

Jolly Phonics: An academic critique

Danielle Cripps

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Reading is fundamental for academic success and an important life skill. It is the process by which pupils access wider learning from all curriculum areas (Hughes, Beverley & Whitehead, 2007). Pupils who become fluent readers are overwhelmingly more likely to succeed at school, achieve good qualifications and enjoy a fulfilling career (DfE, 2015). Longitudinal research shows that children who fail to develop adequate reading skills early on often continue to experience difficulties with literacy skills throughout their education (Juel, 1988; Francis, Shaywitz, Stuebing, Shaywitz & Fletcher, 1996). This highlights the need to identify children's reading difficulties early on (Foorman, Francis, Fletcher, Schatschneider & Mehta, 1998; Fletcher-Campbell, Soler & Reid, 2009) through a range of valid and reliable measures (Glazzard, 2017).

Reading is a complex process but essentially it can be reduced down to two simple components: word recognition and text comprehension (Gough & Tunmer, 1986; Hoover & Gough, 1990; Ehri, Nunes, Stahl & Willows, 2001). It is through the process of accurate word recognition and an understanding of spoken language that written text can be understood (Juel, 1988). It has been well documented in the literature that word recognition involves being able to distinguish and manipulate sounds in speech, known as phonological awareness. Phonological awareness has been identified as a crucial pre-requisite skill for reading (Stahl & Murray, 1994; Foorman et al. 1998). Phonemic awareness, a specific phonological skill, refers to the awareness of sound-letter knowledge. Good phoneme awareness has been identified as a key predictor of children's reading success (Stahl & Murray, 1994; Ehri et al., 2001). Although it is known that early language skills such as receptive language and semantic processing play a large part in children's reading development (Catts, Fey, Tomblin & Zhang, 2002); the vast majority of reading disabilities are largely associated with deficits in phonemic awareness (Fletcher-Campbell et al., 2009) rather than with comprehension difficulties. This highlights the importance of acquiring secure letter-sound knowledge, which is typically acquired through phonics instruction.

Phonics can be defined as a system for identifying speech sounds and learning the associated relationship to written letters (Mesmer & Griffith, 2005). The broader term of phonics refers

to two main types: synthetic phonics and analytic phonics. Synthetic phonics teaches children to identify the 42 phonemes within the English language and their corresponding graphemes in a structured, incremental sequence. Children are taught to synthesise sounds together to read a word, known as 'blending' or 'decoding', and to spell words through segmenting the sounds known as 'encoding'. Furthermore, words with irregular or alternative spelling patterns and 'tricky words' (words which are non-decodable) are taught separately. In contrast to synthetic approaches, analytic phonics methods do not use blending and focus on a whole-to-parts approach in which children are taught to analyse sound and letter information after word recognition has taken place (Torgerson, Brooks & Hall, 2006; Ehri et al., 2006).

In the UK, synthetic phonics is recommended as the prime approach to teaching children to read (DfES, 2006; DfE, 2010; 2015). Children are taught in discrete, daily phonics sessions using multi-sensory approaches which use visual, auditory and kinaesthetic teaching methods. As part of the government's 'phonics fast and first' approach, it is the expectation that children are taught phonics during their first years of schooling and will have acquired the word recognition skills to enable them to become fluent readers by the end of key stage one (aged seven years) (DfES, 2006; DfE, 2010; 2015). In 2008, the government provided a non-statutory framework for teaching synthetic phonics, 'Letters and Sounds' (DfE, 2008). Since then, a range of commercial synthetic phonics programmes have become available for schools, one of which is Jolly Phonics.

The Jolly Phonics programme

Jolly Phonics is a child-centred synthetic phonics programme. It was first devised by Sue Lloyd, a primary-school teacher, in 1992 for primary use with UK children aged four to seven years. The programme uses multi-sensory methods including music, visuals and actions (Jolly Learning, 2018). Through the nine week programme, children are taught all 42 phonemes and their corresponding graphemes (known as grapheme-phoneme correspondences or 'GPCs') at a rate of one new phoneme per day. Letter formation, blending and segmenting skills are taught. Tricky words are also taught to using a variety of strategies such as using the mnemonics or using the 'look, cover, write and check' approach (Lloyd, Wernham, Jolly & Stephen, 1998; DfE, 2013).

Despite its widespread use in primary schools in the UK (Jolly Learning, 2018), the evidence base for Jolly Phonics is somewhat limited. The aim of this critique is to examine the psychological theory and research of two underpinning aspects of the Jolly Phonics programme: synthetic phonics and multi-sensory approaches. The current evidence base which seeks to explore the efficacy of the Jolly Phonics programme will be examined. Implications for practice will also be discussed.

Evaluating the Evidence Base for Synthetic Phonics

Since the late 1970s, educators and researchers have engaged in a lively debate regarding methods of reading acquisition (Nicholson, 1992), which still continues today. In an early narrative review of methods of reading acquisition, Chall (1979, as cited in Adams, 1994)

reviewed the evidence base and carried out classroom observations. Chall concluded that phonics instruction enabled children to make quicker progress than whole-language approaches, which focused primarily on recognition of the whole word rather than the constituent parts of a word. Further, Chall also concluded that synthetic phonics was a particularly effective method of phonics instruction.

Since Chall's influential review, further support for a synthetic phonics has come from a meta-analysis carried out by Ehri et al. (2001) which explored the efficacy of phonics instruction. In total 38 studies were identified, many of which made comparisons between synthetic and analytic phonics approaches. Ehri et al. reported moderate overall effect size ($d = 0.41$) of systematic phonics instruction on reading (decoding, word reading and text comprehension) compared with no control or whole language instruction groups. A larger effect size was also reported ($d = 0.55$) when phonics instruction began at an earlier age (from Kindergarten or reception age).

The Ehri et al. meta-analysis also looked at the effectiveness of phonics teaching for poor readers, children with cognitive difficulties or children at risk of reading failure, although, comparisons were only made between phonics and non-phonics instruction. Findings were mixed; for children identified as at risk (aged five to six years) phonics instruction significantly improved reading skills ($d = 0.58$, $d = 0.74$, respectively) and comprehension skills ($d = 0.51$). However, for children aged seven to eleven years, the effect size was very small ($d = 0.15$), although, significant gains for comprehension skills were found for this age range ($d = 0.32$). Overall, the authors concluded that the phonics instruction was significantly more effective than non-phonics instruction for remediating reading difficulties. The small effect sizes were concluded to be due to the lack of intensity of phonics instruction and the small number of studies analysed which may not have been enough to yield reliable findings. In contrast to these findings, other researchers have found synthetic phonics to be an effective method of instruction for a wide range of populations including children with significant cognitive difficulties (Finnegan, 2012); developmental delay (Goetz et al., 2008); English as an additional language (Stuart, 1999; Stuart, 2004) and children of low social-economic status (Foorman et al., 1998).

Following the Ehri et al. meta-analysis, Camilli, Vargas and Yurecko (2003) replicated the study to explore the central findings and reported a much smaller effect size ($d = 0.24$) relating to the effectiveness of synthetic phonics over analytic approaches. Within the 38 studies, over 30% had used whole-language based reading activities, which were not identified in the original meta-analysis. When this was considered, the analyses produced a comparable effect size to systematic phonics instruction alone ($d = 0.29$). This led the authors to conclude that whilst systematic phonics approaches were of value so were whole-language approaches, and a balance between the two approaches was the most overly effective approach to teach reading. Similar findings were also found by Torgerson et al. (2006) in a systematic literature review of 14 randomised control trial studies. They concluded that there is little evidence to suggest that a synthetic phonics approach is more or less effective than an analytic phonic approach. They report a much smaller effect size compared with Ehri et al. (2001) ($d = 0.27$)

which supports findings from Camilli et al. (2003). Also, the importance of broad literacy activities alongside phonics teaching was found to be an effective component alongside phonics in several studies.

The evidence base suggests that systematic phonics is an effective method of phonics instruction compared with non-systematic phonics or whole-language approaches for developing word recognition skills. There is limited evidence to suggest that synthetic phonics over an analytic approach is more effective. Also, small group versus whole class phonics instruction was found to be of equal effectiveness. Research shows that synthetic phonics is appropriate to use with a wide range of at risk populations including with those with a range of developmental and cognitive difficulties. Overall, the evidence suggests that a balance between a systematic phonics approaches alongside a broad literacy curriculum is the most effective approach for teaching children how to read.

Evaluating the Evidence Base for Multi-Sensory Approaches

Multi-sensory approaches, first introduced by Dr. Samuel Orton and his assistant Anna Gillingham in the 1920s, refer to simultaneous use of the visual, auditory and kinaesthetic strategies to enhance memory and learning (Sheffield, 1991). Together, Orton and Gillingham created the Orton-Gillingham (OG) approach; a structured, multi-sensory synthetic phonics based approach. The approach was originally designed to remediate language and reading problems exhibited by children with dyslexia (Sheffield, 1991; Ritchey & Goeke, 2006).

The underpinning psychological theoretical basis for multi-sensory approaches is rooted in the dual coding theory which posits that there are two systems in memory; a verbal system which specialises in processing linguistic information, and a non-verbal system which specialises in processing imagery (Clark & Paivio, 1991). More specifically, the verbal system contains visual, auditory and articulatory representations, whereas the non-verbal system contains representations such as environmental sounds and actions, and emotional and visceral sensations (Clark & Paivio, 1991). The theory suggests that engaging a child's sensory modalities (visual, auditory and tactile) and linguistic system at the same time may enhance learning and memory (Schlesinger & Gray, 2017).

The evidence base for multi-sensory learning approaches is limited (Davis & Florian, 2004). Many of the studies have sought to evaluate the OG approach and have found positive results (Richey & Goeke, 2006). For example, in one study participants received multi-sensory phonics instruction (OG approach) or non-phonics reading instruction. The multi-sensory group made better gains in reading words and non-words compared with the non-phonics group. These results were maintained two years later. However, results should be interpreted with caution as differences between the groups at baseline were identified. Also, the non-phonics group received a wide variation of teaching which differed from school to school (Oakland, Black, Stanford, Nussbaum, & Balise, 1998). Some studies have found non-significant results or less favourable results. For example, one study reported that the comparison condition had been more effective (see Chandler et al., 1993) and non-significant results were reported by Stoner (1991) and Hook, Macaruso, & Jones (2001). In a review of 12 OG studies, Ritchey et al. (2006)

found that the majority of these had found positive outcomes for children. However, the authors reported that many of the studies lacked methodological rigour including lack of review measures and small sample sizes. This led them to conclude that many of the findings needed to be interpreted with caution and highlighted the need for more research in this area using robust methods.

A plausible reason for a limited evaluation of multi-sensory approaches is the difficulty in isolating its effects as often it is used to enhance a teaching method (Campbell, Heff and Cooke, 2008). Campbell et al. (2008) compared identical instruction methods (synthetic phonics instruction) across two groups (n = 6), one group was exposed to added visual, auditory and kinaesthetic elements (depending on the task). The results showed initial gains in fluency of VC (vowel-consonant) and CVC (consonant-vowel-consonant) words for the multi-sensory group thus demonstrating the value of multi-sensory approaches. However, a lack of review measures means that it was not possible to see if these positive effects were maintained over time. This study is also limited by a very small sample size which lacks its generalisability. The authors concluded that replications are needed to determine whether these effects can be achieved with other students.

Overall findings from a wider research base seem to suggest that multi-sensory approaches are broadly associated with positive results and can be successfully used to support children with a range of reading difficulties. A limitation of multi-sensory approaches is the difficulty in isolating the effects due to the nature of how these are used to support other interventions (Campbell et al., 2008). Further research is needed to draw conclusions about the efficacy of this approach alongside phonics instruction, particularly as many current studies lack robust methods which warrant cautious interpretation of the findings. However, multi-sensory approaches may have inherent value through increasing children's interest, motivation and overall engagement in learning (Farkas, 2010; Rose, 2006).

Evaluation of Evidence Base for Jolly Phonics

Despite its wide use within the UK and Australia, Canada and across the world (Jolly Learning, 2018), the evidence base evaluating the efficacy of the Jolly Phonics programme remains somewhat limited. It is mainly comprised of a small number of peer-review journal articles, with the vast majority of studies being unpublished theses, dissertations, case studies and reports (see Appendix A for search strategy). The current literature highlights positive outcomes for children's reading skills. For example, studies have found significant gains in areas such as overall reading ages (Watson, 1998; Ekpo, Udoson, Afangideh, Ekuinam & Ikorok, 2007); phonological awareness and phonemic awareness (Bowyer-Crane et al., 2008), reading of word and non-words; letter-sound knowledge, blending skills and segmenting skills (Johnston & Watson, 2004; Hus, 2001; Stuart, 1999). A key limitation of this research base includes a lack of studies which use participants with reading difficulties or special educational needs. Although, there is sufficient research from synthetic phonics and multi-sensory approaches which suggest it would be likely suitable for children with a range of difficulties.

When examining the evidence base for Jolly Phonics, the quality of articles varied significantly

in terms of their overall rigour, methodology, measures used and outcomes (see Appendices B and C for quality appraisal table and data extraction table, respectively). In contrast to unpublished articles, published articles have typically been through a peer-review process and are often subject to a thorough scrutiny process. Of the published studies identified in this critique, all scored 16 and above when assessed using the Quality Index (Downs & Black, 1998) suggesting the studies were of good methodological quality. Of those studies that were unpublished, it was noticeable that many of these, with the exception of one or two, scored much lower overall scores thus suggesting that findings from these studies may be subject to biases affecting the generalisability and validity of results. Therefore, a cautious interpretation of the outcomes of these studies was adopted by the author.

Many of the unpublished studies used children with English as an additional language. A key issue with these studies arises when the measures which are used are not standardised for that particular population and therefore they may not provide valid and reliable measurements. For example, several of the studies used Burt Reading Test (Thorpe & Graham, 1974) which has been standardised on a UK population and therefore the standardised scores may not be generalisable across cultures. With this comes another key issue in which results from cross-cultural populations are not as generalisable to a UK population. This makes it difficult to understand and interpret the efficacy of Jolly Phonics for children in the UK based on findings from these international studies and therefore less consideration has been given to these studies as a result.

Conclusions and Implications for Practice

When working with schools, an educational psychologist (EP) can help schools with deciding upon a suitable phonics programme by providing evidence-based advice. With due consideration of the wider evidence-base, Jolly Phonics seems to be a useful and effective approach to use within primary schools. It also meets the government's core criteria for synthetic phonics instruction (DfE, 2015). Furthermore, the programme appears to be straightforward to teach and reduces workload for teachers (Moodie-Reid, 2016; Campbell, 2016). Qualitative evidence from teachers from school case studies report that children enjoy and are motivated by the multi-sensory teaching methods (Jolly Learning, 2018). However, based on the intended age range of the intervention (aged four to seven years), there is a need to consider whether Jolly Phonics would be engaging and as effective for older pupils.

The research base for systematic synthetic phonics instruction and multi-sensory approaches provide some evidence to suggest that these methods are suitable to use with children with a range of learning and cognitive difficulties (Ehri et al, 2001; Finnegan, 2012; Goetz et al., 2008). However, for all interventions, there is a need to consider the appropriateness of the programme for the needs of an individual child; an EP could also provide specific individualised support for this purpose.

Research has shown that phonics instruction taught in isolation is not as effective as when it is taught alongside broad literacy learning (Camilli et al., 2003; Torgerson, et al., 2006), therefore it is recommended that the Jolly Phonics programme is delivered within a rich

language and broader literacy based curriculum. The government has since provided more specific guidance on providing links between language, phonics and literacy learning across the curriculum (DfE, 2014). This guidance suggests using multi-sensory learning and whole-language strategies to encourage children's love of reading and to provide opportunities for children to apply their phonics skills more within a wider literacy context.

References

- Adams, M. J. (1994). *Beginning to read: Thinking and learning about print*. London: The MIT Press.
- Bowyer-Crane, C., Snowling, M. J., Duff, F. J., Fieldsend, E., Carroll, J. M., Miles, J., & Hulme, C. (2008). Improving early language and literacy skills: Differential effects of an oral language versus a phonology with reading intervention. *Journal of Child Psychology and Psychiatry*, 49(4), 422-432.
- Callinan, C., & van der Zee, E. (2010). A comparative study of two methods of synthetic phonics instruction for learning how to read: Jolly Phonics and THRASS. *The Psychology of Education Review*, 34(1), 21-31.
- Camilli, G., Vargas, S., & Yurecko, M. (2003). Teaching children to read: The fragile link between science & federal education policy. *Education Policy Analysis Archives*, 11, 15.
- Campbell, M. L., Heff, S., & Cooke, N. L. (2008). Effects of adding multisensory components to a supplemental reading program on the decoding skills of treatment resisters. *Education and Treatment of Children*, 31, 267–295.
- Catts, H. W., Fey, M. E., Tomblin, J. B., & Zhang, X. (2002). A longitudinal investigation of reading outcomes in children with language impairments. *Journal of Speech, Language, and Learning Research*, 45(6), 1142-1157.
- Chandler, C. T., Munday, R., Tunnell, J. W., & Windham, R. (1993). Orton-Gillingham: A reading strategy revisited. *Reading Improvement*, 30, 59–64.
- Clark, J. M., & Paivio, A. (1991). Dual coding theory and education. *Educational Psychology Review*, 3(3), 149-210.
- Davis, P., & Florian, L. (2004). Searching the literature on teaching strategies and approaches for pupils with special educational needs: Knowledge production and synthesis. *Journal of Research in Special Educational Needs*, 4(3), 142-147.
- Department for Education. (2008). *Letters and sounds: Principles and practice of high quality phonics*. (DFE Publication No. 00281-2007BKT-EN). Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/190599/Letters_and_Sounds_-_DFES-00281-2007.pdf
- Department for Education. (2010). *Phonics teaching materials: Core criteria and the assessment process*. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/298420/phonics_core_criteria_and_the_self-assessment_process.pdf
- Department for Education. (2013). *Phonics self-assessment form: Jolly Phonics*. Retrieved from: <https://www.gov.uk/government/publications/phonics-self-assessment-form-jolly-phonics>

- Department for Education. (2014). *Developing language in the primary school: Literacy and primary languages*. Retrieved from <https://www.all-languages.org.uk/wp-content/uploads/2016/04/Developing-languages-and-literacy.pdf>
- Department for Education. (2015). *Reading the next steps: Supporting higher standards in schools*. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/409409/Reading_the_next_steps.pdf
- Department for Education and Skills. (2006) *Primary National Strategy: Primary framework for literacy and mathematics*. Retrieved from <http://webarchive.nationalarchives.gov.uk/20040722022638/http://www.dfes.gov.uk/primarydocument/>
- Downs, S. H., & Black, N. (1998). The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. *Journal of Epidemiology and Community Health*, 52(6), 377-384.
- Ehri, L. C., Nunes, S. R., Stahl, S. A., & Willows, D. M. (2001). Systematic phonics instruction helps students learn to read: Evidence from the National Reading Panel's meta-analysis. *Review of Educational Research*, 71(3), 393-447.
- Ekpo, C. M., Udosen, A. E., Afangideh, M. E., Ekukinam, T. U., & Ikorok, M. M. (2007). *Jolly Phonics strategy and the ESL pupils' reading development: A preliminary study*. Paper presented at 1st Mid Term Conference at the University of Ibadan, Ibadan, Oyo State. Retrieved from <http://jolly2.s3.amazonaws.com/Research/Nigeria%20-%20University%20Uyo%20Research.pdf>
- Eshiet, O. I. (2014). *Synthetic phonics as a tool for improving the reading skills of Nigerian pupils*. (Unpublished thesis). Retrieved from <http://jolly2.s3.amazonaws.com/Research/Busola%20PhD%20.pdf>
- Campbell, S. (2016). Playing with phonics: Teaching letters and sounds. *Every Child*, 22(4), 10-11.
- Farkas, R. D. (2003). Effects of traditional versus learning-styles instructional methods on middle school students. *The Journal of Educational Research*, 97(1), 42-51.
- Finnegan, E. G. (2012). Two approaches to phonics instruction: Comparison of effects with children with significant cognitive disability. *Education and Training in Autism and Developmental Disabilities*, 269-279.
- Fletcher-Campbell, F., Soler, J., & Reid, G. (Eds.). (2009). *Approaching difficulties in literacy development: Assessment, pedagogy and programmes*. Milton Keynes: Sage Publications.
- Foorman, B. R., Francis, D. J., Fletcher, J. M., Schatschneider, C., & Mehta, P. (1998). The role of instruction in learning to read: Preventing reading failure in at-risk children. *Journal of Educational Psychology*, 90(1), 37.
- Francis, D. J., Shaywitz, S. E., Stuebing, K. K., Shaywitz, B. A., & Fletcher, J. M. (1996). Developmental lag versus deficit models of reading disability: A longitudinal, individual growth curves analysis. *Journal of Educational Psychology*, 88(1), 3.
- Glazzard, J. (2017). Assessing reading development through systematic synthetic phonics. *English in Education*, 51(1), 44-57.

- Goetz, K., Hulme, C., Brigstocke, S., Carroll, J. M., Nasir, L., & Snowling, M. (2008). Training reading and phoneme awareness skills in children with Downs Syndrome. *Reading and Writing*, 21(4), 395-412.
- Gough, P. B. & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education*, 7, 6-10.
- Higgins, J. P.T, & Green, S. (2011). *Cochrane handbook for systematic reviews of interventions*. Retrieved from <http://handbook.cochrane.org>.
- Hook, P., Macaruso, P., & Jones, S. (2001). Efficacy of Fast ForWord training on facilitating acquisition of reading skills by children with reading difficulties: A longitudinal study. *Annals of Dyslexia*, 51, 75–96.
- Hoover, W. A., & Gough, P. B. (1990). The simple view of reading. *Reading and writing*, 2(2), 127-160.
- Hughes, C. J., Beverley, M., & Whitehead, J. (2007). Using precision teaching to increase the fluency of word reading with problem readers. *European Journal of Behavior Analysis*, 8(2), 221-238.
- Hus, Y. (2001). Early reading for low-SES minority language children: An attempt to 'catch them before they fall'. *Folia Phoniatica et Logopaediacae*, 53, 173-182.
- Johnston, R. S., & Watson, J. E. (2004). Accelerating the development of reading, spelling and phonemic awareness skills in initial readers. *Reading and Writing*, 17(4), 327-357.
- Jolly Learning. (2018). Retrieved from <http://jollylearning.co.uk/>
- Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology*, 80(4), 437.
- Lloyd, S., Wernham, S., Jolly, C., & Stephen, L. (1998). *The phonics handbook*. Chigwell: Jolly Learning.
- Mesmer, H. A. E., & Griffith, P. L. (2005). Everybody's selling it—but just what is explicit, systematic phonics instruction? *The Reading Teacher*, 59(4), 366-376.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Prisma Group. (2009). *Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement*. *PLoS medicine*, 6(7).
- Moodie-Reid, L. (2016). *Teachers' perceptions of the impact of the Jolly Phonics Program on students' literacy*. (Unpublished thesis). Retrieved from <http://eds.b.ebscohost.com/eds/detail/detail?vid=17&sid=4c962abf-4bac-4cf3-96971e0e63b5b092%40sessionmgr102&bdata=JnNpdGU9ZWRzLWxpdmU%3d#AN=2016-47709-276&db=psyh>
- Nasrawi, A., & Al-Jamal, D. (2017). The effect of using Jolly Phonics on Jordanian first grade pupils' reading. *International Online Journal of Education and Teaching*, 4(2), 106-119. doi: <http://iojet.org/index.php/IOJET/article/view/172/155>
- Nicholson, T. (1992). Reading wars: A brief history and an update. *International Journal of Disability, Development and Education*, 39(3), 173-184
- Oakland, T., Black, J. L., Stanford, G., Nussbaum, N., & Balise, R. R. (1998). An evaluation of the dyslexia training program: A multisensory method for promoting reading in students with reading disabilities. *Journal of Learning Disabilities*, 31, 140–147.

- Ritchey, K. D., & Goeke, J. L. (2006). Orton-Gillingham and Orton-Gillingham-based reading instruction: A review of the literature. *Journal of Special Education*, 40, 171–183.
- Rose, J. (2006). *Independent review of the teaching of early reading*. Department for Education and Skills. Retrieved from www.standards.dfes.gov.uk/rosereview/
- Schagen, I., & Shamsan, Y. (2007). *Analysis of Hyderabad data from 'Jolly Phonics' initiative to investigate its impact on pupil progress in reading and spelling - India*. National Foundation for Educational Research. Retrieved from <https://files.eric.ed.gov/fulltext/ED502371.pdf>
- Schlesinger, N. W., & Gray, S. (2017). The impact of multisensory instruction on learning letter names and sounds, word reading, and spelling. *Annals of Dyslexia*, 67(3), 219–258.
- Sheffield, B. B. (1991). The structured flexibility of Orton-Gillingham. *Annals of Dyslexia*, 41(1), 41–54.
- Stahl, S. A., & Murray, B. A. (1994). Defining phonological awareness and its relationship to early reading. *Journal of Educational Psychology*, 86(2), 221.
- Stoner, J. (1991). Teaching at-risk students to read using specialized techniques in the regular classroom. *Reading and Writing. An Interdisciplinary Journal*, 3, 19–30.
- Stuart, M. (1999). Getting ready for reading: Early phoneme awareness and phonics teaching improves reading and spelling in inner-city second language learners. *British Journal of Educational Psychology*, 69(4), 587–605.
- Stuart, M. (2004). Getting ready for reading: A follow-up study of inner city second language learners at the end of Key Stage 1. *British Journal of Educational Psychology*, 74(1), 15–36.
- Thorpe, W., & Graham (1974). The Burt Reading Test. The Revision Manual. Retrieved from <https://files.eric.ed.gov/fulltext/ED191016.pdf>
- Torgerson, C. J., Brookes, G. and Hall, J. (2006) *A systematic review of the research literature on the use of phonics in the teaching of reading and spelling*. London: Department for Education and Skills (DfES).
- Watson, J. E. (1998). *An investigation of the effects of phonics teaching on children's progress in reading and spelling*. (Unpublished thesis). Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.120.606>

Appendix A

Systematic Search Strategy

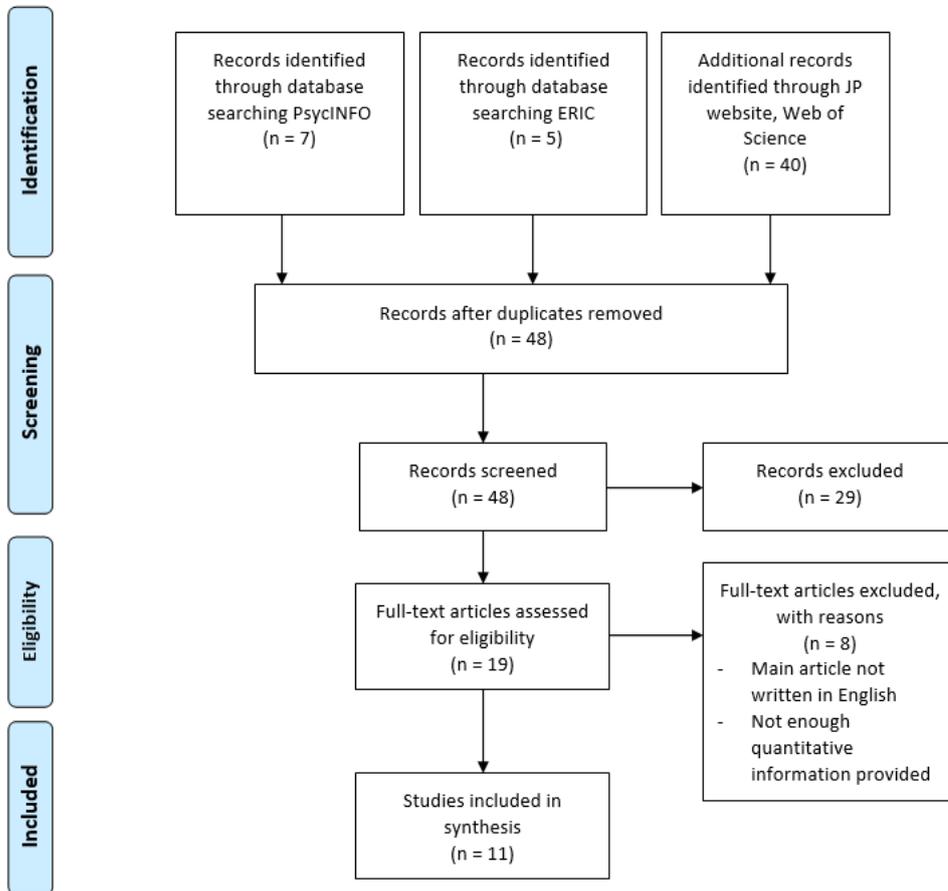
An initial scoping search was carried out using ‘Delphis’ (a discovery portal used by the University of Southampton), ‘Google Scholar’ and Web of Science which yielded a range of research sources. For the purpose of my research question, ‘How effective is the Jolly Phonics programme in teaching children aged 4–7 years to read?’, experimental or quasi-experimental studies in the form of academic journal articles, thesis/dissertations, reports and case studies providing quantitative data were included in the search. Studies which were not primarily focused on exploring the efficacy of Jolly Phonics, were outside of the specified age range or provided qualitative data were excluded. In addition to this, several studies were excluded due to a lack of missing information or because they were not written in English (see PRISMA flow chart below).

Using the ‘PICOS’ framework (Higgins & Green, 2011), key terms were identified (see table below) and were inputted into ‘PsychInfo’ and ‘ERIC’ databases (see figure 2 below). In addition to this, unpublished studies, case studies and conference papers, of which were included in the initial screening titles and abstracts. Following this, a total of 11 studies were quality assessed using Downs and Blacks (1998) Quality Index (see Appendix B). Data extraction was then completed using these studies (see Appendix C) to provide analysis and synthesis for the write-up.

Table 1. Search terms identified using PICOS framework

	Search Terms
Population (P)	child* OR childhood OR pupil OR student OR young person OR pre-school* OR preschool* OR primary aged OR primary-aged
Intervention (I)	“Jolly Phonics”
Comparison (C)	N/A
Outcome (O)	reading OR decoding OR phonological awareness OR phonemic awareness OR phonolog* OR literacy OR academic achievement
Setting (S)	early years OR foundation stage OR kindergarten OR nursery OR pre-school OR preschool OR key stage 1 OR reception OR school OR education

PRISMA Recording Flow Chart (Moher, Tetzlaff & Altman, 2009) showing stages of systematic search process.



Appendix B

Table 2. Quality appraisal of research sources using Quality Index (Downs & Black, 1998)

Study	Aims clearly described	Outcomes measures clearly described	Sample clearly described	Conditions clearly described	Findings clearly described	Distribution of data and estimates of random variability	Potential adverse effects of intervention reported	Lost participants described	Actual probability values reported
Watson (1998)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Stuart (1999)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Hus (2001)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Johnston & Watson (2004) (1)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Johnston & Watson (2004) (2)	No	Yes	No	No	No	Yes	No	Yes	Yes
Bowyer-Crane et al. (2007)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Ekpo et al., (2007)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Schagen & Shamsan (2007)	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No
Callinan & van der Zee (2010)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Eshiet (2014)	Yes	No	No	No	No	Yes	No	No	Yes
Naswari & Al-Jamal (2017)	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes

Study (cont.)	Representative sample	Intervention within representative context	Participants blind to intervention	Attempts to blind those measuring outcomes	All unplanned analyses reported	Time periods between intervention and tests appropriate	Appropriate statistical tests	Intervention fidelity	Accurate outcome measures
Watson (1998)	Yes	Yes	Not known	No	Yes	Yes	Yes	Yes	Yes
Stuart (1999)	Yes	Yes	Not known	No	Yes	No	Yes	Yes	Yes
Hus (2001)	Yes	Yes	No	Not known	Yes	Yes	Yes	Yes	Yes
Johnston & Watson (2004) (1)	Yes	Yes	Not known	Not known	Yes	Yes	Yes	No	Yes
Johnston & Watson (2004) (2)	Yes	Yes	Not known	Not known	Yes	No	Yes	No	Yes
Bowyer-Crane et al. (2007)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ekpo et al. (2007)	Yes	Yes	Not known	Not known	Yes	Not known	Yes	Yes	Yes
Schagen & Shamsan (2007)	Yes	Yes	Not known	Not known	Yes	Yes	Yes	Yes	Not known
Callinan & van der Zee (2010)	Yes	Yes	Not known	Not known	Yes	Yes	No	Yes	Yes
Eshiet (2014)	Yes	Yes	Not known	Not known	Yes	Not known	No	No	Not known
Naswari & Al-Jamal (2017)	Yes	Yes	Not known	Not known	Yes	Yes	Yes	Yes	Not known

Study (cont.)	Participants from same population at same time	Random allocation of participants	Participants and professionals blind to allocation	Adequate adjustment for confounding variables	Lost participants taken into account	Published? Source type? (Not included in overall score)	Total rating out of 23	Notes
Watson (1998)	Yes	No	No	No	Yes	No Thesis	17	
Stuart (1999)	Yes	No	N/A	No	Yes	Yes Peer reviewed	16	
Hus (2001)	Yes	No	No	Yes	Yes	Yes Peer reviewed	17	
Johnston & Watson (2004) (1)	Yes	No	No	No	Yes	Yes Peer reviewed	17	Experiment 1
Johnston & Watson (2004) (2)	No	No	No	Yes	Yes	Yes Peer reviewed	11	Experiment 2
Bowyer-Crane et al., (2007)	Yes	Yes	Yes	Yes	Yes	Yes Peer reviewed	23	Used JP with other interventions
Ekpo et al. (2007)	Yes	Not known	Not known	Not known	Not known	No Report	16	
Schagen & Shamsan (2007)	Yes	Not known	Not known	Not known	Not known	No Report	13	
Callinan & van der Zee (2010)	Yes	No	No	Yes	Yes	Yes Peer reviewed	16	
Eshiet (2014)	Yes	Not known	No	Yes	Not known	No Thesis	8	
Naswari & Al-Jamal (2017)	Yes	Yes	Not known	No	Yes	Yes Peer reviewed	16	

Appendix C

Table 3. Data extraction table showing studies in order of quality as determined by overall Quality Index scores (Downs & Black, 1998)

Author(s), country and study type	Sample	Measures	Intervention	Key Findings	Valuable research?
Bowyer-Crane et al., (2007); UK; published article in PR journal	n = 152 (52.6% male) with poor language and verbal reasoning skills, mean age 4:09 from 19 schools	Initial screening of n = 960 on picture naming and non-word repetition test. Phonological awareness, language/vocabulary and literacy measures (letter identification, single word reading, and non-word reading).	Two groups; 1) phonology with reading or 2) oral language intervention – 20 weeks of training delivered by a TA. Pre, post, mid and review 5 mths later. Measures compared to n = 564 previously screened.	Regression model to control for gender, age and pre-intervention levels. Group taught using JP made sig progress in literacy and phoneme awareness which was maintained at follow-up. Robust effect sizes and confidence intervals demonstrate strength of effects obtained.	Yes, but difficult to unpick effect of JP
Johnston & Watson (2004) Ex 1; UK; published in PR Journal	n = 109 analytic phonics, n = 78 analytic + pa, n = 117 synthetic phonics	Initial screening on phonological awareness and literacy tasks. Tests – BPVS, Letter knowledge, Ready to Read Word Test, BAS Word reading test, Primary Reading Test (other measures irregular words, non-word reading, phonological skills)	1) Analytic, 2) analytic + pa, 3) synthetic phonics instruction delivered by trained teacher. Each session delivered daily for 20 mins over 16 wks. Two analytic groups then took the synthetic phonics programme.	Sig diff between SA group and AP groups on reading test, non-word reading, spelling and letter names	Yes
Hus (2001Stu); Canada; published in PR journal	n = 68 (aged 5:8 – 6:10 years – 4 Kindergarten classes) and n = 50 (aged 6:8 – 8:2 years – 2 Grade 1 classes) from 4 Low SES bilingual French-English schools. 92% 2 or more	Pre and post-measures (Reading Edge Kindergarten reading test) measures phonological awareness and decoding, phonemic awareness, decoding and comprehension skills.	All 4 classes were exposed to the experimental condition – 9 weeks of JP programme. No control group.	Comparisons made between Kindergarten classes receiving JP instruction and Grade 1 classes having not received JP instruction. Kindergarten classes showed significant gains in phonological skills and decoding.	Yes

	languages at home 56% 3 or more languages at home.			Grade 1 class showed lag in progress in these areas. JP is an effective programme for bilingual/multilingual learners.	
Stuart (1999); UK; published in PR journal	n = 112, 4 and 5 year olds, 96% ESL (Majority were Sylheti speakers).	Pre-tests on spoken, written, alphabetic knowledge and phonological awareness. Measures repeated post-test and review 1 year later.	12 week intervention for Big Books (n = 57) or JP (n = 55) delivered daily for an hour. Whole class teaching approach.	Significant positive effects for JP intervention for phoneme awareness, phonic knowledge and reading progress (reading words and non-words) for children with ESL, however both groups made similar progress at 1 year follow-up.	Yes
Callinan & van der Zee (2010); UK; published in PR journal	n = 54 (30 males), mean age 4:5), 16 from JP sch 1, 18 from THRASS sch and 20 from JP sch 2.	Pre and post-tests (after 1 year) on reading words and non-words, as well as newly constructed tests measuring word string recall and phoneme string recall.	Comparison of THRASS and JP programmes across 3 schools. Fidelity of interventions varied but were administered as recommended by programme.	Mixed results showed that JP was overall most effective compared to THRASS intervention both in word and non-word reading. JP sch 1 did not show improvements whereas JP sch.	Yes, but many methodological issues to consider
Naswari & Al-Jamal (2017); Jordan; published in PR journal	n = 58, mean age not specified.	Reading test created by author with Cronbach alpha = 0.81 (good).	RCT. 1) JP n = 29, 2) control n = 29. Intervention for 5 weeks. Control group taught by traditional methods which are not clearly specified.	Significant difference between groups on reading test measure.	No, due to lack of robust methods and difficulties in apply to a UK population
Johnston & Watson (2004) Ex 2; published in PR journal	n = 92 (46 males) from 4 classes,	See experiment 1 details (above)	10 weeks of SP instruction alongside normal analytic phonics programme. Controlled design. 1) no-letter training group n = 29, 2) accelerated letter n = 33, 3) synthetic n = 30	SA group still read and spelt better than AP groups in terms of overall reading, spelling and phonemic awareness.	Yes, but interpret with caution as difficult to unpick effects

Watson (1998); UK; Thesis	n = 92 (46 males) from 2 primary schools, mean age 4:97, end of study n = 87 remained	Initial screening using BPVS. Pre (BPVS + letter knowledge), post (BAS, letter knowledge and non-word) and review 9 mths later (BAS, letter knowledge and non-word).	Matched participants. Intervention 1) JP; letter sounds in onset position; n = 33, 2) JP; letter sounds in all positions + blending; n = 30, 3) control group n = 29 whole word – look and say approach. All groups exposed to pre-reading skills. JP taught for 10 weeks, 15 mins daily.	Intervention group 2 (blending group) performed overall sig better on emergent reading, phonemic awareness and letter sound knowledge. Results maintained at 9 mths review. Overall no difference in pace (accelerated/gradual) in which letters are taught but explicitly teaching blending skills improves decoding.	Yes
Eshiet (2014); Nigeria; Thesis	n = 154 between ages 5-11 years.	Burt Reading Test, Schonell Spelling Test, Ruth Miskin Phoneme Awareness. Pre and post-tests. No review measures carried out.	1) JP (x2 groups), 2) traditional methods – rote learning of alphabet (2x groups). JP delivered by trained teacher. Intervention lasted 6 months. Exact n for each group not specified.	Confusing results which suggest that there were differences between the groups at baseline. Rationale for Mann-Whitney non-parametric test not explained as distribution was reported as normal. Difficult to decipher meaningful results.	No, difficult to decipher meaningful results; missing results and information
Ekpo et al. (2007); Nigeria; unpublished report	n = 168 across 5 schools. Age of children not specified.	Burt Reading Test pre and post measures. No review measures carried out.	1) JP n = 84 2) control n = 84 JP delivered by trained teachers.	Significant main between groups and over time. No confidence intervals reported or effect sizes therefore difficult to measure size of effect.	Yes but limited measures used
Schagen & Shamsan (2007); India; unpublished report	n = 506 from 14 schools, ages between 8–14 years.	Burt Reading Test, Schonell spelling test, NFER tests A, B & C, dictation tests (NFER B excluded as control group didn't take this test. Pre and post measures.	1) JP n = 241, 51% male; 2) control n = 265, 56% males. JP taught across sample by 5 different trained teachers.	Multilevel modelling was used. Looked at effect of gender. Girls seemed to outperform boys on all measures.	No, due to lack of details in the report it is difficult to conclude that outcomes are useful and rigorous