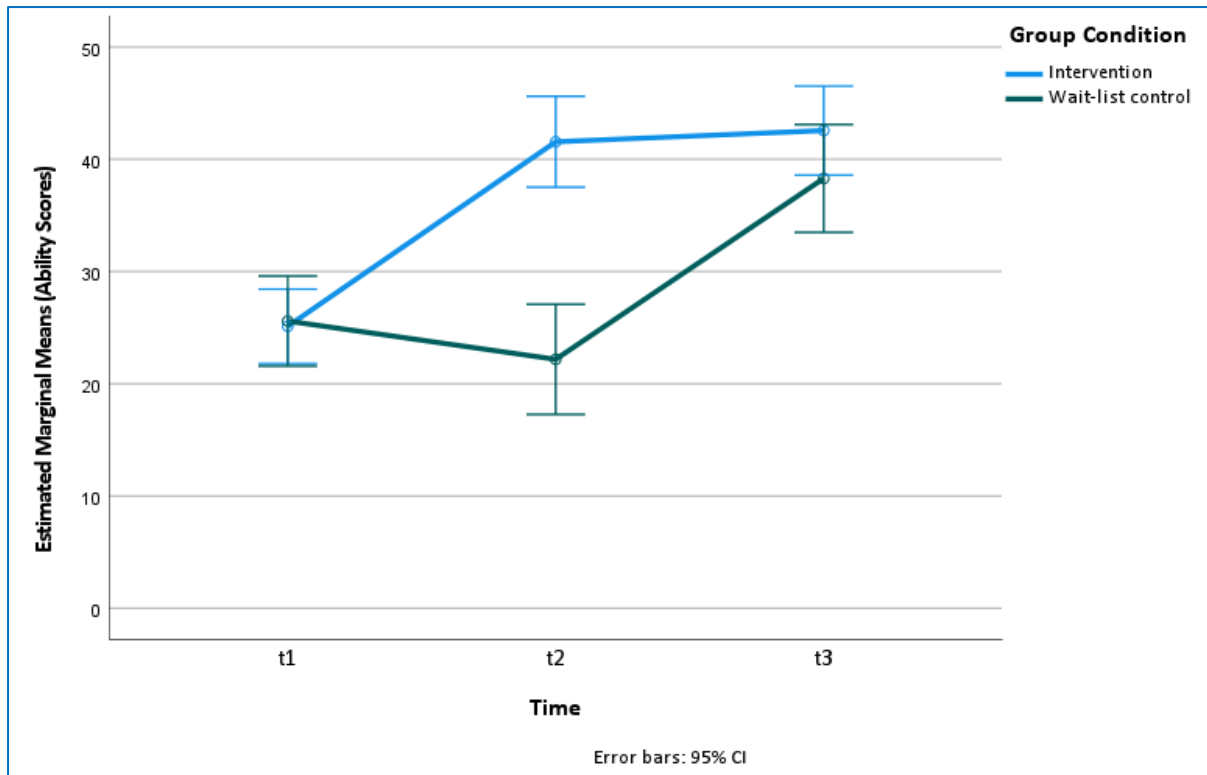
Mauchly's test indicated that the assumption of sphericity had been violated, ( $p = .000$ ), therefore degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity,  $\epsilon = .604$ . A two-way (Group: Intervention vs. Waitlist control x Time  $t_1$  vs.  $t_2$  vs.  $t_3$ ) repeated measures ANOVA was performed on ability scores on the YARC fluency subtest revealing that there was no significant main effect of group,  $F(1, 19) = .728$ ,  $p = .404$ ,  $\eta_p^2 = .04$ , a significant main effect of time,  $F(1.2, 22.97) = 8.933$ ,  $p = .005$ ,  $\eta_p^2 = .320$ , and no significant interaction of group and time,  $F(1.2, 22.97) = .498$ ,  $p = .522$ ,  $\eta_p^2 = .03$  (see Figure 14). As there were no significant interaction of time and group, no post-hoc tests were carried out.



**FIGURE 14 SPLIT PLOT ANOVA DISPLAYING ESTIMATED MARGINAL MEANS FOR YARC FLUENCY SUBTEST**

#### 5.2.2.4 YARC Comprehension Subtest

Mauchly's test indicated that the assumption of sphericity had not been violated ( $p=.366$ ). A two-way (Group: Intervention vs. Waitlist control x Time:  $t1$  vs.  $t2$  vs.  $t3$ ) repeated measures ANOVA was performed on ability scores of the YARC comprehension subtest which revealed that there was a significant main effect of group,  $F(1, 40) = 9.719$   $p=.003$ ,  $\eta_p^2 = .19$ , a significant main effect of time,  $F(2, 80) = 58.823$ ,  $p<.001$ ,  $\eta_p^2 = .60$ , and a significant interaction of group and time,  $F(2, 80) = 28.136$ ,  $p<.001$ ,  $\eta_p^2 = .41$ . Mean scores are displayed in Figure 15.



**FIGURE 15 SPLIT PLOT ANOVA DISPLAYING ESTIMATED MARGINAL MEANS FOR YARC COMPREHENSION SUBTEST**

Post-hoc pairwise comparisons are displayed in Table 9 below. The results indicated that the intervention group improved in comprehension between  $t1$  and  $t2$ , representing a significant increase in comprehension scores following the intervention. There was no significant decrease at  $t3$  compared to  $t2$  for the intervention group indicating that the intervention group maintained their gains at the follow-up data collection point. The wait-list control improved in comprehension between  $t2$  and  $t3$  representing a significant increase in comprehension scores following the intervention but did not improve between  $t1$  and  $t2$  when they were not receiving the intervention. The intervention group performed significantly better in comprehension than the wait-list control at  $t2$ , indicating that the group in receipt of the intervention performed significantly better than the control group. There was no significant difference in the two groups scores at  $t3$  once all participants had received the intervention.

**TABLE 9 POST HOC COMPARISONS - CONDITION \* TIME (YARC COMPREHENSION SUBTEST)**

		Mean Difference	SE	t	Cohen's d	p <sub>bonf</sub>
Intervention, t1	Wait-list, control, t1	-0.468	2.948	-0.159	-0.050	1.000
	Intervention, t2	-16.440	1.759	-9.347	-1.753	< .001 ***
	Wait-list, control, t2	2.944	2.948	0.998	0.314	1.000
	Intervention, t3	-17.440	1.759	-9.916	-1.860	< .001 ***
	Wait-list, control, t3	-13.174	2.948	-4.469	-1.405	< .001 ***
Wait-list control, t1	Intervention, t2	-15.972	2.948	-5.418	-1.703	< .001 ***
	Wait-list control, t2	3.412	2.133	1.600	0.364	1.000
	Intervention, t3	-16.972	2.948	-5.757	-1.810	< .001 ***
	Wait-list control, t3	-12.706	2.133	-5.957	-1.355	< .001 ***
Intervention, t2	Wait-list control, t2	19.384	2.948	6.575	2.067	< .001 ***
	Intervention, t3	-1.000	1.759	-0.569	-0.107	1.000
	Wait-list control, t3	3.266	2.948	1.108	0.348	1.000
Wait-list control, t2	Intervention, t3	-20.384	2.948	-6.914	-2.174	< .001 ***
	Wait-list control, t3	-16.118	2.133	-7.557	-1.719	< .001 ***
Intervention, t3	Wait-list control, t3	4.266	2.948	1.447	0.455	1.000

\*\* p < .01, \*\*\* p < .001

Note. P-value adjusted for comparing a family of 15

The results indicated that the participants responded to the intervention on measures of word reading, accuracy and comprehension. Significant improvements were noted for the intervention group and the wait-list control after they had received the intervention in the word reading, accuracy and comprehension subtests. Additionally, significant differences were found between the intervention and wait-list control in these measures indicating that the measures recorded were in response to the intervention.

#### 5.2.2.5 Intervention attendance

Attendance was measured by the intervention facilitator. Descriptive analysis revealed the average (*M*) number of sessions attended by the children in the intervention group was 33.78 (*SD*= 9.28) which equates to 67.6% of the total intervention while for the

wait-list control group, the average ( $M$ ) number of sessions attended was 32.48 ( $SD=4.95$ ) which equates to 65.0% of the total intervention. An independent samples  $T$ -test revealed there was no significant difference between the attendance recorded for the intervention group and the wait-list control,  $t(53)=.613, p=.543$ .

### 5.2.3 RQ2: Children's views of themselves as readers

#### 5.2.3.1 Pre-intervention

Prior to the intervention, children from both groups used 23 different words in total to describe their views of reading, although some of these were used multiple times by different children. Children had the option to include *up to* three words. The word cloud (Figure 16) and subsequent Table 10 below displays the most frequently used words (complete list of words used by children is provided in Appendix x).



**FIGURE 16** WORD CLOUD DISPLAYING THE MOST FREQUENTLY USED WORDS BY CHILDREN TO DESCRIBE THEIR VIEWS OF READING PRIOR TO THE INTERVENTION

**TABLE 10 TOTAL INSTANCES OF WORDS USED BY CHILDREN TO DESCRIBE THEIR RELATIONSHIP TO READING  
PRE-INTERVENTION**

Word	Sentiment rating	Frequency (n)	Frequency (%)
Happy	+1	25	19%
Hard	-1	16	12%
Tricky	-1	11	8%
Sad	-1	10	7%
Excited	+1	9	7%
Boring	-1	9	7%
Fun	+1	8	6%
Worried	-1	6	4%
Angry	-1	6	4%
Easy	0	5	3%
Scared	-1	4	3%
Calm	0	3	2%
Difficult	-1	3	2%
Bad	-1	2	1%
Confused	-1	2	1%
Other		8	6%

*Note: sentiment rating refers to the rating of the word in terms of its sentiment where +1 represents positive words, 0 represents neutral words and -1 represents negative words.*

#### 5.2.3.2 Post-intervention

In total, children used 24 words to describe their views of reading after the intervention. The word cloud (Figure 17) and subsequent Table 11 below displays the most frequently used words post-intervention.



**FIGURE 17** WORD CLOUD DISPLAYING THE MOST FREQUENTLY USED WORDS BY CHILDREN TO DESCRIBE THEIR VIEWS OF THEMSELVES AS READERS / READING AFTER THE INTERVENTION.

**TABLE 11** TOTAL INSTANCES OF WORDS USED BY CHILDREN TO DESCRIBE THEIR RELATIONSHIP TO READING POST-INTERVENTION

Word	Sentiment rating	Frequency (n)	Frequency (%)
Fun	+1	22	18%
Good	+1	18	14%
Exciting	+1	6	5%
Nice	+1	6	5%
Cool	+1	5	4%
Amazing	+1	5	4%
Happy	+1	4	3%
Wonderful	+1	4	3%
Great	+1	4	3%
Tricky	-1	3	2%
Hard	0	3	2%
Important	+1	3	2%
Helpful	+1	3	2%
Beautiful	+1	3	2%
Other		15	12%



The sentiment lexicon scores prior to the intervention and after the intervention (where positive scores indicated an overall positive sentiment, while negative scores indicated an overall negative sentiment to the words used) were computed for each child individually and were analysed using a paired samples T-test. The analysis revealed that the lexicon sentiment for all children was significantly higher post-intervention ( $M=2.24$ ,  $SD=1.04$ ) compared to pre-intervention ( $M=-.80$ ,  $SD=2.12$ ),  $t(40) = 8.646$ ,  $p<.001$ ,  $d=2.26$ .

### 5.2.4 RQ3: Children’s views of the intervention

Children were shown a picture of themselves taking part in the intervention and were asked to describe the intervention using three words. The word cloud (Figure 18) below displays the words that children frequently used to describe the intervention.



**FIGURE 18** WORD CLOUD DISPLAYING THE MOST FREQUENTLY USED WORDS BY THE CHILDREN TO DESCRIBE THE INTERVENTION

Table 12 displays the words that the children used most commonly when describing the intervention, alongside a count of the frequency with which the word was mentioned along

with a percentage representing the number of times the word was used as a proportion of all the words that were used to describe the intervention. In total, children used 33 different words to describe the intervention, although some of these were repeated multiple times (as can be viewed in the table below; full list available in Appendix <sup>xi</sup>).

**TABLE 12 FREQUENCY OF WORDS USED BY CHILDREN TO DESCRIBE THE INTERVENTION**

Word	Positivity rating	Frequency (n)	Frequency (%)
Fun	Positive	28	19%
Good	Positive	27	18%
Exciting	Positive	17	11%
Easy	Positive	13	9%
Amazing	Positive	8	5%
Great	Positive	6	4%
Fantastic	Positive	6	4%
Happy	Positive	6	4%
Nice	Positive	6	4%
Wonderful	Positive	3	2%
Joyful	Positive	3	2%
Other		22	18%

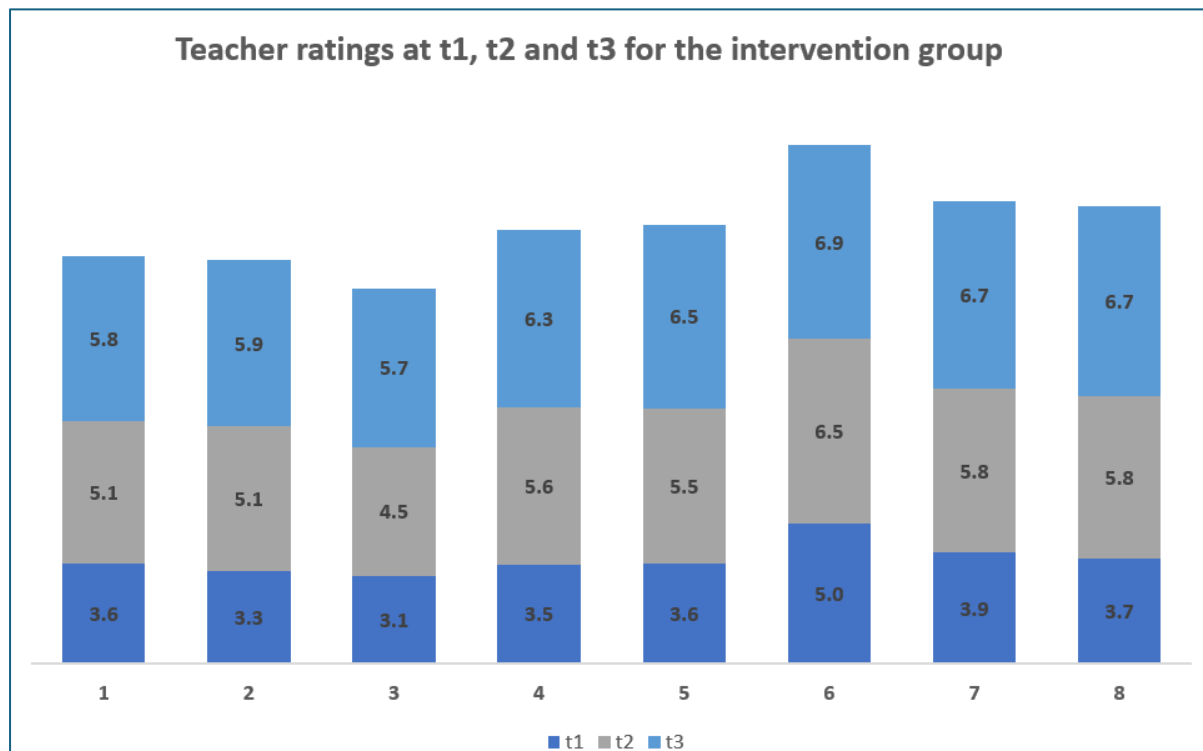
To compare the difference in the types of words that children used to describe the intervention, a count of positive and negative words was conducted. A paired samples t-test revealed that children used significantly more positive words ( $M=2.78$ ,  $SD=.51$ ) than negative words ( $M=.06$ ,  $SD=.24$ ),  $t(50) = 29.238$ ,  $p < .001$ ,  $d = .67$ .

### 5.2.5 RQ4: Teachers' ratings of literacy related outcomes

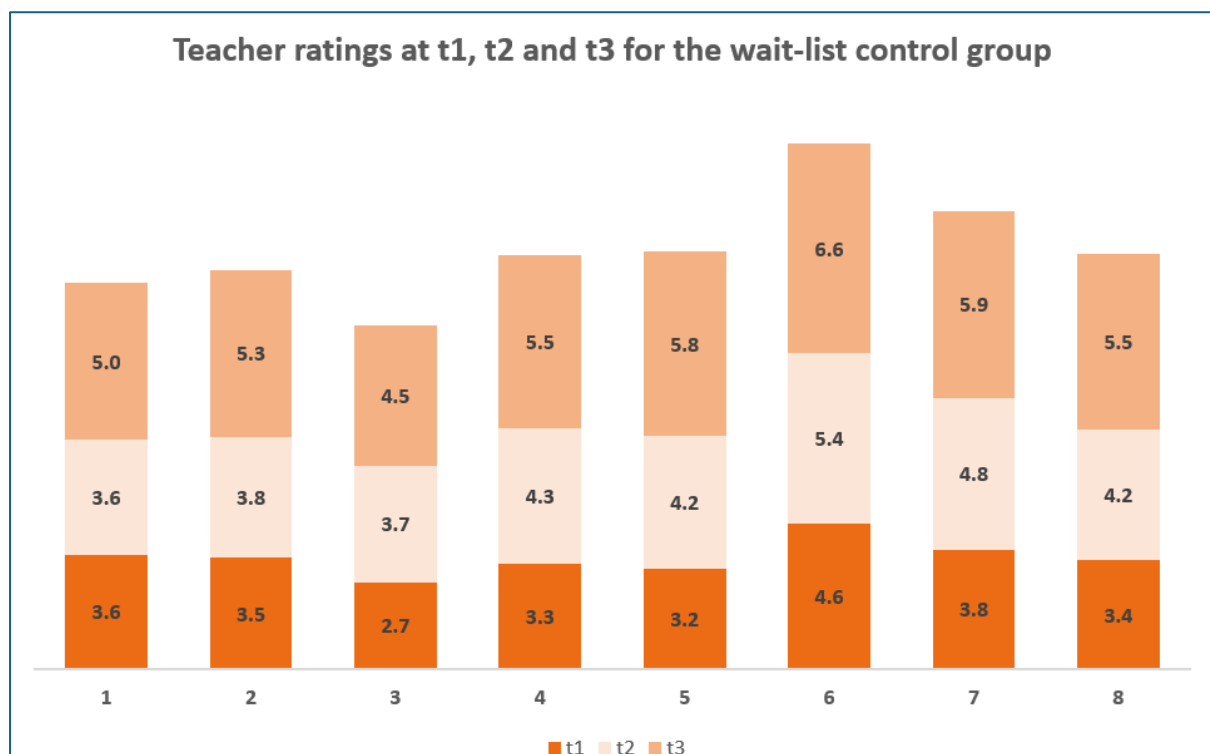
Teachers were asked to rate each child taking part in the study using a 10-point Likert rating scale (with 1 representing no progress and 10 representing exceptional progress) in a range of areas. Teachers were asked to think about the child in that moment in time (and data were collected at  $t_1$ ,  $t_2$ , and  $t_3$ ). The questionnaire asked respondents to consider the following areas: 1) academic progress in general, 2) reading, 3) writing, 4) self-esteem, 5) self-

efficacy, 6) general attitude to learning, 7) confidence and 8) contribution to class discussions.

Average (*M*) ratings are displayed in Figures 19 and 20 below.



**FIGURE 19** TEACHER RATINGS OF THE LITERACY RELATED CONSTRUCTS AT T1, T2 AND T3 FOR THE INTERVENTION GROUP.



**FIGURE 20** TEACHER RATINGS OF THE LITERACY RELATED CONSTRUCTS AT T1, T2 AND T3 FOR THE WAIT-LIST CONTROL GROUP.

As the data were ordinal in nature, and therefore not appropriate for parametric testing, data were analysed using Friedman's test to look for main differences over time. The results of this analysis for all of the constructs measured is displayed in Table 13.

**TABLE 13 FRIEDMAN TEST ON LIKERT RATING SCALES BETWEEN DATA COLLECTION POINTS (T1, T2 AND T3)**

<i>Scale</i>	<i>Group</i>	<i>Test</i>
Academic progress in general	Intervention group	$\chi^2(2)=49.723, p<.001^{***}$
	Wait-list control	$\chi^2(2)=7.233, p=.027^*$
Reading	Intervention group	$\chi^2(2)=47.73, p<.001^{***}$
	Wait-list control	$\chi^2(2)=13.107, p=.001^{***}$
Writing	Intervention group	$\chi^2(2)=52.519, p<.001^{***}$
	Wait-list control	$\chi^2(2)=14.949, p=.001^*$
Self-esteem	Intervention group	$\chi^2(2)=48.127, p<.001^{***}$
	Wait-list control	$\chi^2(2)=9.789, p=.007^*$
Self-efficacy	Intervention group	$\chi^2(2)=48.860, p<.001^{***}$
	Wait-list control	$\chi^2(2)=17.148, p<.001^{***}$
Attitude to learning	Intervention group	$\chi^2(2)=33.755, p<.001^{***}$
	Wait-list control	$\chi^2(2)=6.0, p=.05^*$
Confidence	Intervention group	$\chi^2(2)=54.209, p<.001^{***}$
	Wait-list control	$\chi^2(2)=11.633, p=.003^*$
Contribution to classroom discussion	Intervention group	$\chi^2(2)=35.733, p<.001^{***}$
	Wait-list control	$\chi^2(2)=7.179, p=.028^*$

\*significant at the .05 level \*\*\*significant at the <.001 level

The Friedman tests indicated that all of the measures differed over time for both groups. In order to better understand whether there were differences between data collection time points across the groups, Wilcoxon Signed-Rank Tests were used on pairs of data for the groups separately. The results are displayed in Table 14.

**TABLE 14 PAIRWISE POST-HOC COMPARISONS USING WILCOXON SIGNED-RANK TESTS OF TEACHER RATED DATA**

Scale	Pair	Intervention Group		Wait-list Control Group	
		Z statistic	<i>p</i>	Z statistic	<i>p</i>
Academic progress in general	t1 / t2	4.491	<.001*	.376	.707
	t2 / t3	3.572	<.001*	2.516	.012*
	t1 / t3	4.819	<.001*	3.260	.001*
Reading	t1 / t2	4.17	<.001*	.417	.676
	t2 / t3	2.97	.003*	2.503	.012*
	t1 / t3	4.90	<.001*	3.473	.001*
Writing	t1 / t2	4.49	<.001*	2.07	.038
	t2 / t3	3.89	<.001*	1.30	.193
	t1 / t3	4.97	<.001*	3.881	<.001*
Self-esteem	t1 / t2	4.749	<.001*	1.706	.088
	t2 / t3	2.766	.006*	1.649	.099
	t1 / t3	4.828	<.001*	3.637	<.001*
Self-efficacy	t1 / t2	4.459	<.001*	2.072	.038
	t2 / t3	3.833	<.001*	2.283	.022
	t1 / t3	4.883	<.001*	3.944	<.001*
Attitude to learning	t1 / t2	4.183	<.001*	.789	.328
	t2 / t3	1.447	.148	1.965	.049
	t1 / t3	4.549	<.001*	3.348	.001*
Confidence	t1 / t2	4.68	<.001*	1.71	.087
	t2 / t3	3.73	<.001*	1.9	.05
	t1 / t3	4.98	<.001*	3.73	<.001*
Contribution to classroom discussion	t1 / t2	4.035	<.001*	.476	.634
	t2 / t3	2.744	.006*	1.458	.145
	t1 / t3	4.718	<.001*	3.304	.001*

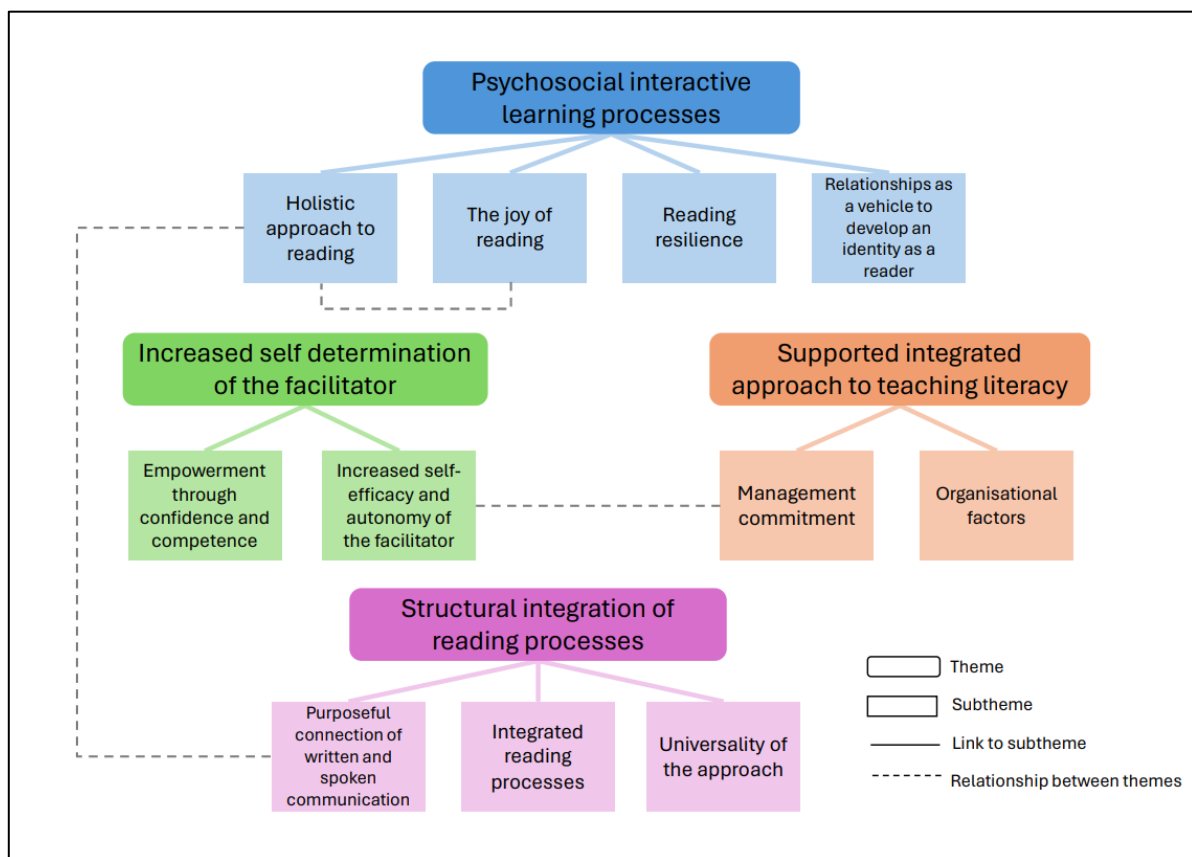
\*significant at the .017 level (Bonferroni corrected alpha value)

## 5.3 Phase 2 Results

### 5.3.1 RQ5: Thematic analysis

Qualitative data obtained during the interviews with intervention facilitators were analysed using reflexive TA (Braun & Clarke, 2006, 2019, 2021). Four overarching themes were identified in the data: structural integration of the reading processes, psychosocial

interactive learning processes, increased self-determination of the facilitator and supported integrated approach to teaching literacy. Two of the overarching themes yielded two corresponding subthemes, one of the themes yielded three corresponding subthemes and the final theme yielded four corresponding subthemes. A thematic map is represented in Figure 21. Each overarching subtheme will be discussed in the subsequent sections of this thesis, with interview quotations embedded in the text that reflect the theme in discussion. Further information regarding the process of the TA, as well as further examples of interview quotations that represent the themes are provided in Appendix <sup>1</sup>.



**FIGURE 21** THEMATIC MAP FOR THE FOUR OVERARCHING THEMES AND ELEVEN CORRESPONDING SUBTHEMES IDENTIFIED DURING THE INTERVIEWS WITH THE INTERVENTION FACILITATORS.

### 5.3.2 Theme One: Psychosocial interactive learning processes

Theme one explores reports around the psychosocial interactive learning processes associated with the intervention. Figure 22 represents the subthemes relating to this overarching theme in the data. Two of the subthemes in this theme were linked.

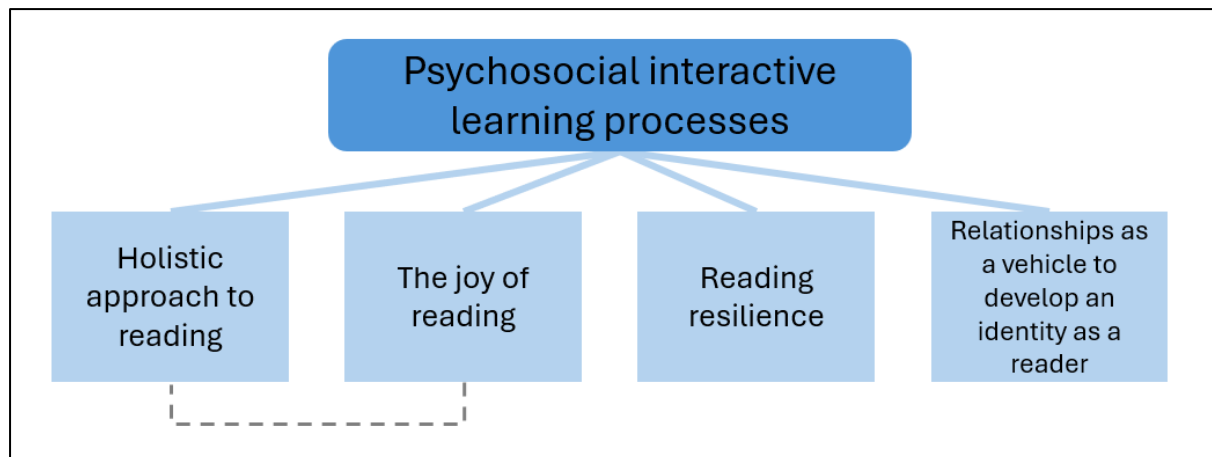


FIGURE 22 THEME ONE THEMATIC MAP

#### 5.3.2.1 Holistic approach to reading

Participants reflected on the holistic nature of the intervention, describing how the type of materials used successfully supported engagement. All participants referenced the use of ‘real’ books as a facilitator to this. One participant said, *“the reading of the real books, I think that was really useful. Because they are getting to that age, particularly as the years gone on, like this second group in particular, they are getting to that age where they want to read real books and books that they have seen...”* Another participant talked about how this type of material provided further engagement through exposure to more content than may be typically provided in restricted texts or reading schemes. This participant said, *“...you know, for one little girl who doesn't read at home, and now she can take her books and read them by herself... it opens a new world for them.”* Finally, participants noted that the holistic nature of the approach afforded the opportunity to have time to absorb the meaning of the text,

providing further engagement for the children. For example, one participant explained that *"...you're giving them time you're not rushing them through, right, get this book read or change the next one, get this but they're actually having the time to absorb the story and the words."*

#### *5.3.2.2 The joy of reading*

One theme that emerged from the data referenced by three of the participants explored how the intervention promoted the joy of reading. This was often linked with holistic nature of the intervention (notably the types of books offered in the intervention, see section 5.3.2.1). One participant explained that, *"...I think the children have really enjoyed it every morning, they were ready and waiting to come out and do the intervention."* Another participant said, *"I have noticed actually the, from the not wanting to come and read, to wanting to come and read, you know, to get that new book to let's ...read this one."*

#### *5.3.2.3 Reading resilience*

Interview data indicated that the content of the intervention had an impact on children's reading resilience and participants reflected broadly on notions of increased self-esteem and confidence related to reading. There was a broad consensus, referenced by all participants, that the inclusion of motivational statements (or positive affirmation related to reading) were a helpful conduit for achieving that. One participant said, *"...the children really liked the... slide where it's like, got the affirmation. "*

It emerged in the data that participants felt that there was an impact on children's confidence as a result of the intervention and that this increased resilience. One participant said, *"some of them have been so much more confident in their reading. One of the little boys in the second session that I did, if he got anything wrong, he used to get really upset. But he*



*was sort of like putting his hand up and quite eager..."* A further quote from another participant reinforces this idea. They said, *"I found when we've been reading, as it's gone along, they're less likely to give up when they've been reading."* Finally, participants noted the impact of the reading intervention on children's relationship to reading over time with one participant describing this as a 'light bulb moment.' They said, *"I just loved watching the light bulb come up in their eyes when, when suddenly they got it they suddenly realise that oh my gosh, I'm reading this and I'm understanding that and you know, and watching them develop as the weeks went on..."*

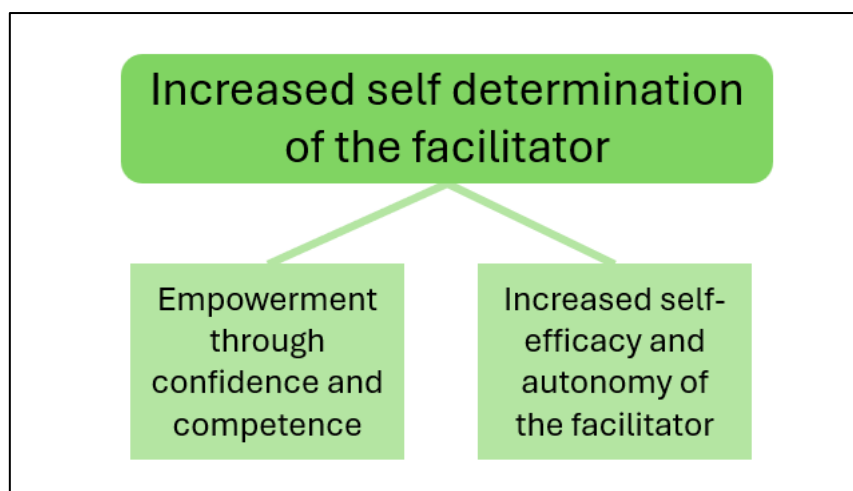
#### *5.3.2.4 Relationships as a vehicle to develop an identity as a reader*

Across the interview data, there was a clear theme about the relationships that developed as a result of the intervention and how this helped to shape and reinforce identity as a reader. This theme described the relationships between the children in the group as well as the relationships that the adult participants developed with the children. One participant stated that *"...the kids loved it. I'd walk into their classroom, the goal is, we are readers straightway jumping up, we are readers, and I was like yeah, coming down. And they were rushing to get there. They all had their own seats to sit on. And yeah, just watching the children enjoy. It was lovely. It wasn't like pulling teeth."* Another participant said, *"...and sometimes they'd be here before I even got out here. So I think they've really enjoyed that, that time with that focus time on them,"* and another said, *"I think they just loved being a part of a reading group, I think they just loved the fact that they, this was a group for them. And only them."* Participants discussed children's sense of benefitting from being in a space where the focus is on them. The participants also discussed their own relationships within the groups and their sense of pride in being part of a group where they were able to observe children making

progress. One participant said, *“it's been nice having that little group and see their confidence kind of growing, really.”*

### 5.3.3 Theme Two: Increased self-determination of the facilitator

Theme two explores information that emerged around the facilitator's increased self-determination as a result of delivering the intervention. Much of the data centred around the intervention facilitators' perceived self-efficacy and autonomy which appeared to be an important factor in how they were able to deliver the intervention in a practical sense. The subthemes, displayed in Figure 23, are expanded upon in the next section.



**FIGURE 23** THEME TWO THEMATIC MAP

#### 5.3.3.1 Increased self-efficacy and autonomy of the facilitator

A theme that emerged from the data from all participants centred around the psychological constructs of autonomy and self-efficacy. Self-efficacy refers to an individual's belief in their ability to successfully complete a task or accomplish a specific goal (Bandura & Walters, 1977). Participants spoke about how easy they found the intervention to implement with one participant stating, *“...it was it was just it was easy, very easy, and self-explanatory,”*

and *"...it was easy, because the slides you just run through them and then the books I just go and grab."* A further reflection of participants' self-efficacy was communicated through their expression of feelings of enjoyment related to the intervention. For example, one participant said, *"I enjoyed doing the slides, because the slides like give the opportunity to all the children to try..."*

During thematic analysis, it emerged that all participants discussed their growing sense of autonomy in applying and adapting the approach. This emerged through data which referred to some of the underlying pedagogical approaches (e.g., interleaving, distributed practice and cognitive load) and facilitators' sense of autonomy in applying those principles. For example, one participant said, *"I did adapt it some days, like a bit differently, especially towards the end, when a lot of the words were words that they knew. So I'd get them to come out the front maybe and read the board and give them a reward..."* and another participant stated, *"...because it was so repetitive throughout the week. I think by the end of it, they were like, oh, you know, so we tried to jazz it up a bit. And you've got to put your own spin on it as well. As long as you keep to the format and everything, you got to make it fun."* While both of these comments reflect a lack of fidelity to programme and infer that participants, at times, adjusted the intervention, it also reflects facilitators confidence to adapt approaches (explored further in Section 6.6.2). Another participant said, *"so some days, if we were a bit behind, because we've been on a school trip, or had to miss a session for a reason we'd sort of catch up on two sessions."*

#### *5.3.3.2 Empowerment through confidence and competence*

Participants reflected on the usefulness of having the confidence to move away from phonics books. One participant said, *"...it's given me the confidence as well to come off the so*

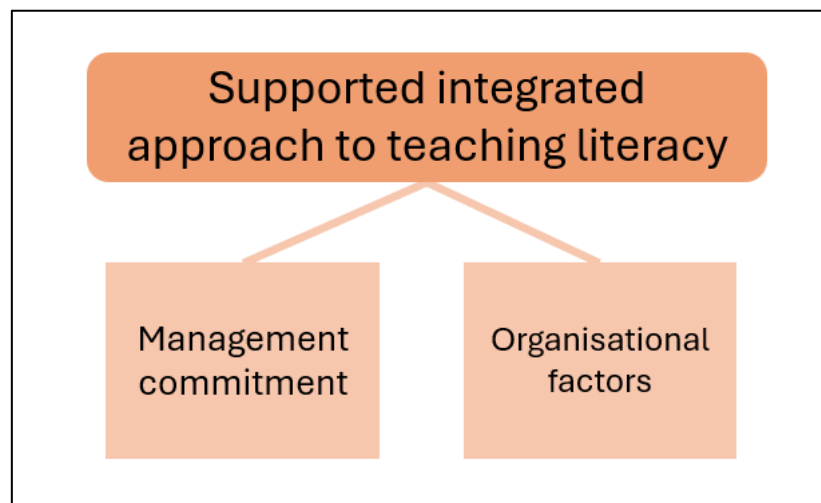
*much more phonics-based books, and we've gone to, you know, the Oxford reading tree stories."* This quote reflects a theme that emerged in the data that represents the knowledge that participants gained around the evidence relating to 'real' books and participants feeling confident to utilise these materials in practice.

Competence in the principles of the approach was reflected in a number of quotes that reflected these principles. For example, one participant discussed interleaving, stating, *"...I liked the fact that you jumbled them about you know, it wasn't the same one you were building and building and they you ended up with like, 50 words and what? You know, it was nice that you kept dipping back and forth with certain words."* Participants also mentioned the use of direct instruction many times, reflecting on the use of *"my turn...your turn"* on numerous occasions as well as reflecting on the benefit of the mode in which this was delivered. One participant said, for example, *"so it was a fun way of doing it as well, rather than just sitting down listening to them reading with a book. I think, like I said, the interaction with it being on the whiteboard. Made a difference for sure."* Additionally, participants reflected that it was beneficial for the intervention to be highly repetitive. For example, one participant said, *"...that was really beneficial. In terms of, kind of each day, it's true, the fact that it was like repetitive, and the children knew what was going to come each session was really useful."* This theme was linked to Management Commitment (see 5.3.4.1).

#### 5.3.4 Theme Three: Supported integrated approach to reading

Theme three explores subthemes that emerged centring around an overarching theme about the importance of supported integrated approaches to reading. Intervention facilitators discussed the significance of having management commitment to the intervention

and support to overcome some organisational factors. The subthemes are displayed in Figure 24.



**FIGURE 24** THEME THREE THEMATIC MAP

#### 5.3.4.1 *Management commitment*

A subtheme described by 4 out of 5 participants was termed management commitment. This reflected participants' views about the importance of all staff being informed about the intervention, whether they were involved in its delivery or not, and about having the support of more senior staff to deliver the intervention. For example, one participant said, *"...so I was very lucky that I was given that release time,"* reflecting on their own reliance on more senior members of staff. Another spoke about the supportiveness of members of staff, stating, *"I told [SENCO] that we need a screen apparently, because it's a slide. So, she was so supportive."* Another participant said, *"...I've got good teachers who would just allow the children to go and they caught them up when they could,"* while another added, *"working out when are we going to do this, and then the teachers working out when they can release the children."* Extending the importance of this idea of all staff having equal commitment to the intervention, one participant stated, *"...having that intervention teacher,*

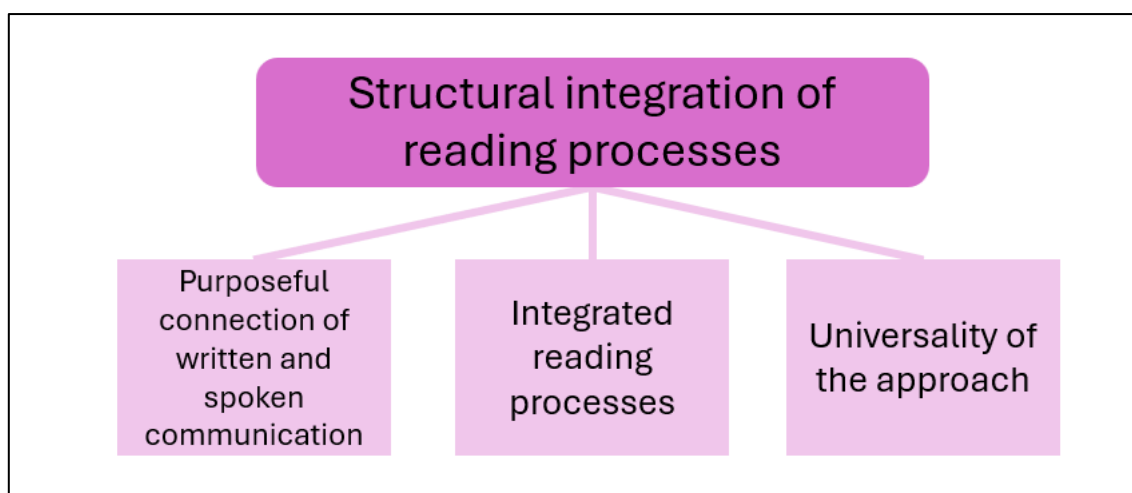
*maybe be in a lesson once in a while, and like actively encouraging them to do it within the lessons and ... making sure there's that communication between the teacher and the intervention staff."*

#### **5.3.4.2 Organisational factors**

Another subtheme theme that emerged related to participants' views about the organisational factors that were present in the implementation of this intervention. This theme was present in data from all participants. This referred to environmental challenges, such as having the right equipment. One participant said, *"I mean, for us just finding a place with a screen to be able to show them was quite tricky."* Participants additionally spoke about physical challenges in the environment relating to space in which to deliver the intervention, with one participant saying, *"But for me, it worked because I had the big screen and I had privacy. So it's good. But if I was in a room... (with) a tiny little computer in the corner. So that would be my only problem that if I didn't have the room."* Finally, participants discussed the challenge of finding time to do the intervention. One participant said, *"...timing, timing wise, like fitting it in was a challenge,"* and another said, *"it's getting that time, I don't want to pull them out of lessons, time for it. So it's really only sort of like assembly times."*

#### **5.3.5 Theme Four: Structural integration of reading processes**

The final theme refers to how the intervention supported the structural integration of key literacy and reading processes. The subthemes are displayed in Figure 25.



**FIGURE 25** THEME FOUR THEMATIC MAP

#### 5.3.5.1 Purposeful connection of written and spoken communication

An important and significant theme that emerged in the data related to participants views about the importance of purposefully connecting written and spoken communication in the intervention for a number of reasons. One participant discussed the utility of children being able to create their own sentences, a feature of the intervention whose aim was to reinforce the meaning of words and therefore increase vocabulary. One participant said, “...I mean, some of them made up crazy sentences... you know, there was quite a lot of discussion some days on, on those sentences.” Additionally, another reflection about language related to participants’ views around exposure to new language, either through direct instruction in the intervention or through expository texts provided at the end of the intervention. One participant stated, “I love the idea that they are exposing [sic] to new language, not language, but new vocabulary. With the new book corner books that they haven’t read before or (been) introduced (to) before.” The participant refers to ‘book corner books’ which is termed as ‘real’ books in this thesis. Another participant, regarding the exposition to new language through texts, said, “...because it’s introducing them to new words. It’s totally new words. They haven’t tried to read before. Learning new meanings like some they have asked me lots of like, what

*does that mean? What is this?"* This is evidence of higher order reading skills being reinforced by the exposure to new language in a supportive context (i.e., clarifying new words) which may be as a result of being exposed to texts with unfamiliar language, a feature of this intervention that was distinguishable to practice through SSP.

#### *5.3.5.2 Integrated reading processes*

It emerged from the qualitative data that participants had a sense that the intervention was impactful for the children in terms of supporting their integrating diverse reading processes, which in turn positively affected their reading outcomes. For example, participants said *"...so as time went on, they seemed that their fluency picked up more,"* and *"they were just like, steadily just reading up and up and they all moved up a reading level."* Importantly, a theme that is captured in this data that was not observable in the quantitative data was children's capacity to apply the knowledge they had gained from the intervention to other parts of the curriculum and school day. For example, one participant said, *"So you're taking them from reading a book, to reading on the screen with me, too, then applying that knowledge and those words and then taking it into another level of the teaching and learning for them. And I think that's where you can see the progression."*

All of the participants referred to the elements of the intervention, largely criticising the integration of SSP approaches. For example, one participant noted, *"...I do think the phonics element of it was a nice inclusion, but I don't know how beneficial that part was, I suppose because they were already learning phonics in school..."* This was echoed by another participant who provided further detail about this. This participant stated, *"...I definitely think, you know, some of those readers are, you know, benefit more from the sight reading, rather than the phonics based..."* This participant notes that the addition of a diverse range of



methods and strategies to support literacy development that are distinguishable to instructional methods taking place in the classroom (namely phonics), is beneficial to the children.

#### *5.3.5.3 Universality of the approach*

The final subtheme that emerged in the data centred on participants' feelings about the universality of the approach, both in terms of how individuals responded to the intervention and also the benefit of a mixed composition in terms of the group. Participants reflected on the nature of the group, with one stating that *"...the group did tend to be more EAL or SEN children."* One participant reflected on the nature of the group being mixed in 'ability' which some participants felt presented a challenge, stating, *"...it depends on the ... abilities of the children, because they, they were like mix, let's say, some of them were able, some of them, they needed more help."* Conversely, other participants felt that the mixed nature of the group was helpful in facilitating learning for all children. One participant noted, *"sometimes some of the stronger ones, the other ones would sort of follow. You know, they'd take the lead, and they just follow along, sort of, and copy them sort of thing."*

## Chapter 6: Discussion

### 6.1 Chapter Overview

This study aimed to investigate whether a multicomponent reading intervention improved reading outcomes for children who were identified as having literacy difficulties in a sample of primary schools in the UK. A further important focus of this study was to capture the voice of the child. To that end, the impact of the reading intervention on children's views of the intervention and the impact of the intervention on children's relationship with reading was also investigated. Furthermore, the study sought to go beyond assessing whether the intervention was effective and therefore sought the views of the intervention facilitators to gain an understanding of *why* they felt the intervention was effective. This study had five research questions that sought to investigate these issues and deployed a mixed-methods approach. In this chapter, the key findings will be discussed. In an effort to present the results in a manner that draws together the multiple perspectives of the data collected from different participants, this discussion will be organised by sub-headings which draw on the data to support responding to the five research questions. This is because of the nature of mixed-methods research and the epistemological perspective of this paper. The multiple perspectives afforded through the mixture of quantitative and qualitative data from a number of sources help to shape a deeper understanding of the outcomes of the study. Later in the chapter, the strengths and limitations of the study will be explored. Subsequently, the implications of the study will be outlined and structured using Bronfenbrenner's ecosystemic theory (2005) as an heuristic to structure these findings to reflect the different levels that EPs work at. This theoretical model was introduced earlier in the thesis as an heuristic for the

study. Finally, future directions for research will be elaborated upon before reaching a conclusion.

## 6.2 Reading outcomes (RQ1 and RQ5)

This section will focus on reading outcomes of the participants involved in the study and will draw predominantly from analyses of measures of reading taken at the three time points measured in this study. It will also look at data gathered from the teachers of the participants in an effort to assess whether the effects of the intervention were observed beyond the intervention. Where it is relevant, information from the qualitative analyses will be included to provide a rich account and triangulated perspective of the outcomes of this study.

### 6.2.1 Word reading

Measures of word reading were obtained at  $t_1$ ,  $t_2$  and  $t_3$  using the BAS3 word reading subtest. These data indicated that participants improved significantly on a measure of single word reading following the intervention. There was a significant increase for both groups after they had received the intervention compared to their scores before. Additionally, the intervention group performed significantly better on this measure than the wait-list control at  $t_2$ , indicating that it was the intervention itself that was successful in improving single word reading. Furthermore, at  $t_3$ , the intervention group did not perform significantly lower than at  $t_2$ , indicating the improvements observed following the intervention were retained over time and there was no learning decay.

Similarly, for the YARC reading accuracy subscale, the intervention group improved significantly after they had received the intervention and they scored significantly better than

the wait-list control group, indicating that the intervention was successful in improving accuracy in text reading. The wait-list control group also improved significantly after they had received the intervention and there was no significant difference between the two groups at  $t_3$ , indicating that both groups responded positively to the intervention. For the intervention group, the  $t_3$  data indicated that there was no significant decrease in the scores that were obtained at  $t_2$ , indicating that the children retained their gains.

This is consistent with previous research (O'Connor & Solity, 2020b; Wanzek et al., 2020) and confirms the findings that were reported in the pilot study (Lettington & Hill, 2022). This suggests that a multicomponent reading intervention improves single word reading and accuracy, which are both measures of word reading. Additionally, as both of these measures are standardised measures of word reading containing words outside the target content of this intervention, it implies that this effect is a robust one, since the effects go beyond the content of the intervention itself. This study adds to previous research (e.g., Wanzek et al., 2017) as it provides an insight into the positive long term effect of the intervention through collection of data at  $t_3$ , which indicated that participants retained their gains.

### 6.2.2 Reading fluency

The data suggested that there was no effect of the intervention on fluency for either of the groups. The current body of evidence reports mixed findings in terms of reading fluency with some, albeit less frequently, reporting that fluency improvements were achieved (Wanzek et al., 2020) while many others report that fluency improvements are more difficult to achieve (e.g., Vaughn et al., 2016). It is perhaps not surprising that there were no significant gains in fluency resulting from this intervention. According to the instructional hierarchy (Haring & Eaton, 1978), achieving fluency in a skill develops *after* a skill is acquired.

Additionally, fluency was not an explicit component in this intervention and, although there may have reasonably been some improvements in fluency as a result of increased accuracy, this is likely to have been observed over a longer duration. In addition, the YARC fluency score is only achieved when individuals are able to read a predetermined number of words accurately. This means that those individuals with the most severe reading difficulties (i.e., those with the lowest accuracy score) would not have achieved a fluency score. As such, reading fluency scores were skewed towards the most able readers at the beginning of the study, meaning any gains may have appeared non-significant on average in comparison at follow up data collection points.

### 6.2.3 Reading comprehension

Measures of reading comprehension were observed to improve after the intervention was delivered to both the intervention and the wait-list control groups. The intervention group also scored significantly higher than the wait-list control group at  $t_2$ , indicating that it was the intervention that impacted the gains of the intervention group. Follow up measures of the intervention group showed that they did not score significantly lower at  $t_3$ , suggesting that there was no learning decay. Research has not consistently shown that intensive reading interventions impact reading comprehension (e.g., Vaughn et al., 2016). Reading interventions that do show significant improvements in comprehension are often more focused on language elements such as morphological approaches (e.g., Georgiou et al., 2021) or ones that contain specifically targeted activities that have a specific instructional element related to comprehension (e.g., Young et al., 2018). This study provides evidence that a balanced approach involving and targeting multiple components of reading improves reading comprehension. This finding should be interpreted with caution given the age of the

participants. Miciak et al. (2018) discuss the changing nature of the task of reading comprehension as readers progress in efficiency, explaining that lower-level readers are required to recall more surface level detail of narrative which often requires little inference. Given the age of the participants, it is possible that this effect was observed as the comprehension 'task' was relatively simple and it may not be observed in more advanced readers.

#### 6.2.4 Generalisation of skills

Qualitative data from the adults reflected a notion that some children were beginning to be able to generalise the skills they were learning in the intervention space to other contexts. Several references were made to this in multiple themes represented in the qualitative section of the results. For example, adults spoke about increasing engagement (encapsulated in the theme, '*The joy of reading*') as children were reported to be more likely to read in other places outside of the intervention. In addition, in the theme '*Integrated reading processes*,' adults made reference to children making progress in the types of books they were able to access and the ability to use some of the skills they learned in the intervention in the classroom context. This is an interesting finding, and one that is not reported upon in any of the prior literature referred to in this study.

#### 6.2.6 Summary of reading outcomes

The data outlined above indicate that this reading intervention was successful in improving reading outcomes for children who received it in terms of single word reading, accuracy and comprehension. From the measures taken, it was not possible to observe that children improved in terms of reading fluency. Data from the adults additionally indicated

that children were beginning to generalise their learning from the intervention space to other contexts.

## 6.3 The voice of the child (RQ2, RQ3)

This section will explore an important feature of this study which is somewhat unique in the field of reading intervention research: the voice of the child. It will explore the children's views of reading both before and after the intervention and will take a closer look at what children thought of the intervention itself.

### 6.3.1 Children's views of reading

In order to establish an understanding of whether this intervention had an impact on children's views of the intervention, children were asked to describe their views of reading before the intervention and after it. This was done through drawing as it is understood that this is an appropriate means of gaining an insight into a young person's world (Malchiodi, 1998). Children were able to write or dictate three words to explain their feelings or thoughts about reading. Prior to the intervention, the most frequent words were 'happy,' 'hard,' 'tricky,' 'sad,' 'excited' and 'boring.' These words accounted for 60% of the total. After the intervention, the most frequently used words were 'fun,' 'good,' 'exciting,' 'nice,' 'cool,' 'amazing,' 'happy,' 'wonderful' and 'great.' The aforementioned words account for 59% of the total. An analysis of the sentiment of the words confirmed that children used more words with a positive sentiment after the intervention compared to before. Some studies have previously sought to understand constructs such as participants' competence beliefs about reading (Daki & Savage, 2010) and larger studies have looked at confidence and motivation through scaling measures (Mullins et al., 2017). To this author's knowledge, this is the first study that has directly asked about the views of the children taking part and has recorded

those views in the way that they were expressed by the participants. This provides valuable insight into the effectiveness of the intervention from the perspective of an important stakeholder, those for whom the intervention is designed.

### 6.3.2 Children's views of the intervention

Qualitative data were collected after the intervention to assess children's views of the intervention. The pilot study (Lettington & Hill, 2022) highlighted challenges in collecting more detailed data from the participants. In order to overcome this difficulty, children were presented with a photo that was taken of their own group receiving the intervention as a means of eliciting their voice and ensuring that they fully understood what they were being asked to do. Children most frequently used the words 'fun,' 'good,' 'exciting,' 'easy' and 'amazing' which had a combined representation of 63% of the words used to describe the intervention. Although these words have fairly transparent meanings, they were independently blind inter-rated and were all confirmed to be positive in their sentiment. Analyses additionally revealed that children used significantly more words with a positive sentiment compared to words with a negative sentiment. Broadly speaking, this indicates that children felt positively about the intervention. This is a positive finding as it has obvious implications for the practicability of the intervention, implying that school staff can feel confident about implementing this intervention. It is additionally positive that this study has sought to gather the perspective of those individuals who took part. In the numerous examples provided in the literature review, all of the cited studies sought to find out whether their intervention was successful in terms of reading outcomes. However, there was a consistent failure to obtain the voice of the child participants.



### 6.3.3 Summary of pupil voice

This section has outlined some important findings of this research pertaining to the voice of the key stakeholders: the participants themselves. It is perhaps unique in its attempt to rigorously obtain the perspective of those involved and therefore provides a distinctive contribution to the literature. The children responded positively to the intervention, both in terms of how they viewed reading and in terms of the intervention itself. It is of critical importance that this approach is one that does not provide further exposure to reading related failure, since it is known that this can have a significant impact on self-esteem (Wilmot et al., 2023). Additionally, for an intervention to be successful, it is important that it provides motivation for the participants to attend. These data would suggest that this intervention was successful in that endeavour.

## 6.4 Class teacher's views of reading outcomes (RQ4)

This section will discuss the findings of the data collected from teachers of the children who participated in the study. In all cases, the teachers were not the individual delivering the intervention to the participant. As such, these data afford an interesting insight into the presence of progress outside of the intervention space.

### 6.4.1 Reading constructs

The teachers of the children were asked to rate participants at  $t_1$ ,  $t_2$  and  $t_3$  on a number of constructs that related to literacy (e.g. reading, writing, academic progress in general) and other constructs that are known to be affected by an individual's literacy ability and relationship with reading (e.g. self-esteem, confidence etc.; Boyes et al., 2018). The data that were collected were non-parametric and as there is no non-parametric test that allows

for the analysis of the interaction between time and group, the groups were analysed separately. Analyses on both groups revealed that there was a difference between the scores across time points for all of the constructs measured. Visual analysis of the descriptive data revealed that for both groups, this difference was consistently positive (i.e., the ratings went up). The different constructs will be discussed for each group, briefly, in the subsequent section.

#### *6.4.1.1 Intervention group*

In each of the constructs measured, the intervention group improved significantly between  $t1$  and  $t2$ , after they had received the intervention. On average, the children were rated 3.7 on a ten-point Likert rating scale at  $t1$  by their teachers and at  $t2$  they were rated 5.5. This indicates that the teachers of the children were able to observe improvements in areas that are known to be related to reading (Boyes et al., 2018; Denton et al., 2021; Riddick et al., 1999; Toste et al., 2017) and that they observed this outside of the intervention space. This indicates that children were beginning to generalise their learning. Between  $t2$  and  $t3$ , children significantly improved in all constructs apart from 'attitude to learning.' This effect is more challenging to explain as children were no longer in receipt of the intervention. However, although the improvements are significant, they are not as great in value as the improvements between  $t1$  and  $t2$ . The average difference between  $t1$  and  $t2$  was 1.7 while the average difference between  $t2$  and  $t3$  was 0.8. Additionally, it is possible that the children, having improved in reading as a result of the intervention, were more able to access the curriculum and learning taking place in class as a result and this had a broad impact on their outcomes.

#### 6.4.1.2 Wait-list control group

For the wait-list control group, there were no significant improvements on any of the constructs measured between  $t1$  and  $t2$ . On average, teachers rated this group 3.5 across the constructs at  $t1$  and 4.25 at  $t2$ . This is compelling evidence that the effects noted for the intervention group were as a result of the intervention and not simply because they would have improved regardless. The results between  $t2$  and  $t3$ , when this group were in receipt of the intervention, are less clear cut. A significant improvement was noted for academic progress in general and reading. However, for the remainder of the constructs, no significant improvements were found. Upon examination of the data, it is possible to observe, however, that for all of the constructs, significant improvements were found between  $t1$  and  $t3$ . On average, teachers rated children 5.5 across the constructs at  $t3$ . There are several reasons why this may be observed in the data. Firstly, this group was smaller, meaning that it is possible that the test was not sensitive enough to note significant differences between the time points (a worthwhile question, since non-parametric tests are a blunter instrument). Additionally, a number of the differences were no longer significant once a Bonferroni correction had been made. However, the descriptive data *do* indicate that there were improvements between  $t2$  and  $t3$  which averaged 1.25 compared to 0.75 between  $t1$  and  $t2$ .

#### 6.4.2 Summary of teacher views

Several tentative conclusions can be drawn from the data from the teachers, although this must be done cautiously and within the context within which the data were collected. Firstly, it appears that the intervention impacts a broad range of reading related constructs from the perspective of the teacher as the intervention group improved in a broad range of measures while the wait-list control did not. It can be reasonably deduced that this is outside

of the context of the intervention since none of the teachers were those delivering the intervention. Secondly, it would appear that these effects are long lasting as at the follow-up data collection point, children in the intervention group continued to improve. Finally, it can be cautiously deduced that improving reading has an impact on a range of measures beyond simply reading itself, according to the data.

There are issues with these data which is why caution must be exercised in their interpretation. Firstly, the teachers were aware of which children were in receipt of the intervention. As such, Hawthorne effects may be observed in the data as it is possible that the teachers were either sensitive to any improvements that they were making or were reporting what they believed should be reported to the researcher (Landsberger, 1958). Additionally, given the nature of the data, it was not possible to compare across the groups to see if there were meaningful differences between the groups at different data collection time points. As such, it is difficult to ascertain whether this is an effect of the intervention or because the children would improve, from the perspective of the teacher, over time anyway. However, if this were the case, it would be expected that all groups would follow the same pattern (i.e., all improving significantly between data collection points) as it was the same teachers assessing both groups. As this was *not* the case, it can be inferred that the tentative conclusions drawn from this data are reliable.

## 6.5 Adult's views of the intervention (RQ5)

This section of the discussion will explore the qualitative data obtained through interviews with the intervention facilitators after the intervention. The data collected from this phase of the study represent an important addition to the research literature around reading interventions. This is because many large scale studies seek to answer the question

of whether an intervention is successful and this is almost exclusively achieved by collecting quantitative measures of reading pre- and post-intervention (see Donegan et al., 2020; Vaughn et al., 2016; Wanzek et al., 2020). Miciak et al. (2018) make an important point about multicomponent interventions: there is no ‘silver bullet’ in remedial programmes for reading that can undo years of reading related failure. While some large-scale evaluations of reading interventions, including the EEF studies mentioned previously, incorporate process evaluations to assess the reasons why an intervention may have been successful, there are practical challenges of implementing large research studies where collecting qualitative data would be costly in terms of time. This section will therefore discuss the qualitative analysis of the interview data with a view to extending the evidence outlined above which indicates that the intervention was successful. This section will provide valuable insight into the question of *why* it was successful.

### 6.5.1 Psychosocial interactive learning processes

The first overarching theme that emerged from the data was termed ‘psychosocial interactive learning processes.’ This provides an interesting insight into some of the social and emotional processes that contributed to the success of the intervention. Firstly, participants reflected that the holistic nature of the intervention increased engagement and children were more motivated to read because of the nature of the reading material. Previous studies have shown that targeting motivation alone can have a positive effect on reading outcomes (e.g., Daki & Savage, 2010) so this is a valuable addition to the evidence base that suggests that motivation can be increased by incorporating texts that children are interested in reading.

Solity, Vousden and colleagues (2020; 2009; 2011) are critical about reading scheme books<sup>13</sup>, arguing that they often result in children becoming disengaged and less motivated to read. The outcomes from this study would seem to support that position, since the reading materials in this study comprised of 'real books' and motivation and engagement increased. Future research should aim to capture this in a more formal way such as through the use of a more formal scale (such as the one developed in the Progress in International Literacy Study; Mullins et al., 2017).

A theme emerged in the data that indicated that the intervention was successful in supporting children to develop reading resilience, with all of the participants reflecting on the tangible effect on children's reading related self-esteem and this in turn impacted on resilience in the face of challenge and reading related adversity. Multiple studies have indicated that individuals with reading difficulties are at greater risk of having a lower self-esteem and have increased reported anxiety (Boyes et al., 2018; Taylor et al., 2010; Wilmot et al., 2023). The findings from this study seem to corroborate this narrative as participants reported that children increased in self-esteem as a result of the intervention, implying that for some of the children, this was an area of difficulty. Vaughn et al. (2022) reported that, when delivered alongside a reading intervention, anxiety management strategies (such as those incorporated in CBT) are an effective way of supporting progress in reading. This study provides further support for that idea. It is possible that the vehicle by which that was achieved was the motivational beliefs statements as this additionally has a promising evidence-base (e.g., Miciak et al., 2018).

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<sup>13</sup> Reading scheme books are graded reading materials designed for children in the early stages of learning to read and are typically organised into levels or stages by reading ability. They often feature repetitive language, simple vocabulary and restricted exposure to complex words.

Relationships as a vehicle to develop an identity as a reader was highlighted as an important means by which participants felt that children were able to make progress. This is a welcome finding which is not reported in any studies included in the literature review. This is possibly due to the large-scale nature of many of these studies, which reflects the importance of carrying out smaller scale research that is able to capture qualitative data alongside the quantitative measures. It is well reported that positive adult-student relationships and effortful engagement mediate learning outcomes for children (Hughes et al., 2008) and consequently, this finding is not particularly surprising. It does, however, shine a light on the practical importance of positive adult-child relationships in the *intervention* space and provides useful guidance when considering the implications of this study.

#### 6.5.2 Increased self-determination of the facilitator

The second overarching theme from the qualitative data describes the increased self-determination and pertains to the adult facilitating the intervention. Self-determination theory (SDT; Deci & Ryan, 2012) posits that motivation and engagement are determined by three core constructs: autonomy, competence and belongingness. None of the studies reported in the literature review measured the views of the people delivering the intervention. This is possibly because many studies focused on fidelity as a measure of how well the intervention was being implemented by the adult facilitator (e.g., Wolgemuth et al., 2014). However, this is potentially an oversight since it is widely reported that adult engagement (characterised by active participation, collaboration and a focus on the outcomes of children) significantly impacts the effectiveness of an intervention and leads to better outcomes for students (Anderson, 1997). It is likely that the design of this study promoted motivation through the target constructs as defined by SDT. Firstly, participants reported

being supported by management at the school (see below) which is likely to have increased autonomy by increasing confidence. Secondly, participants were given extensive training and ongoing supervision which is likely to have increased a sense of competence. Finally, participants belonged to a named group of professionals who were part of a study that was highlighted as important and worthwhile which is likely to have engendered a sense of belonging (an important feature that will be expanded upon in Section 6.7.3).

One of the findings that emerged through the analysis relates to the fidelity of the intervention. Participants reflected on their confidence and sense of autonomy in delivering the intervention. While this is positive through the lens of empowerment and self-determination, this poses a threat to the fidelity of the intervention (see Section 6.6.2).

### 6.5.3 Supported integrated approach to teaching reading

The third overarching theme related to the integration of diverse reading approaches which received support as an approach (and was therefore often related to the theme outlined above). Management commitment describes the way that facilitators were empowered to feel competent and confident in their application of the intervention. This is a positive finding and one that was not reported in the studies included in the literature review. This theme also reflects participants' views about the delivery of this intervention during school hours and how it was therefore necessary for teachers to be informed about the intervention and willing to facilitate it. This was not only about allowing children the time to go to the intervention, but also about ensuring that they were still able to access the curriculum and were released from class at an appropriate time. This supports findings from another study which showed that an intervention delivered after school was not effective (Roberts et al., 2018).



An important theme that emerged from the data was about the organisational factors (which broadly reflected environmental challenges) that impacted on the delivery of the intervention. For most facilitators, this was a barrier and reflects the weight of consideration that should be given by intervention creators about the mode of delivery. This is an overlooked area in the research cited in the literature review. Conversely, some participants made reference to how these barriers were often circumvented through support from more senior members of staff. This highlights the necessity of management “buy-in” for the effective implementation of interventions.

#### 6.5.4 Structural integration of reading processes

Theme four describes the importance of the structural integration of reading processes. One of the key subthemes that emerged in the data was the successful purposeful connection of written and spoken communication. The data suggested that participants felt that the inclusion of a ‘word study’ element of the intervention supported the connection of written and spoken language. This supports the theoretical position of the DRC model of reading which posits that individuals must have an understanding of a word in order to access the lexical store if they are to utilise the lexical route for word reading (Coltheart et al., 2001). This is an important finding given what is known about the relative representation of commonly occurring words in reading scheme books (Solity & Vousden, 2009) and the disadvantage encountered by children from less language-rich backgrounds (Hart & Risley, 1995). The recently published Children of the 2020s study confirmed the relationship between exposure to stories and language knowledge in infants (Bernardi et al., 2023) and as such, the finding from this study has important implications pertaining to outcomes in

children. It suggests that an important aspect of literacy development is understanding word meanings and being able to relate that to reading.

### 6.5.5 *Why it works: a summary*

Analysis of the qualitative data provides valuable insight into why the intervention was successful. Firstly, multiple themes indicated that the design of the intervention and that it was multicomponent in nature allowed it to be successful. This is likely to be a reflection of the nature of frustration at the singular approach advocated by the UK government (namely, SSP) which may inhibit children from being supported to draw on a multitude of approaches when reading which is often necessary in English as it is a morphophonemic language (Rastle, 2019). Using a multicomponent approach to reading is likely to have equipped the children with a wider variety of word reading skills which might have allowed them to read complex and non-transparent words. Secondly, the intervention appeared to be successful as it included reading materials that were engaging and more reflective of real-world literature. This in turn led to children being more motivated to read and over time, their success and engagement led to increased reading related self-esteem according to the interview data. Finally, a crucial factor that allowed this intervention to be successful related to the adults delivering it. It appears from the data that there needs to be a clear commitment to this approach from key stakeholders, such as management, and that this encourages the delivery of the intervention as the facilitator faces less barriers to its delivery. One interesting and particularly pertinent factor described the facilitators' own self-determination related to a sense of being able to deliver the intervention. It is clear, therefore, that interventions need to be designed in a way that encourages the autonomy, competence and belongingness of the adults as well in order to promote the regular delivery, and to ensure programme fidelity,

whilst allowing some scope for creativity and development. In doing so, adults felt confident in their ability to deliver the intervention which is a crucial facet of the effective implementation of an intervention.

## 6.6 Strengths and limitations of this study

This section will take a critical view of the research described above. It will begin by describing the strengths of the study before considering in detail some of the practical challenges that have arisen relating to intervention fidelity. Finally, general limitations of the research design will be considered.

### 6.6.1 Strengths of the approach

One of the key strengths of this study was its mixed methods approach which provided depth and breadth of findings. Many intervention studies fail to triangulate the outcome data and consequently offer a limited perspective of the successes of an intervention. Furthermore, this study sought to place at the heart of the research the voice of the child with two research questions pertaining to their views. In all of the evidence included in the literature review, there was a consistent failure to amplify the voice of this key stakeholder. A further strength of this study is its practical applicability to the profession of educational psychology and ease of implementation within existing resources available in schools. In a context where the role of the EP is evolving and dynamic in response to challenging circumstances (e.g., workforce crisis; see Atfield et al., 2023) and vehement opinion on the position that EPs must adopt regarding reading difficulties (see Stanbridge et al., 2023; Hill et al., 2023) this research provides practical ways in which EPs can support systems surrounding young people with reading difficulties.

### 6.6.2 Intervention fidelity

It emerged quite clearly from the qualitative data that there were some issues in the fidelity to the programme. One of the key limitations of this study was that there was no measure of fidelity and as such, apart from the regular supervisory contact with those delivering the intervention, it is not easy to tease out the impact of any divergence from the programme. Nelson et al. (2012) argues that intervention fidelity is crucial for examining the effectiveness of an intervention, arguing that intervention-as-implemented often differs from intervention-as-defined. Fidelity is reported to have a significant contribution to the variance in outcomes in reading intervention studies (Wolgemuth et al., 2014). While these criticisms are valid and represent a limitation of the study, there were practical obstacles that prevented a more in-depth analysis of the fidelity to the programme. However, as previously discussed (see section 6.5.2), it is possible that the increased sense of competence that the intervention facilitators gained throughout the trial contributed to their sense of autonomy and ultimately their capacity and willingness to carry out the intervention successfully and to adapt it to respond to external demands. While fidelity may be important for large scale research, EPs should strive to work in ways that are effective at delivering the practical application of psychology. EPs deliberately place themselves in a position of non-expert (see Wagner, 2008) partly to allow the individuals working within a school system to feel empowered to affect change. As such, it is important that fidelity to the programme be viewed through the lens of understanding that the facilitators were the 'experts' in the children themselves and working within a school context of competing demands. As such, fidelity breaches are likely to have occurred in response to their knowledge about how children were responding.

### 6.6.3 Limitations

There were some methodological limitations of this study that impact on the generalisability of the findings. Firstly, power analysis was not performed in order to determine the minimum sample size. Maxwell (2004) discusses the persistence of underpowered studies in psychological research, explaining that underpowered studies run the risk of not being sensitive enough to discover true effects and are more likely to produce type I errors. However, Maxwell goes on to explore the possible reasons why psychological research often is underpowered and the significant practical limitations of conducting real world research. In the case of this research, it was beyond the scope of the study to include more participants than could have been practically assessed using lengthy standardised assessments administered by a single researcher over three different time points. Therefore, although this is a limitation, it reflects a challenge that is common among psychological research and in particular within practitioner research.

A further methodological limitation of this study is the sample which consisted of 5 schools all based in the south of London. As such, it is not possible to generalise the findings of the study to other locations. It was a relatively small sample (for reasons outlined above) and as such, the findings should be interpreted with caution. Additionally, the sample size meant that it was not possible to carry out further exploratory analysis to understand for whom this approach was most beneficial. Due to the size of the sample, it was not possible to randomise the sample meaning that the groups that were formed may not be entirely representative of the population. However, Grossman and Mackenzie (2005) are critical of the view that randomised control trials (RCTs) are the gold standard in psychological research, as was previously contended. While RCTs may minimise bias and can more comfortably

establish causality, there are several practical limitations to their use. For example, they may restrict eligibility and often incur greater cost and lack generalisability to real-world settings. The design adopted in this study was more fit for purpose and it was reasoned that it was more ethical to have a matched pairs design which increased feasibility and therefore allowed for the maximum number of children to participate.

In terms of the measures, there are widespread and long held criticisms of psychometric tests, such as those that were used in this study, in terms of their construct validity (see Cronbach & Meehl, 1955; Smith, 2005). While these critiques are valid and it is accepted by the author that the tests can only provide a measure of what is contained within the test (as opposed to a broader psychological construct), attempts were made to paint a broader picture by triangulating data from adults and children themselves. As such, while this remains a limitation of the study, and indeed any study using psychometric tests, the data from other sources indicate that the progress observed in the standardised tests were valid.

It should be noted that the qualitative data were collected by the principal researcher. This may have resulted in potential Hawthorne effects (Landsberger, 1958). While this is a limitation of the study, the nature of real-world research meant that this was unavoidable. However, there were indications that the data were reflective of participants' voice since there were several instances of negative feedback (see Section 5.2.4). Additionally, the data from teachers indicate that they were being honest in their assessment (see Section 6.4.2 for a more complete analysis).

## 6.7 Implication of the findings

This section will use Bronfenbrenner's ecosystemic model (see section 1.5) as a theoretical framework to explore the implications of the findings of this study. This is because

EPs in the UK work to support the multiple and interacting systems around a young person (Cameron, 2006; Hill, 2013). A recent workforce survey provided insight into the current EP workforce in the UK, revealing that currently there is a ratio of one practicing EP to between 3131 and 4946<sup>14</sup> school-aged children in the UK (Atfield et al., 2023). Consequently, the most effective way that an EP can work is to affect change in the systems around a young person. This section will therefore highlight some of the systemic implications of this research.

### 6.7.1 Implications at a macrosystem level

UK policy regarding reading advocates a phonics first approach. Despite the government's own data indicating that a proportion of children do not respond to this approach (see section 1.6), there is a distinct lack of policy at a macrosystem level that promotes or provides guidance about alternative approaches. This study provides a rationale for the adoption of policy around alternative approaches. Swinson (2023) provides a historical account of the role of the EP in shaping government policy, with reference to important legislation and governmental reports which have shaped policy. In this critical review, Swinson makes reference to several pinnacle reports and legislation, such as the 1944 Education Act (1944), the Warnock Report (1979) and Every Child Matters (2003), to which EPs made valuable contributions. Swinson goes on to say that although the profession is small, EPs have historically had significant influence on educational policy in the UK over the last seven decades, claiming that this is because educational psychology is a profession that is bound by evidence-based practice. Those within the profession have therefore accumulated

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<sup>14</sup> Authors cite the difficulty in estimating the exact population of EPs in the UK as registers are kept with the regulating professional body, the Health and Care Professions Council, and the trade union, the Association of Educational Psychologists. Additionally, EPs are not required to state whether they are in full-time or part-time employment.

invaluable knowledge about quality teaching and learning and have a pivotal role in shaping policy.

### 6.7.2 Implications at an exosystem level

EPs sit in the exosystem of a young person's world. The SEND Code of Practice (DfE, 2015) had significant implications for the ways that EPs work to support children. Most significantly in the context of this research, the Code of Practice outlines the need for EPs to have an advisory role to support other professionals to meet the needs of children with SEN, the importance of early identification and intervention with regards to specific learning needs and the need for promoting inclusive practices including effective quality first teaching. As highlighted in Section 6.8, EPs in the UK are currently limited and the EP workforce survey (Atfield et al., 2023) called for further government funding to be made available in order to support the training of more EPs. As such, the ways of working for EPs have changed and it is important that EPs work systemically rather than focusing solely on carrying out individual assessments. One effective way that EPs can impact practice and support greater number of pupils is therefore through training in good literacy practice or effective multicomponent interventions, such as the one outlined in this study. The theoretical and practical implications of this study provide an opportunity for school staff to reflect on and critically analyse universal teaching as well as implement targeted interventions.

### 6.7.3 Implications at a microsystem level

Supporting targeted intervention delivered by other professionals is an effective way that EPs can work to support young people experiencing difficulties. One evidence-based approach that has been successful in this endeavour is the Emotional Literacy Support Assistant programme (ELSA) developed by Burton (2020). The ELSA programme is a time-



limited intervention drawing on evidence-based practice that aims to support young people with a range of difficulties relating to their emotional literacy. It is typically delivered by teaching assistants who have received extensive additional training (typically around 36 hours) facilitated by an EP and who are required to attend ongoing supervision (typically 12 hours per year) in order to retain their status as an ELSA. Evidence shows that EPs have a vital role in supporting these professionals to deliver evidence-based interventions and that the EP has an important part to play in ensuring that good practice is being adhered to as well as fostering a safe and supportive environment (Osborne & Burton, 2014). Working with adults in the microsystem around a child is likely to be more effective than working at an individual level as, given the aforementioned workforce issues, this is bound to have further reach. The qualitative data provided by the intervention facilitators indicated that one of the successful elements of the intervention related to increased self-determination of the facilitator. SDT (Deci & Ryan, 2012) posits that three constructs (autonomy, competence and belongingness) contribute to a sense of self-determination which in turn impacts on motivation to complete a task. This research has highlighted that the facilitators felt competent in their capacity to support children and through management commitment, they were afforded the necessary autonomy to fulfil the task of delivering the intervention. It is likely that their sense of the strength of the relationships they developed as a group contributed to their sense of belonging as well as the group supervision that they received. This research provides the evidence to call for the creation of a new role within schools to support children and young people with literacy difficulties: the Advanced Literacy Support Assistant (ALSA). This role would be supported through training delivered by an EP and would require ongoing supervision. Providing facilitators with the necessary training and skill, requiring schools to

commit to the delivery of literacy interventions and creating a unique name for the role would target the three constructs that are known to increase motivation and self-determination.

#### 6.7.4 Theoretical implications

One of the core functions of EPs is research (Cameron, 2006) and contributions to theoretical perspectives about human phenomena. This research has important theoretical implications. The three-phase model of reading (Frith, 1985) contends that individuals pass through three developmental stages when they are learning to read (see section 2.2.1.1). The four-phase model (Ehri et al., 2001) provides a similar, more detailed, account of the developmental trajectory that individuals will face when learning to read. One criticism that has been levelled at both of these developmental models is that it presupposes that individuals must acquire phonic knowledge in order to become skilled readers and places emphasis on the importance of this mode of instruction. This research provides some evidence to support the theoretical position that individuals that have not developed completely in the alphabetic or partial alphabetic stage (depending on the model) might still be in the logographic or pre-alphabetic stage and as such, it might be helpful to target this area (through visual rather than phonic methods) to support their literacy development. The current research does challenge the idea that individuals must pass through a phonic stage of reading in order to become more competent readers, however. Since many of the participants in this study made progress in reading and the intervention was more heavily weighted towards visual methods, there is a suggestion that there are routes to becoming a competent reading that do not rely on a fully developed knowledge of GPCs.

This research additionally has theoretical implications for the DRC model of reading (Coltheart et al., 2001). This theory posits that there are two routes to word recognition (see

Section 2.2.3). The lexical route requires individuals to have an understanding of word meanings to be able to recognise it. An important component of this intervention was the ‘word study’ component (word definitions) which reinforced the meaning of the target content. Data from the qualitative phase indicated that the meaningful connection of spoken and written language was an important feature of this study that permitted the children to make progress. This provides support for the theoretical perspective of the DRC model.

### 6.7.5 Dissemination of the findings

In terms of disseminating the findings of this research, this has happened and will continue to happen in a number of ways. A variety of methods of dissemination will help to capture the broadest and most varied audiences and modes of dissemination will be tailored to the specific stakeholders who are interested. Importantly, immediately after the research was completed, school staff including SENCOs and headteachers were provided with a summary of the outcomes for their setting (see Appendix<sup>xii</sup> for an anonymised research briefing sent to schools). This research briefing outlined the outcomes for their setting but also highlighted the theoretical principles that underscored the approach with the aim of disseminating the message about effective practice. School leaders were encouraged to share this information with key stakeholders including parents and the governing body. The findings have been presented to a number of interested groups such as the Centre for Literacy, Language and Numeracy: Research and Practice at UCL’s Institute of Education. Additionally, the research was presented at the British Psychological Society’s (BPS) Division of Educational and Child Psychology (DECP) conference (*DECP Annual Conference, 2024*; Lettington, 2024). The annual conference had a focus on the role of educational psychology in promoting social justice, equity, diversity and inclusion and has a broad reach predominantly consisting of

practitioner psychologists across the UK. The paper was also presented at the sister conference, the BPS DECP Trainee conference which allowed for the dissemination of findings among trainee EPs across the UK (*The DECP Trainee Educational Psychologists' Annual Conference*, 2024). Finally, the author plans to submit the thesis research for publication in peer-reviewed journals in two parts. One paper will focus on the measurable outcomes of the study (i.e., the reading outcomes as captured by the quantitative data) and the other will focus on the outcomes of the interviews with the facilitators to reflect the valuable insight that has been afforded by this detailed analysis.

## 6.8 Future directions

This study has provided an indication that a multicomponent intervention is an effective method to support children with reading difficulties. However, it was a small-scale study that took place in a geographically proximal area. As such, future studies should incorporate larger samples and geographically diverse areas. Larger sample sizes would allow for a randomised design which is likely to yield more reliable results. Any future studies should include a measure of fidelity. It was clear from the qualitative analysis that fidelity was an issue in this study, but without a robust measure, it is hard to ascertain at an analytical level, the extent to which this impacted on the outcomes of the study. Having a fidelity measure would add robustness to the design of the study as it would allow for comparisons between groups that had high versus low fidelity to the programme. Future studies may wish to measure broader reading constructs, such as phonological awareness, onset and rime, as well as constructs related to literacy such as language. Other measures that future studies may wish to include are measures of self-esteem, confidence, motivation and engagement. Furthermore, future studies may wish to have a more complicated design that seeks to

compare variations on the type of intervention that is received against one another rather than against a business-as-usual control group. Alternatively, this approach could be compared with one of the more successful intervention described in the introduction. This would allow researchers to tease out the *most* successful aspects of the intervention and to verify, from a quantitative perspective, whether the views of what adults perceive to be the most effective portions of an intervention are reflected in the outcomes of the participants.

## 6.9 Conclusion

This study sought to find out the extent to which a multicomponent reading intervention based on several underlying psychological principles was effective in supporting reading outcomes for 6-7 year olds in primary schools in the UK. Government policy is important in understanding practice in the teaching of reading in the UK. Schools must use approaches to reading that are guided by principles of SSP. While that appears to work for most, a significant body of children (approaching 20%) do not respond to that mode of instruction and as such, may require additional targeted support to learn to read. This intervention study investigated the extent to which an intervention based on the most commonly occurring words, motivational beliefs, language exposure and the use of real books was successful in providing that targeted support. Outcomes were positive. Reading measures indicated that children in receipt of the intervention fared better than their matched controls in word reading, accuracy and comprehension. Of critical importance in this research was the voice of the child participant. Data revealed that children enjoyed the intervention and felt more positively about reading after they had received it. This was a mixed methods study and as such, further data were collected to triangulate the outcomes. Teachers noticed improvements in a broad range of reading related constructs and skills that were being

generalised in the classroom context and the intervention facilitators provided valuable insight into *why* the intervention was successful. This broadly related to psychosocial interactive learning processes and organisational factors that facilitated an increased sense of self-determination in the person delivering the intervention. This study has important implications for schools and EPs. Firstly, this is an effective intervention, and EPs should promote alternative practice for struggling readers and support schools to adopt and deploy alternative practices where this is indicated. Secondly, as children and adults enjoyed the intervention, schools can feel confident in implementing it and EPs have a role in training and supporting schools to do that. Finally, as it emerged that the reading literature, namely real books, increased motivation and reading related self-esteem, school staff should carefully consider the reading material they are promoting at schools. EPs have a fundamental role in keeping psychology at the heart of their practice. Highlighting the role of underlying psychological constructs in children's relationship with and, consequently, outcomes in reading is a critical function of the EP.

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## 8.0 Appendices

### i Appendix: inclusion criteria for systematic literature review

**Table 1**  
*Inclusion and exclusion criteria used in literature review*

Criterion	Inclusion	Exclusion	Rationale
1. Type of publication	A peer-reviewed scholarly journal article.	An article which has not been peer-reviewed including theses, conference papers and reports.	Peer-reviewed journals contain research that has been quality assured and therefore there is a reasonable assumption that it has a good methodological standard.
2. Date of publication	Published after 2009	Published before 2009	The Rose Review (2006) and the Rose report (Rose, 2009) are generally accepted to be the driving force in approaches to teaching reading in schools being dominated by phonics instruction.
3. Language	The record is written in English.	The record is not written in English.	The author is able to read and understand and therefore engage in a critical analysis of publications written in English.
4. Location	The study took place in the UK, the US or Canada	The study took place in any country other than the UK the US or Canada	Phonics is the principal approach in the UK, the US and Canada and therefore it is possible to review interventions that offer an alternative approach that are based in the UK or the US or Canada.
5. Type of study	The study is experimental or quasi-experimental in its design including a control group.	The study is not experimental or quasi-experimental in its design or does not include a control group.	Experimental or quasi-experimental designs including a control group will give an indication of whether the intervention has been successful because of the intervention itself and not because of the instruction that children would be receiving anyway.
6. Intervention	The intervention type should be an alternative to phonics and must focus on word reading (and may include comprehension).	Interventions using phonics as their principal approach and focus does not include word reading (e.g. just focusing on comprehension).	This study is focusing on alternative to phonics provision. A recent robust critical analysis was performed on phonics-based instruction (Wyse & Bradbury, 2022) which has been referred to in this paper.
7. Outcomes	The dependent variable (DV) should include at minimum a measure of reading accuracy e.g. BAS, YARC or WIAT.	None of the DVs measure reading ability. If the study focuses on other facets of reading e.g. fluency, but does not include accuracy.	This study wishes to look at the effectiveness of alternative reading provision for reading outcomes and thus it is imperative that a reading measure is included in the studies.
8. Age of participants	Primary aged (e.g. 5-11 or Year 1 – Year 6).	The participants are older than 11 (year 6) or younger than 5 (age of entry to Year 1).	This study is concerned with designing an intervention to support primary school aged children and thus literature relevant to interventions supporting individuals at primary school is most pertinent to the study.
9. Inclusion of participants with reading difficulties	The participants in the study have been identified as having continued literacy difficulties, dyslexia or are known to have general reading difficulties.	The participants have reading abilities broadly in line with their chronological age. Studies that focus solely on participants with other neurodiversity (e.g. ADHD, ASD)	This study is specifically looking at interventions for those children who are having reading difficulties and presumed therefore to have not responded to traditional reading teaching methods

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## ii Appendix: example of matched pairs

**Table B** An extract from the data file which shows the participant number, initial word reading standard score, EAL status and the pair.

Participant no.	Spring	Summer	EAL	BAS3 Word reading standard	Pair
1	Control	Experimental	Y	81	1
2	Control	Experimental	N	76	2
3	Experimental	Control	N	87	3
4	Control	Experimental	N	84	4
5	Experimental	Control	Y	105	5
6	Control	Experimental	Y	72	6
7	Experimental	Control	Y	84	7
8	Control	Experimental	N	84	3
9	Experimental	Control	N	87	4
10	Experimental	Control	N	76	2
11	Experimental	Control	N	78	1
12	Control	Experimental	N	89	7
13	Control	Experimental	N	98	5
14	Experimental	Control	N	73	6



### iii Appendix: Example of rating scales provided to teachers

#### Teacher questionnaire

We would like you to consider \_\_\_\_\_'s attitudes and behaviours in relation to literacy.

Please read the questions below and consider the child's literacy related **progress**. Please rate the child on a scale of 1-10, with 1 representing no progress and 10 representing exceptional progress.

**At this moment in time, how would you rate this child's: (Please circle or highlight)**

#### A. Academic progress in general?

0      1      2      3      4      5      6      7      8      9      10

#### B. Reading

0      1      2      3      4      5      6      7      8      9      10

#### C. Writing

0      1      2      3      4      5      6      7      8      9      10

#### D. Self-esteem (how good they feel about themselves as readers)

0      1      2      3      4      5      6      7      8      9      10

#### E. Self-efficacy (their own image of what they are able to achieve as readers)

0      1      2      3      4      5      6      7      8      9      10

#### F. General attitude to learning

0      1      2      3      4      5      6      7      8      9      10

#### G. Confidence

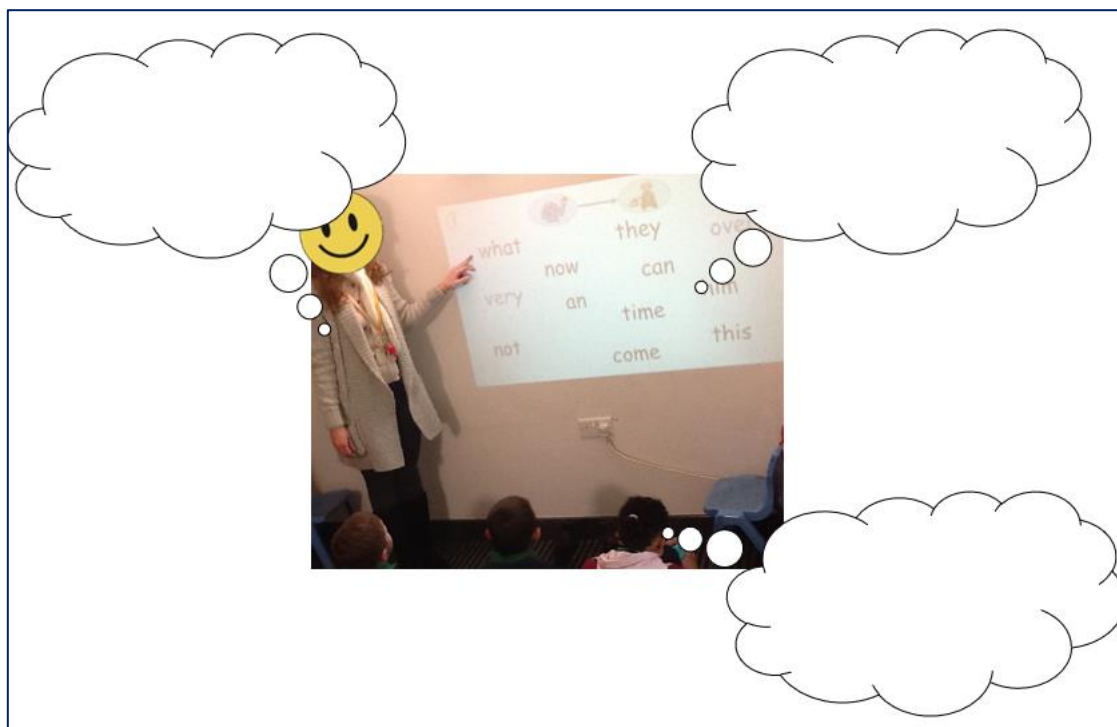
0      1      2      3      4      5      6      7      8      9      10

#### H. Contribution to class discussions

0      1      2      3      4      5      6      7      8      9      10

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iv Appendix: Example of pupil voice stimulus for pupil voice post-intervention



Note: face has been obscured for the purpose of providing this example in the Appendix. Children were shown photos that were not anonymised as it was felt that this was an important means of capturing the young person's real voice.

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## ^ Appendix: Paired reading

### **Paired reading – what is it and what is the evidence?**

Paired reading is a collaborative strategy involving a proficient reader assisting a less proficient counterpart which has emerged as a prominent intervention in schools and one that is often advocated by Educational Psychologists. This short account provides a review of the evidence supporting the use of paired reading, highlighting its impact on reading fluency, comprehension, accuracy and overall attitudes towards reading.

Numerous studies have consistently demonstrated the positive effects of paired reading on reading fluency. Li and Nes's (2001) study that revealed significant improvements in reading fluency among primary school children engaged in paired reading interventions. In addition to fluency, paired reading has shown promising outcomes in enhancing comprehension skills. Topping and Lindsay (1992) reported a notable increase in comprehension scores among struggling readers participating in paired reading sessions. This suggests that the collaborative nature of paired reading positively influences understanding and retention, contributing to a more holistic improvement in reading abilities.

Moreover, paired reading has been associated with the promotion of positive attitudes towards reading. Topping (1997) found that students engaged in paired reading not only demonstrated increased interest in reading but also developed more positive attitudes towards their own reading abilities. This aspect is crucial as it highlights the potential of paired reading not only as an academic intervention but also as a means to foster a positive reading environment.

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The individualised support and immediate feedback provided in paired reading sessions have been identified as significant contributors to its effectiveness. Topping (1989) noted that the one-on-one nature of paired reading allows for tailored assistance, addressing specific reading challenges and contributing to an overall improvement in reading performance. Longitudinal studies further support the efficacy of paired reading interventions, demonstrating sustained effects over time. Topping and Lindsay (1992) found that participants maintained their reading gains, indicating that the positive impact of paired reading is not merely transient but has lasting effects on reading proficiency.

Beyond the empirical evidence, there are convincing arguments for the adoption of paired reading as an intervention strategy. The social interaction and peer learning embedded in paired reading not only contribute to academic outcomes but also promote positive peer relationships (Lloyd et al., 2015). This dual focus on academic and social development adds a valuable dimension to the intervention.

The versatility of paired reading across age groups is another compelling argument in its favour. Koskinen and Bloom (1986) demonstrated that paired reading is effective not only in primary education but also across various age groups. This adaptability makes paired reading a valuable intervention strategy for educators working with diverse student populations. The inclusivity and differentiation facilitated by paired reading are noteworthy. Teachers can pair students based on skill levels, providing targeted support for struggling readers while simultaneously challenging more proficient readers.

In conclusion, the current evidence and arguments presented strongly support the efficacy of paired reading as an intervention in its own right for improving reading. Its impact on reading fluency, comprehension, and attitudes towards reading, coupled with its versatility

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and inclusivity, make it a compelling strategy for schools aiming to address the literacy needs of their pupils.

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<sup>vi</sup> Appendix: Example materials from the intervention

Example PowerPoint presentation slides from Session 11

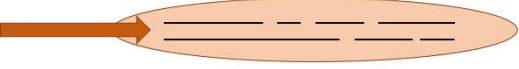


# We are readers!







My turn, your turn




Use it in a sentence




Paired reading



Timeframe



Your turn  
(black text)



Say together

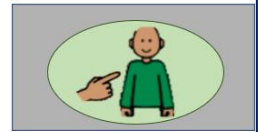
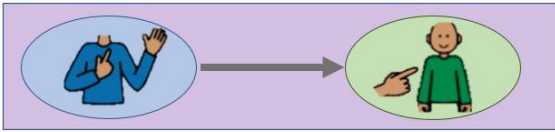




# We are astonishing readers!







er

wh

qu

ing

th

sh



queen

quick

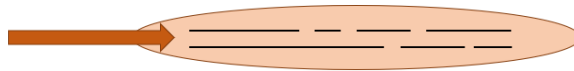
quip

quid



11

me the could  
we  
about my in was off  
because of to  
a



I know about music.

She could touch her toes.

Your turn...





# Let's read



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vii Appendix: List of 100 most commonly occurring words

the	about	for	they	other
a	could	got	this	were
and	you	came	time	there
is	by	some	him	as
it	see	do	can	at
that	she	down	an	little
then	made	up	over	live
went	make	us	very	will
with	get	new	her	away
he	into	next	here	today
I	not	take	look	old
in	now	like	too	did
to	what	said	after	on
my	had	saw	are	from
me	has	call	our	his
was	have	all	out	last
we	when	so	put	back
of	them	go	big	be
off	one	am	but	two
because	once	come	their	three

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## viii Appendix: Semi-structured interview schedule

### Semi-structured interview questions for intervention facilitators and SENCOs

1. Can you tell me about how the intervention has gone generally?
  - Anything unique about the setting?
  - How manageable was the intervention to action?
2. Can you tell me about your thoughts on the intervention materials?
  - Age-appropriateness / how engaging / how easy to use / the use of symbols.
3. What have you noticed about the children's reading since you started the intervention?
  - Prompts: accuracy, fluency, understanding, confidence, reading related self-esteem.
4. What have been the things that you consider successful about the intervention?
  - What things do you think have helped the children?
  - What do you think the children have enjoyed? Why?
  - What have you enjoyed about the intervention in terms of delivering it? Why?
5. Have there been any challenges in implementing the intervention?
  - Tell me about...
  - How would you address them if you were to do it again?
  - Is there anything about the intervention that you would change? How?
  - What might help to make the intervention more successful?
6. How do you think this intervention will support children with their reading outside of the intervention space? (Generalisation)
  - Have you seen any of the skills being used elsewhere?
  - How might you improve transference of skills?
7. Is there anything I haven't asked you about the intervention that you think it is important for me to know?

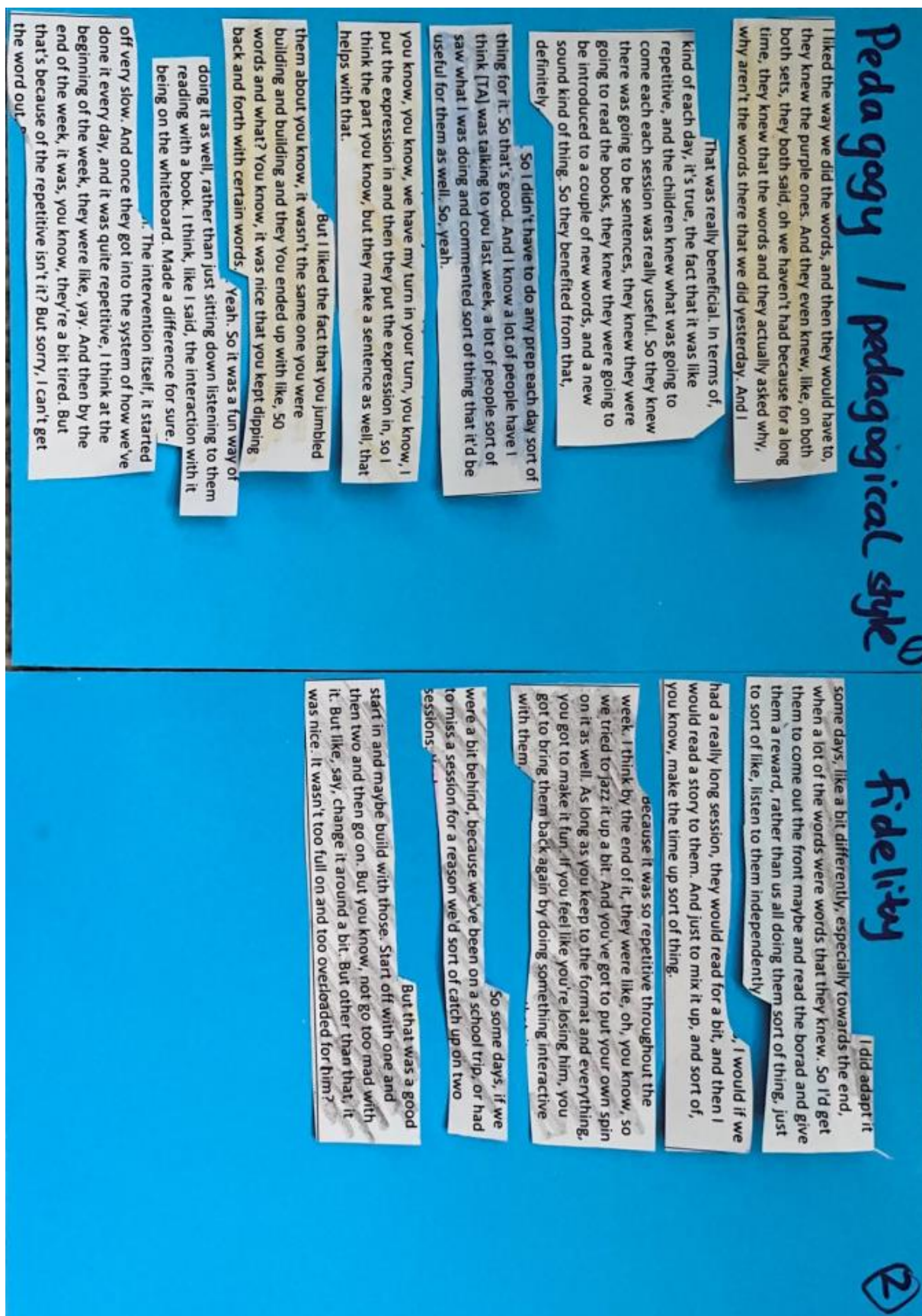
## ix Appendix: Example of thematic analysis

Example of initial codes on transcript:

	What about the age appropriateness of the PowerPoints?		
2:59	<i>Respondent</i>		
	Yeah. I mean, it was perfect for them. I mean, could possibly maybe go down to Year one, but yeah, I thought it was it was perfect for them. Yeah.	age appropriate	
3:08	<i>Interviewer</i>		
	And how easy did you find it to use them?		
3:12	<i>Respondent</i>		
	Really easy. Everything was just there. And yeah. When you sort of got six children that in front of you sort of think it was really easy to do. Yeah, to say they knew that they knew the drill sort of being after a few sessions. And yeah, just flowed. And yeah, we sort of had sometimes we had longer than others, because like when we did it during "Worship" in the morning, so sometimes worship would be a bit longer. So some days, if we were a bit behind, because we've been on a school trip, or had to miss a session for a reason we'd sort of catch up on two sessions. Yeah, and they enjoyed reading the books as well. Yeah, I think I really enjoyed it when they were when I said, Oh, we're, we're not doing it anymore. Like you'd like to start going back to "Worship." They were like, ohh! They really enjoyed it.	ease of implementation chrn familiar lack of fidelity lack of fidelity chrn enjoyed real books chr wanted to continue	
4:01	<i>Interviewer</i>		
	And what did you make of the use of symbols in the, in the materials?		
4:08	<i>Respondent</i>		
	What do you mean like the prompts at the top to say, like, whether to read or? Yeah, I mean, at first, I introduced that. But after a few sessions, I didn't really have to, they knew what each page they had to do, like, you know, the my turn, their turn. So I wouldn't really focus on the symbol, I'd just say, because they knew I'd just say, right, we're gonna do the words now my turn your turn. So yeah, I didn't really need to use the symbols. I always displayed every slide like the first one, we are readers, and yeah, and then we used to make a bit of a like, see how loud, we could say we are amazing readers, and then after a few sessions, see whether they can actually make out the amazing or miraculous sort of try and read it themselves.	use of symbols direct instruction direct inst. enjoyed affirmation	
4:56	<i>Interviewer</i>		
	Lovely, thank you. So what have you noticed about the children's reading since you started the intervention?		
5:03	<i>Respondent</i>		
	Some of them have been so much more confident in their reading. One of the little boys in the second session that I did, if he got anything wrong, he used to get really upset. But he was sort of like putting his hand up and quite eager to, like his confidence, I felt, yeah, he was much more confident by the end of the session. Yeah, no, I think, yeah, they did well out of it. Yeah. And I think as well, I also got told in their phonics checks that they'd done so much better since they were checked last after doing the intervention. So but some of them will, I've listened to some of them read some days, I would if we had a really long session, they would read for a bit, and then I would read a story to them. And just to mix it up, and sort of, you know, make the time up sort of thing.	confidence confidence improvements in accuracy generalisability lack of fidelity	
5:54	<i>Interviewer</i>		



Examples of extracts of transcripts matched to initial themes:





# Relationships

(3)

Um, I mean, it's unusual for me to do an intervention in general. So it was nice to just do one. Engaging those kinds of relationships. In terms of the actual content, I mean, I liked that they liked it.

The kids loved it.

I'd walk into their classroom, the goal is, we are readers straightaway jumping up, we are readers, and I was like yet coming down. And they were rushing to get there. They all had their own seats to sit on. And yeah, just watching the children enjoy. It was lovely. It wasn't like pulling teeth.

Um, yeah, I enjoy it. It's a nice, easy package to... straightforward to do. Yeah. That's right. It's been nice having that little group and see their confidence kind of growing, really.

And sometimes they'd be here before I even got out here. So I think they've really enjoyed that, that time that that focus time on them?

so I really liked that I thought that worked well, erm, and it kind of set the tone for the intervention as well. Erm, kind of keeping it really positive. And making the children positive with each other as well.

I think they just loved being a part of a reading group, I think they just loved the fact that they, this was a group for them.

...but I think having that little reading group really helped him. It wasn't overwhelming for him.

# Language

(12)

, but it was nice that they were actually putting the words each day like making two sentences out of the words, which was, I mean, some of them made up crazy sentences. But you know, some of them didn't make sense said, and we'd have to sort of sit there and say, well, or you haven't included... you know, there was quite a lot of discussion some days on, on those sentences. But yeah, I think the words reading the word, and as I say having them on the board, rather than getting them to read a list off on a piece of paper. And

So that was good. And the sentence writing the sentence reading that we done, I know we had it with the two key words for that day, maybe put it into a few more sentences, we could have had a few more on there, rather than just those two, because I could, we could have pushed him a little bit more on that.

Um, yes, more so from the individual reading that is, I think there's not, not so much in the package isn't so much on the understanding, but that's, that comes from the individual reading and talking about the book and asking them questions,

...I love the idea that they are exposing to new language, not language, but new vocabulary. With the new book corner books that they haven't read before, or introduced before. Yeah, was okay.

They are they have more challenging words. Not like the ones that they read daily. So yeah, I think it's, it's, it's built their confidence more. And I have heard lots of lovely comments from the teachers saying that, Oh, they have progressed they're reading? It is nice. Yeah.

Because it's introducing them to new words. It's totally new words. They haven't tried to read before. Learning new meanings like some they have asked me lots of like, what does that mean? What is this? What does this mean? So yeah, I think it's really beneficial this part



## ④ Environmental challenges

Timing, timing wise, like fitting it in was a challenge. And then I think it would have been nice to have like a maybe an assessment that went with it.

And I think that the hardest thing was to try and find a spot to do it sort of thing. But that sort of

So that was a challenge trying to find the right time to go, which suited everyone. But I think if you go into this intervention, you've got to go in with everyone sat around the table, and working out when are we going to do this, and then the teachers working out when they can release the children. So because it is a half an hour, we managed to do it every day.

Yeah, I really enjoyed it. And I can see, obviously, sometimes it's difficult to get the times, things change and, with absences as well there's been sort of like quite a few. But, you know, I can definitely see sort of like the progress children have made as well. A

But if I was in a room like I am now, there's no telling, there's like a tiny little computer in the corner. So that would be my only problem that if I didn't have the room, it would be hard to a full lesson to the best I can deliver it.

It's getting that time, I don't want to pull them out of lessons, time for it. So it's really only sort of like assembly times, anytime, where, you know, they might be doing quiet reading, but you don't want them to miss the beginning of lessons or anything like that.

And then also, I mean, for us just finding a place with a screen to be able to show them was quite tricky. Luckily, we have like different lunch times, different assembly times and things like that.

And during it that that's the problem absences, and they got the time really to catch that back up, because that's when you need to be doing the next group, they just have to fit in. And obviously, you explain that again, but when they've missed a week or two whole weeks of it can be quite and then they're back for a few days, and then they're off again. That's the problem. Absences.

## ⑤ Self-efficacy (adults)

As I say, it was easy, because everything's done for you, I didn't have to prep anything or anything, it was all there. So it was just a case of literally coming out, logging on

Yeah, they were very clear. They would, they were achievable, even by the lower abled ones sort of thing. And it was quite a nice way of doing it on the whiteboard, isn't it with the words rather than just sitting down with a piece of paper saying read them to me sort of thing is good.

After a few sessions, I didn't really have to, they knew what each page they had to do, like, you know, the my turn, their turn. So I wouldn't really focus on the symbol, I'd just say, because they knew I'd just say, right, we're gonna do the words now my turn your turn. So yeah, I didn't really need to use the symbols.

So, yes. Yeah, very well laid out and what have you, it was just, it was nice. It was all ready for me.

I feel that they were really good. They were very to the point and they weren't too overwhelming for him. And I think maybe when we got to the keywords obviously they started to increase as time went on.

No, no, everything about that intervention was great. You had like the guided reading focus, which I liked, you had the speed word, key word reading, which I liked.

No, no, I think that's it, just to say that it's a lovely intervention I think you've got a good idea here. And it's worked really well. And like say, I mean, it can be adapted. In certain places and for certain children's reading levels, but that's about it.

I enjoyed doing the slides, because the slides like give the opportunity to all the children to try because I do not, let's say, give them the choice of who would like to read?



# Motivation

(13)

I have noticed actually the, from the not wanting to come and read, to wanting to come and read, you know, to get that new book to let's let's read this one. And then you know, you know, almost like I'm like, you know, what, should we finish it now, and then you can take a new one home for the weekend. Whereas before they "no," you know, and as I say, not wanting to come not haven't had as many avoidance tactics

changing my library book. And she'd make a point of saying that, I've read this. I've read this book sort of thing. Yeah, so definitely.

Yeah, no, I think it just makes, because some children don't like reading, they take a book home, they don't want to read it sort of thing. And we don't, sort of, we haven't actually got like, we used to years ago have that particular time that we've read one to one with a child anymore in class, sort of thing. So you know, that got them actually reading.

Yeah, I think the children have really enjoyed it every morning, they were ready and waiting to come out and do the intervention. Um, it was sort of short and sharp, um, and they sort of like knew the routine and what have you

# Engagement

(7)

The reading of the real books, I think that was really useful. Because they are getting to that age, particularly as the years gone on, like this second group in particular, they are getting to that age where they want to read real books and books that they have seen, or they've, they know. And it was nice to be able to include books that they kind of had read before, like, things like the Gruffalo and things like that.

Yeah, and they enjoyed reading the books as well. Yeah, I think I really enjoyed it when they were when I said, Oh we're, we're not doing it anymore.

how I see it, you're giving them time you're not rushing them through, right, get this book read or change the next one, get this but they're actually having the time to absorb the story and the words. A

So I think the fact that we were in that group, we've done what we needed to do, we got the knowledge from that lesson. And then they were going off to be free readers. Whether they read with me that day, or they just had 10/15 minutes to read on their own base.

They chose their own little spot around the class around the room, and they just sat on their own. And you could see him enjoying the book that they were actually reading. So that was nice. And

Yeah, and one thing is, well, you know, for one little girl who doesn't read at home, and now she can take her books and read them by herself.

read with her so she can just sit and ooh you can read that tonight at home, can't you and bring it back tomorrow to have that impact whereas before it wouldn't have done it on her own and it's never gonna get done at home. You know, so they start so I think that as well. You know, opens a new world for them.



## <sup>x</sup> Appendix: complete list of responses (RQ2) provided by children when describing themselves as a reader

The following tables provide detail about the responses provided by children when asked to describe their views of themselves in relation to reading pre- and post-intervention.

Pre-intervention words		Post-intervention words	
Word	Frequency of overall use	Word	Frequency of overall use
1. happy	25 (18.5%)	1. fun	22 (17.6%)
2. hard	16 (11.9%)	2. good	18 (14.4%)
3. tricky	11 (8.1%)	3. exciting	6 (4.8%)
4. sad	10 (7.4%)	4. nice	6 (4.8%)
5. excited	9 (6.7%)	5. cool	5 (4%)
6. boring	9 (6.7%)	6. amazing	5 (4%)
7. fun	8 (5.9%)	7. happy	4 (3.2%)
8. worried	6 (4.4%)	8. wonderful	4 (3.2%)
9. angry	6 (4.4%)	9. great	4 (3.2%)
10. easy	5 (3.7%)	10. tricky	3 (2.4%)
11. scared	4 (3%)	11. hard	3 (2.4%)
12. calm	3 (2.2%)	12. important	3 (2.4%)
13. difficult	3 (2.2%)	13. interesting	3 (2.4%)
14. bad	2 (1.5%)	14. helpful	3 (2.4%)
15. confused	2 (1.5%)	15. beautiful	3 (2.4%)
16. sleepy	1 (0.7%)	16. easy	2 (1.6%)
17. dream	1 (0.7%)	17. like	2 (1.6%)
18. relaxed	1 (0.7%)	18. best	2 (1.6%)
19. good	1 (0.7%)	19. smart	2 (1.6%)
20. surprised	1 (0.7%)	20. fantastic	2 (1.6%)
21. creative	1 (0.7%)	21. brilliant	2 (1.6%)
22. serious	1 (0.7%)	22. marvellous	1 (0.8%)
23. annoyed	1 (0.7%)	23. learn	1 (0.8%)
		24. know	1 (0.8%)

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<sup>xi</sup> Appendix: complete list of responses related to children's views of the intervention (RQ3)

The following table provides detail about the responses provided by children when asked to describe their views of the intervention.

Order	Word used	Occurrences	Percentage
1.	fun	28	18.7919
2.	good	27	18.1208
3.	exciting	17	11.4094
4.	easy	13	8.7248
5.	amazing	8	5.3691
6.	great	6	4.0268
7.	fantastic	6	4.0268
8.	happy	6	4.0268
9.	nice	6	4.0268
10.	wonderful	3	2.0134
11.	joyful	3	2.0134
12.	ok	2	1.3423
13.	beautiful	2	1.3423
14.	words	2	1.3423
15.	incredible	2	1.3423
16.	tricky	1	0.6711
17.	calm	1	0.6711
18.	cool	1	0.6711
19.	like	1	0.6711
20.	excited	1	0.6711
21.	tiring	1	0.6711
22.	better	1	0.6711
23.	creative	1	0.6711
24.	playful	1	0.6711
25.	boring	1	0.6711
26.	extra	1	0.6711
27.	smart	1	0.6711
28.	excellent	1	0.6711
29.	new	1	0.6711
30.	fast	1	0.6711
31.	helpful	1	0.6711
32.	fine	1	0.6711
33.	simple	1	0.6711

Institute of Education



## School Research Briefing

We would like to thank you, your staff, families and children for taking part in our research. Research on approaches to support struggling readers provides a valuable insight into what works best to support young people and informs the wider evidence-base into effective practices. This short research briefing provides a brief account of the background to the research, the principles underlying the approach and a snapshot of how the children in your setting responded to the intervention. We hope that this information can be disseminated to key stakeholders (e.g. staff and governors) to promote effective practices in supporting individuals with reading difficulties.

### Background and rationale

Reading approaches in the UK are influenced by governmental mandate. In the 21<sup>st</sup> century, reading practices have been dominated by approaches underpinned by principles of systematic synthetic phonics (SSP). While this approach appears to work for most, the government's own data indicate that around 1 in 5 children do not reach the required standard in phonics by the end of Year 1 and around a third of children do not reach the expected standard of reading by the end of Year 2.

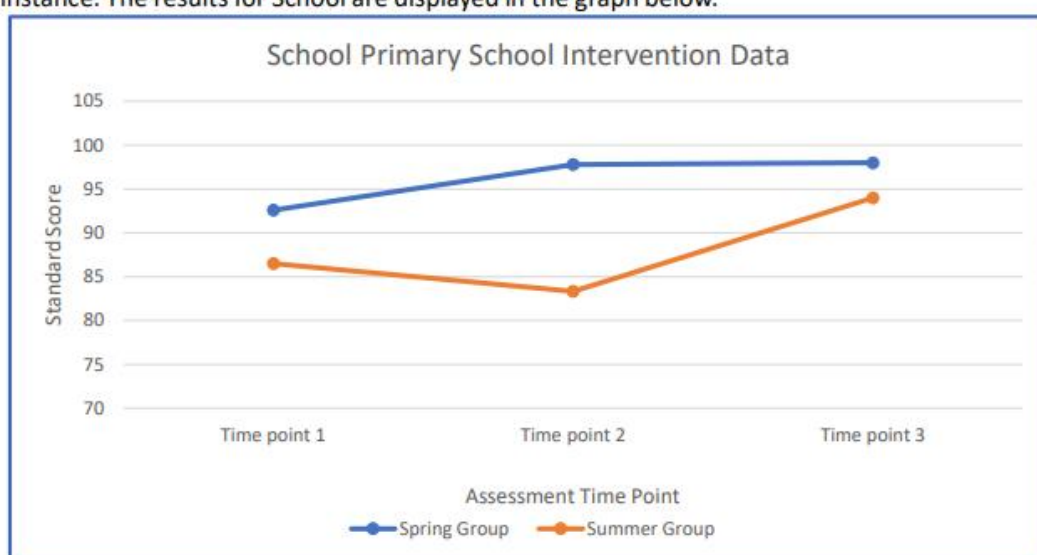
Schools have a duty to deliver a SSP programme. However, school staff often report feeling unsure about how to support children who are experiencing difficulties learning to read and for whom phonics does not seem to work. This is the backdrop to the current research and its aim was to investigate the extent to which an alternative approach which draws on a number of psychological principles was successful in supporting children to make progress in reading.

### The underlying principles

- **The simplicity principle:** the intervention taught children to recognise by sight the 100 words which account for 53% of text found in children's and adult's literature (sometimes referred to as the simplicity principle, i.e., deliver the content that has the most impact).
- **Interleaved learning:** new content was delivered alongside previously learned material.
- **Distributed practice:** the intervention was delivered in short daily sessions which is known to be more effective than longer sessions less frequently.
- **Cognitive load:** the intervention had a highly repetitive and structured format which reduced the 'cognitive load' and allowed the children to focus on the content of the intervention.
- **Motivational beliefs:** daily motivational statements were included to reinforce positive reading self-image and increase reading related self-esteem.
- **Real books:** importantly, the intervention used real books and not reading scheme books. Reading scheme books are restricted in their language and story structure.

## Results at School

Although this was a wider research project involving several schools, twelve children took part in the research at School. In order to ascertain whether children were making progress because of the intervention and not because they would anyway, the research included a control group (who did not receive the intervention). The first group ('Spring Group') received the intervention in the Spring term and the control group ('Summer Group') went on to receive the intervention in the Summer term. This allowed us to carry out a follow-up assessment for the children who received the intervention in the first instance. The results for School are displayed in the graph below.



### Interpreting the data (tentatively!)

The children were assessed using a standardised measure of word reading. This measure takes into account a child's chronological age and is therefore a reliable measure over time. A standard score has an average range of 85-115 (with 100 being the perfect average).

The Spring Group increased by 5 standard scores after they had received the intervention while the control group did not improve (as we would expect if it was the intervention that was making the difference). The Summer Group increased by 10 standard scores after they had received the intervention. Time point 3 also allows us to see if the children who received the intervention in the Spring term retained the improvement they had made. As can be seen in the graph above, the Spring Group's scores remained, on average, around the same, indicating that the intervention may have been successful in the medium-term as well as the short-term.

### What can be concluded

These data broadly indicate that, in your setting, the intervention was successful in supporting individuals who were identified as struggling readers, many of whom had not passed the phonics screening check, to make progress in reading.

It is hoped that you will continue to use the materials, which you are free to retain, to support individuals experiencing reading difficulties in the future.