The Effectiveness of an Online Dialogic Reading Intervention for Improving the Oral Language Skills of Children Attending a DEIS School in Ireland

Sarah Jane O' Shea

Supervised by Dr. Laura Ambrose

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Abstract

Title: The effectiveness of an online Dialogic Reading intervention on the oral language skills of students attending a DEIS school in Ireland.

Background: Dialogic Reading (DR) is a well-established, evidence-based, interactive reading intervention. Research indicates that children from low-socioeconomic backgrounds benefit less well from this intervention than children from high-socioeconomic backgrounds, with contributing factors suggested as parents' self-efficacy and perceived competency. The current study aimed to address limitations as highlighted in previous research and adequately support this population's specific needs using online intervention sessions.

Methods: A cluster-randomised controlled experiment was used to investigate the effectiveness of an online, six-session, parent-led DR intervention on children's oral language skills, as assessed by standardised measures of expressive and receptive language. Twenty-two parent-child dyads attending an urban DEIS school were pair-matched cluster randomised into two conditions: intervention and waitlist control. Participating children were aged between 50 and 95 months. Parents were instructed to read at home with their children between intervention sessions, which took place over 8 weeks. Parents' implementation fidelity was monitored via check-ins during online sessions and phone calls.

Results: Results of three separate mixed-model repeated-measures ANOVAs indicate that the intervention was ineffective at significantly improving young children's oral language skills, compared to waitlist control. Participating parents' level of participation decreased over the course of 8 weeks.

Conclusion: Due to challenges associated with parents' engagement, it was not possible to definitively conclude whether this online, parent-led DR intervention can significantly impact children's language skills. Practical implications for implementing a DR intervention with at-risk populations within an Irish context are discussed in terms of the findings. Factors which may contribute to this population's responsiveness to intervention and directions for future studies are explored.

Declaration

This thesis is entirely my own work and has not been submitted for other awards at this or at any other academic establishment. Where use has been made of the work of others, it has been acknowledged.

Name: Sarah Jane O' Shea

Signature: _____

Date: _____

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List of Acronyms

ACIRI	Adult-Child Interactive Reading Inventory
ANOVA	Analysis of Variance
ASD	Autism Spectrum Disorder
BAS	British Ability Scales
BEI	British Education Index
BPS	British Psychological Association
BPVS	British Picture Vocabulary Scales
CPD	Continuing Professional Development
CROWD	Completion, Recall, Open-Ended, Wh- Questions, Distancing
DCYA	Department of Children and Youth Affairs
DEIS	Delivering Equality of Opportunity in Schools
DECPsy	Doctorate in Educational and Child Psychology
DES	Department of Education and Skills
DR	Dialogic Reading
EAL	English as an Additional Language
EPs	Educational Psychologists
ERIC	Education Resources Information Center
HSCL	Home School Community Liaison
MCAR	Missing Completely at Random
MLU	Mean Length of Utterance
NALA	National Adult Literacy Agency
NCCA	National Council for Curriculum and Assessment
NEPS	National Educational Psychology Service
NESF	National Economic and Social Forum

OLS	Ordinary Least Squares
PEER	Prompt, Evaluate, Expand, Repeat
PPVT-3	Peabody Picture Vocabulary Test
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PSI	Psychological Society of Ireland
SES	Socio-economic Status
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
WoE	Weight of Evidence
WWC	What Works Clearinghouse

Chapter One: Introduction

The current study aimed to ascertain whether an online Dialogic Reading (DR; Whitehurst et al., 1994) intervention would be effective in improving the oral language skills of children attending an Irish DEIS school, in comparison to waitlist control. The current thesis consists of three integrated components, presented as separate chapters: a review paper, an empirical paper, and a critical appraisal which concludes with an impact statement.

The review paper opens with a critical review of the literature base relevant to the current study, including recent research regarding oral language skill development and low-income families, and the DR intervention. Then follows a systematic review of DR interventions completed with populations from low-SES backgrounds, or within low-income countries. The systematic review evaluates relevant, recent empirical studies based on their methodological rigour and conceptual relevance to the research question. Subsequently, gaps within the literature that require future investigation are highlighted. The empirical paper then provides a detailed account of the empirical research completed to answer the research question, which asks, “Is an online, home-based DR intervention effective at improving the oral language skills of young children attending a DEIS school in Ireland, in comparison to waitlist control?” The format is that of a traditional research article, containing an introduction, methodology, results, and discussion section. The final chapter includes critical reflections on several aspects of the study undertaken. Reflections include discussions of the strengths and limitations regarding the epistemological and theoretical perspective chosen to guide the current thesis, the chosen research design, the data collection process, and the data analysis used. Ethical considerations are discussed, along with unanticipated ethical dilemmas encountered during the research process. This chapter further details implications for policy, practice, and future research. The concluding impact statement culminates the

work undertaken for the current study and indicates how the knowledge, analysis and insights presented in the thesis may benefit families, professionals, and academics alike.

Paradigm and Assumptions

This section denotes the paradigm adopted for this research, and thus the ontological and epistemological assumptions made. Social research is informed by the ontological beliefs of the researcher, i.e., how they view the nature of existence and the structure of reality (Crotty, 1998). Such beliefs then inform epistemological assumptions, the methodology and the methods employed to collect data (Crotty, 1998; Grix, 2004). Thus, such beliefs must be outlined at the outset of research (Denscombe, 2010). A method of outlining ontological beliefs is by adopting a paradigm, which is a collection of "related assumptions, concepts and prepositions that orient thinking and research" (MacKenzie & Knipe, 2006, p. 2). As such, adopting a paradigm provides a framework for considering the complex constructs approached in this research, such as socio-economic status and language development. The paradigm adopted for the current research is post-positivism.

Post-positivists argue that whilst an objective reality exists, it can only be discovered within a certain realm of probability (Creswell, Klassen, Plano-Clark & Smith, 2011). This means post-positivist research must establish empirical evidence to support a reality and must also use evidence to disconfirm alternative explanations (Creswell et al., 2011). The determinist view aligned with this paradigm means that quantitative methodologies are predominately used within this approach (Creswell et al., 2011). As such, research that aligns with a post-positivist paradigm must aim to measure reality via objective means, use deductive reasoning, and allow for research to be guided by previous empirical evidence (Grix, 2004). Post-positivism is an appropriate paradigm for the current study, as the primary focus of the study is the effect of an intervention on language skills, an observable and

measurable construct. Furthermore, the research process is deductive and investigative in nature, as the study is ascertaining the effectiveness of an intervention, meaning that epistemologically, post-positivism is suitable.

However, within the current study, a vulnerable population engaged in the intervention, thus it is important to have awareness of the participants' backgrounds and contexts when conducting research (Whittaker & Cowley, 2012). The post-positivist stance has cognizance of such factors, whilst still applying a precise, scientific, and objectively presented quantitative methodology (Cooper, 1997). As Breakwell and colleagues (2006) outline; the epistemological foundations of quantitative paradigms include accurately assessing a phenomenon, a researcher remaining unbiased, accruing knowledge from controlled experiments, and interpreting information as quantifiable.

Post-positivism acknowledges that although a researchers' observations are rooted in theory, they may also be influenced by their backgrounds and personal theories or biases (Creswell et al., 2011; O' Leary, 2009). However, researchers must strive to remain neutral to curtail such preconceptions from swaying their work (Creswell et al., 2011; Mertens, 2019). Researchers can address potential fallacies by using data triangulation, which is the flexible use of multiple sources of data to confirm the trustworthiness of results and provide a more accurate view of reality (Olsen, 2004; Panhwar, Ansari & Shah, 2017). Therefore, the current study looks at multiple measures to determine the effectiveness of the independent variable (the DR intervention) on the dependent variable, oral language (Olsen, 2004). Finally, the post-positivist ontological position recognizes that whilst a 'true' reality exists, it is never absolute due to the influence of the researcher's experiences and beliefs (i.e., critical realism; Maxwell, 2012). Within the critical review chapter of the thesis, the research reflects the ontological beliefs that align with post-positivism by critically reflecting on the reliability, validity, generalizability, and reproducibility of the study (O' Leary, 2009).

Chapter Two: Literature Review

Introduction

Dialogic Reading (DR; Whitehurst et al., 1988) is a widely researched intervention used to improve the oral language skills of young children (Whitehurst et al., 1994). The intervention uses two acronyms to support adults to elicit conversations with young children: PEER and CROWD (Whitehurst et al., 1994). PEER stands for Prompt, Evaluate, Expand and Repeat, and supports adults to remember the sequence in which to elicit conversation from children while reading. CROWD represents the types of prompts parents can ask; Completion (asking the child to complete a sentence or phrase), Recall (asking the child if they can remember characters or events in the story), Open-Ended, Wh- Questions (who, what, why) and Distancing (asking the child to relate aspects of the story to their own life; Whitehurst et al., 1994). DR has been found to effectively improve expressive and receptive vocabulary, print knowledge, phonological awareness, and narrative skills of young children both within classrooms and at home, and within individual and group-based settings (for reviews see Dowdall et al., 2020; Manz et al., 2010; Mol et al., 2008; Noble et al., 2019). A 2008 meta-analysis measuring the effect of DR on oral language outcomes indicated that children from low-SES backgrounds benefit less well from the intervention (d = .13) than children from high-SES backgrounds (d = .53; Mol et al., 2008). The authors hypothesise potential factors impacting children's language outcomes to include parents' literacy skills, attitudes toward reading or competency using DR techniques (Mol et al., 2008).

To begin this chapter, both international and Irish research which indicate a 'language gap' between children from low- and high-SES backgrounds shall be explored, along with a brief inspection of literature pertaining to the relationship between language development and SES. This is followed by a brief history of DR research and its current literature base. After this, the use of DR specifically with families from low-SES backgrounds, and DR training

methods are briefly discussed. This provides a rationale for conducting a systematic review to further investigate research that has implemented DR interventions with participants from low-SES backgrounds. Specifically, this systematic review aims to ascertain whether research conducted after Mol and colleagues (2008) meta-analysis has identified factors which influence or mediate children from low-SES backgrounds' responsiveness to DR interventions.

A systematic review was chosen to identify relevant research, as this method of identifying, evaluating and synthesising research is completed in a way that "adheres closely to a set of scientific methods that explicitly aim to limit systematic error" (Pettigrew & Roberts, 2006, p. 9), thus eliminating researcher bias. Furthermore, systematic reviews are an excellent data-based means for identifying research gaps (Eagly & Wood, 1994; Schlosser, Wendt & Sigafoos, 2007), which shall be used to shape the research undertaken in the current thesis. Eight studies met the inclusion criteria, and using Gough's (2007) weight of evidence, two studies achieved a high rating – meaning the studies had a high level of methodological rigour, used an appropriate research design, and answered the current review question appropriately. Following this review, a synthesis of findings highlights gaps within the literature that have clear implications for practice and research, and which informed the ensuing empirical research project which is described in further detail in the third chapter of this thesis. This chapter concludes with a research question and aims.

Oral Language Skills and Families from Low-SES Backgrounds

A population that consistently is found to have lower oral language skills (from toddlerhood through to post-primary school) is children from low-socioeconomic (SES) backgrounds (Fernald et al., 2013; Fitzgerald, Robillard & O' Grady, 2016; Hindman, Wasik & Snell, 2016; Hoff, 2003; Locke et al., 2002; McGillion et al., 2017). SES is a composite index of relative socio-economic advantage or disadvantage – parental education, occupation

and household income are the three most typically used components within literature (Beck & McKeown, 2007; McAvinue, 2018). International research confirms a disparity in oral language skills between children from low- and high-SES backgrounds. In Australia, children from low-SES backgrounds are four times more likely to be behind their peers in language and cognitive skills (Fitzgerald, Robillard & O' Grady, 2016), and in the United States, studies have found that children from high-SES areas begin school with at least twice as many words as children from low-SES areas (Hindman, Wasik & Snell, 2016; White, Graves & Slater, 1990). In the UK, children from low-SES backgrounds have been found to show a significant clinical difference in vocabulary size and language processing abilities from 18 months of age (Fernald et al., 2013; McGillion et al., 2017). One study highlights how more than 50% of children in the lowest Index of Multiple Deprivation in England begin school with delayed language skills, despite having cognitive abilities in the average range (Locke, Ginsborg & Peers, 2002).

In Ireland, a study exploring Growing Up in Ireland data (a national longitudinal study of children) found a statistically significant association between SES and vocabulary (McAvinue, 2018). This association was small in magnitude, linear and declined in strength as chronological age increased, indicating that the association between oral language and SES may be weaker within the Irish cohort than reported internationally (Molloy, Murtagh & McAvinue, 2016). However, the presence and significance of such a gap cannot be ignored, as children from low-SES backgrounds in Ireland consistently obtain significantly lower levels of educational attainment in comparison to students from high-SES backgrounds in relation to literacy and numeracy attainments in primary school (Devaney et al., 2013; Eivers et al., 2010; Eivers, Shiel & Shortt, 2004) to state examinations in post-primary school (McAvinue & Weir, 2015; Weir & Kavanagh, 2018).

Social contexts are crucial in shaping language development, as they provide opportunities for interaction which motivate a child to learn a language (MacWhinney, 2004). Different social contexts support language acquisition in different manners and thus can produce large differences in the rate and course of language development across different social contexts (Hart & Risely, 1995; Huttenlocher et al., 2010). One such social context which influences language development is SES. Evidence for this comes from research completed by Hoff (2003) who investigated naturalistic interactions between mothers from low- and high-SES backgrounds and their children. This research indicated that mothers from high-SES backgrounds speak more frequently to their children, use a more variable vocabulary, and use more grammatically complex sentences when speaking to their children when compared to mothers from low-SES backgrounds. This difference in maternal speech fully accounted for the vocabulary production differences of participating children after pre-test and child-birth order were controlled for. Aside from maternal speech, within literature SES is commonly a proxy index which is used to indicate a variety of factors which can influence a child's language development. Much research has been dedicated to identifying other SES- related factors which can lead to the 'language gap'; which includes demographic differences such as maternal age and family size, environmental differences associated with parent education and income, and home environment differences such as the regularity with which children are read to and parents' own attitudes towards reading (Curenton & Justice, 2008; Garvey et al., 2006; Waldfogel & Washbrook, 2011; Yarosz & Barnett, 2001). Literature indicates that families from low-SES backgrounds are less likely to have access to books and learning materials, and less likely to engage in shared reading activities, which can influence children's language development (Berkule et al., 2007; Korat et al., 2007). Furthermore, whilst reading to their children, parents from low-SES backgrounds have been found to be less likely to believe that they have an important role in promoting their child's

literacy skills, in comparison to parents from high-SES backgrounds (Hammer, Miccio & Wagstaff, 2003; Weigel, Martin & Bennett, 2006), which can lead to low-quality shared reading interactions (Curenton & Justice, 2008).

Within an Irish school context, Cregan (2008) found pronounced differences in the language patterns of children from differing SES backgrounds. In her interpretative case study she found that children from low-SES backgrounds typically demonstrate a more restricted range of vocabulary, use more vague terms of reference, and use less specific or elaborate lexical choices, when compared to children from high-SES backgrounds. Interestingly, Cregan (2008) also found that all children had a strong awareness of the existence of a 'language variation' (i.e. a difference between the language spoken at home and at school), and the value school places on more formalised language. Cregan, along with other sociolinguistic researchers suggest that the language of children from low-SES backgrounds is *different*, rather than deficient, with Stubbs (1980) stating "educational failure results from a mismatch between children's language and experience and the language and experience demanded by school" (p.143, as cited in Cregan, 2008). It is posited that the language of children from middle to high-SES backgrounds is more likely to be congruent with the language used in school, and as such, places them in a more privileged position from the outset (Cregan, 2008; MacRuairc, 2011; Skerrit, 2017). For children from low-SES backgrounds, a discontinuity between the language used at home and at school can present as a major challenge, and thus hinder academic achievement.

Within an Irish context, low expectations of teachers regarding the achievements of children attending DEIS schools is well-documented (Archer & Weir, 2005; Eivers et al., 2004), and there are negative perceptions amongst teachers in DEIS schools regarding the language ability of their students (Cregan, 2008; 2010). This suggests a persistent deficit view of children's language skills. Cregan's (2008; 2010; 2019) extensive research indicates

that children require explicit support in acquiring the academic language required to succeed within school contexts. Thus, regardless of whether one views the language gap as a language difference or a deficit, it can be concluded that academic language is required within a school context to succeed.

The relationship between SES and language development is evidently complex. The reason findings confirming a 'language gap' are particularly disheartening is due to the huge importance of oral language skills in early childhood. Several longitudinal and factor analytic studies indicate that there is a significant relationship between early oral language abilities and later reading proficiency (Lervag, Hulme & Melby-Lervag, 2018; Nation et al., 2010; Shanahan & Lonigan, 2010; Farkas & Beron, 2004). Vocabulary knowledge in particular is core to oral language skills as it is the foundation of domain-specific knowledge and later reading comprehension (Beck & McKeown, 2007; Chall, Jacobs & Baldwin, 1990). Research suggests that poor vocabulary skills impede children's attempts at becoming proficient readers and may also increase the frequency of problem behaviours and social-skill deficits (Yew & O' Kearney, 2013; Morgan & Meier, 2008). Children from low-SES backgrounds tend to demonstrate lower proficiency in vocabulary, as measured by a standardised test of receptive vocabulary; The Peabody Picture Vocabulary Test (PPVT-3; Dunn & Dunn, 1997; studies: Farkas & Beron, 2004; Hart & Risley, 2003; Hay & Fielding-Barnsley, 2009; Waldfogel & Washbrook, 2011). Furthermore, children from low-SES backgrounds tend to build their vocabulary at slower rates than children from high-SES backgrounds (Rowe, Raudenbush & Goldin-Meadow, 2012). As vocabulary learning is cumulative in nature, such disparities can be magnified over time, with differences growing up to a full standard deviation by four years of age (Biemiller & Boote, 2006; Farkas & Beron, 2004), and once established, such differences may remain over time (Biemiller & Slonim, 2001; Hart &

Risely, 1995). These findings indicate that oral language disparities in early years can lead to educational disadvantages which may endure a child's entire school experience.

Dialogic Reading

Understandably, many interventions have targeted this specific population to improve their oral language skills and close the language gap between children from low- and high-SES backgrounds. An evidence-based intervention that has the potential to improve the vocabulary and general oral language skills of young children is Dialogic Reading (DR; Whitehurst et al., 1988). This intervention was first described in Whitehurst and colleagues (1988) seminal paper wherein the researchers empirically evaluated parent-child shared reading practises. The researchers hypothesised that it was the children's active participation during shared reading that was central to the development of early language and literacy skills. This led to DR being designed and investigated in several rigorous studies which explored the use of DR strategies in the home and at schools with teachers. Researchers found that the DR intervention led to significant improvement in children's performance on standardised measures of language (Whitehurst et al., 1994; Whitehurst et al., 1988; Whitehurst et al., 1999). Importantly, what distinguishes DR from simply reading to a child is the interactive quality and use of evocative behaviours (Barrett, 2019). The goal of DR is for the child to become the storyteller and the adult (parent or teacher) to facilitate, expand, and respond to the child's verbalisations (Zevenbergen & Whitehurst, 2003). To help adults learn to use DR, there is a set of standardised prompts provided, known as the PEER and CROWD sequences (Justice & Pullen, 2003; Whitehurst et al., 1994). PEER supports the adult in remembering the sequence to respond to children's verbalisations during a shared reading session – Prompt, Evaluate, Expand and Repeat. The adult first prompts a child to answer or contribute, evaluates their response, corrects if necessary, and then expands upon the child's answer. If the adult has contributed a word that is potentially new vocabulary for the child,

the adult then asks the child to repeat the word. CROWD then, represents five different prompts that adults can use to develop children's responses over time – Completion (asking the child to complete a sentence or phrase), Recall (asking the child to remember what has happened), Open-ended questions, Wh- questions (why, where and what), and Distancing (questions which encourage the child to make links between the book and their own life). Adults are further instructed to follow the child's interests and have fun (Whitehurst et al., 1994). DR is an attractive intervention as it is low-cost, brief and easy to use (Marulis & Neuman, 2010).

Dialogic Reading: Current Literature Base

Following the original DR studies, in 2007 DR was listed as an evidence-based intervention which supports pre-literacy skills in a report by 'What Works Clearinghouse' (WWC), a US federally funded digital database of educational research, focused on high-quality evidence-based interventions (WWC, n.d.). At the time of publication, it was contended that there was enough evidence from sufficiently high-quality studies to state that DR has a positive effect on children's oral language development, whether implemented by researchers in clinical settings, teachers in classrooms, or parents in the home (WWC, 2007). It was further highlighted that DR had potentially positive effects on print knowledge and writing skills (WWC, 2007). This report was followed by a meta-analysis completed in 2008 by Mol and colleagues, who aimed to investigate the added-value of parent-child DR in comparison to 'typical' parent-child shared reading practices, in relation to children's oral language skills. Their analysis of 16 studies highlighted a strong, positive correlation between DR and expressive language outcomes (d = 0.42). However, the meta-analysis highlighted that not all children benefit equally, with younger children, aged 2 to 3 years old, benefitting more from the intervention (d = .50) than older children aged 4 to 5 years old (d = .14). In addition, as already mentioned children 'at risk' (i.e., from low-SES backgrounds) benefitted

less well (d = 0.14) than children not at risk (d = 0.39). Such a finding was echoed in a separate meta-analysis inspecting shared reading interventions, which revealed smaller effect sizes for language skills for children from low-SES backgrounds (d = .14) than for children from high-SES backgrounds (d = .39; Manz et al., 2010). That same year a meta-analysis on vocabulary-training interventions (Marulis & Neuman, 2010) used poverty as an additional risk factor and found significant differences in the effect sizes between groups: children from middle- and high-SES backgrounds were significantly more likely to benefit from vocabulary interventions (g = 1.35) than children from low-SES backgrounds (g = 0.77). More recently, two meta-analyses investigating shared book reading interventions (Dowdall et al., 2020; Noble et al., 2019) argued against previous reviews, finding no clear evidence if a child's age or SES-status moderates the effect of book sharing interventions as measured by standardised language outcomes. However, both indicated that there is a dearth of high-quality studies analysing the efficacy of shared book reading interventions with low-SES families, indicating that it is a critical area of future investigation. It must be noted that only one cited synthesis of studies was investigating DR specifically (Mol et al., 2008), thus the results of these studies must be interpreted with caution when generalising to the use of DR.

However, taken together, the results of these reviews indicate that although DR may improve oral language skills, it may not be sufficiently powerful to close the 'language gap' between low- and high-SES children. The authors of these reviews suggested that perhaps DR does not form a scaffolding of parent-child opportunities for early literacy development for all parents, and that a book reading intervention standardised on middle- to high-SES samples may not be appropriate for lower-SES samples (Mol et al., 2008; Shanahan & Lonigan, 2010). Researchers further suggest that results could be due to parents' educational background, literacy skills, attitudes towards reading, self-efficacy, perceived competency using DR techniques, or the need for researchers to provide parents additional support in

order to implement DR effectively (Marulis & Neuman, 2010; Manz et al., 2010; Mol et al., 2008). This suggestion is also reflected in a recent review of DR research which found parental inclusion, fidelity to the intervention, and adult competence in DR techniques are all factors which influence the effectiveness of DR interventions (Barret, 2019).

As previously highlighted, there is a complex relationship between SES and language development, thus there are complexities involved in understanding the factors which inhibit or encourage families from low-SES areas' responsiveness to language interventions. A qualitative study completed in 2018 explored parents from middle- and low-SES backgrounds' experiences implementing a home-based DR programme (Zevenbergen et al. 2018) and found that middle-SES parents were significantly more likely to indicate positive impressions of the intervention, compared to low-SES parents. However, one of the main themes identified in interviews with parents from low-SES backgrounds did also involve positive impressions of the programme. Other themes identified in interviews with parents from low-SES backgrounds included liking the structure, challenges with intervention execution, enjoying when children showed ability, and not liking specific books included for the intervention. Following these interviews the authors included recommendations for bolstering interventions using DR with a low-SES cohort, as follows: (i) create rapport with parents and assess their self-efficacy in reading before beginning the intervention, in order to tailor the intervention to parents' needs, (ii) at the beginning of the intervention specifically plan with parents an appropriate time within a distraction-free environment to read with their child, (iii) provide more extensive training with parents, and (iv) talk about typical challenges of implementing DR before beginning. These recommendations align with those from Manz et al. (2017) who created a shared reading intervention based on DR principles via collaborative inquiry with families from low-SES backgrounds and recommended that low-SES parents should be trained in fewer strategies at a time and allow for the individualisation

of sequence and pace of the intervention programme. Despite such recommendations, the individualisation of intervention training methods is not common practise within DR studies: typically, these studies have a researcher provide a once-off training seminar at the beginning of the programme, or an instructional video is shown to interventionists (for a review of DR training methods see Towson et al., 2017). It is clear that having sensitivity to parents' specific needs, having flexibility in training methods to allow for individualisation of sequence and the provision of time to ensure adult competence using the DR methods may be factors which significantly influence responsiveness to such interventions.

Rationale and Research Question

Over 10 years have passed since the previous meta-analysis on the effectiveness of DR was conducted (Mol et al., 2008), and it still proves to be a popular intervention. It is appropriate to replicate a review of the research conducted in the last few years - the number of studies will have predictably grown, as researchers and educators alike are currently more conscious of the effect SES has on children's oral language skills. For example, the importance of oral language in education has been recognised by the Irish educational system, with a new primary language curriculum having been implemented within primary schools in 2019 (Circular 0045/2019). Furthermore, DR is recommended as an effective intervention by both the Irish National Educational Psychologist Service (NEPS; Nugent, Gannon, Mullan & O' Rourke, 2015) and the National Council for Curriculum and Assessment (NCCA; Kennedy et al., 2012). Despite this, a DR intervention has not yet been empirically evaluated within an Irish context. It is established within the literature that children from disadvantaged areas and attending DEIS (Delivering Equality of Opportunity in Schools; DES, 2005) schools differ in educational attainment, with children from low-SES backgrounds frequently performing less well than children from high-SES backgrounds across several domains (Weir, McAvinue, Moran & O' Flaherty, 2014).

It is hoped that researchers are currently more conscious of the effect SES has on children's oral language skills. Conducting a review of research may highlight factors which influence or mediate children from low-SES backgrounds' responsiveness to DR interventions, which can then in turn be identified and targeted in future research. This will help bridge the gap between low- and high-SES children in pre-school and early primary school contexts. Furthermore, within an Irish context, educational psychologists' (EPs) role is currently shifting, towards a consultative and preventative model, which includes identifying appropriate interventions to support stakeholders (Frederickson, 2002). This means that Irish EPs will be accountable for ensuring interventions they recommend are appropriate for the population they are consulting for (Woolfson et al., 2003). Therefore, it is sensible for EPs to be aware of this preventative intervention and how to use it appropriately in the classroom and/or at home and be aware of specific methodologies to recommend to parents from DEIS areas, should there be any.

Research Question

How effective is a DR intervention at improving the oral language skills of children from low socio-economic backgrounds?

Literature Search

To address the review question, a literature review was conducted in July 2020. A later search was conducted in August 2021 to ensure the systematic review included recent articles. A keyword search examined the databases PsychINFO, ERIC and British Education Index (BEI), due to their focus upon psychology and education-oriented research. Two individual searches were completed, and the keywords are displayed in Table 1. Keywords included alternate terms for 'dialogic reading', namely 'interactive reading' and 'shared reading'. The reason for this is because although shared reading and interactive reading are

different concepts (as acknowledged by the What Works Clearinghouse; 2007), the terms are still used interchangeably within literature (Mol et al., 2008). The reason that two searches were completed, with one search not using any terms related to socio-economic status is because some studies gather demographic data and compare children from low- and high-SES backgrounds' outcomes as a secondary unplanned analysis and this review sought to include such studies (for example see Marulis & Neuman, 2010).

Table 1
Search terms for database search

Search 1	Search 2
dialogic reading OR interactive reading OR shared reading AND intervention AND socio economic status OR low-income OR poverty	dialogic reading OR interactive reading OR shared reading AND intervention

A filter was applied to restrict the search to peer reviewed journals, written in English and published within the last 13 years (2008 – 2021). The search generated 676 results combined for both searches across the three databases. 282 were deleted due to being duplicates, which resulted in 394 titles being screened using the inclusion and exclusion criteria as displayed in Table 2. 331 studies were removed for not meeting the criteria at the title-screening stage, which resulted in 63 abstracts being screened. 43 results were removed at this stage, and 20 papers were chosen for full-text screening. The full-text screening resulted in 8 studies being retained for full review (2 of which were included during the August 2021 search).

Figure 1 illustrates the literature search in more detail, using a PRISMA Flow diagram (Page et al., 2021). All excluded studies with a coded rationale are contained within Appendix A. The final included studies are displayed and summarised in Appendix B

Table 2
Inclusion and Exclusion Criteria Applied to Studies during Title-Screening and Abstract-Screening Stages

		Inclusion Criteria	Exclusion Criteria	Rationale
1	Type of Publication	Peer-reviewed journal	Non peer-reviewed journal	To ensure high methodological rigour
2	Language	Published in English	Not available in the English	Translation services not currently available Note: as DR is an internationally used intervention, studies which are originally completed in a language other than English are included
3	Date	Published since 1st January 2008	Published before 1st January 2008	Prior review investigating the effect of DR interventions was published in 2008 (Mol et al., 2008).
4	Study Design	Experimental Quasi-experimental (i.e., studies which include the collection of primary empirical data)	Reviews / Meta-analyses Informative Articles	To measure if intervention is effective; quantitative, original data is required. Quasi-experimental studies are included as SES can be considered a quasi-independent variable within certain study designs.
5	Participants	i) Children older than 24 months old ii) Participants do not have a diagnosed disability, developmental disorder, or specific language impairment iii) Participants within at least one experimental condition are from a low-SES background	i) Children younger than 24 months old ii) Participants have a diagnosed disability, developmental disorder, or specific language impairment iii) Participants SES is not measured, or no presence of participants from low-SES backgrounds in any experimental condition	i) Examining intervention effects on oral language skills - the participants need to be able to exhibit language. ii) Looking at effects upon intervention across homogenous age and ability, not looking at potential additional effects of disability. iii) Examining effects of DR intervention for participants from low-SES backgrounds
6	Intervention	i) Intervention which employs the DR criterion (based on Whitehurst's (1988) study) is the experimental condition ii) DR is the main intervention of study	i) Intervention which does not employ DR criterion is the experimental condition, or is not based on Whitehurst's (1988) original study ii) DR intervention is not the main intervention of the study	To effectively examine the effect of a DR intervention
7	Outcomes	Measure of oral language in child's primary language	No measure of oral language	Investigating efficacy of DR interventions on improving oral language abilities

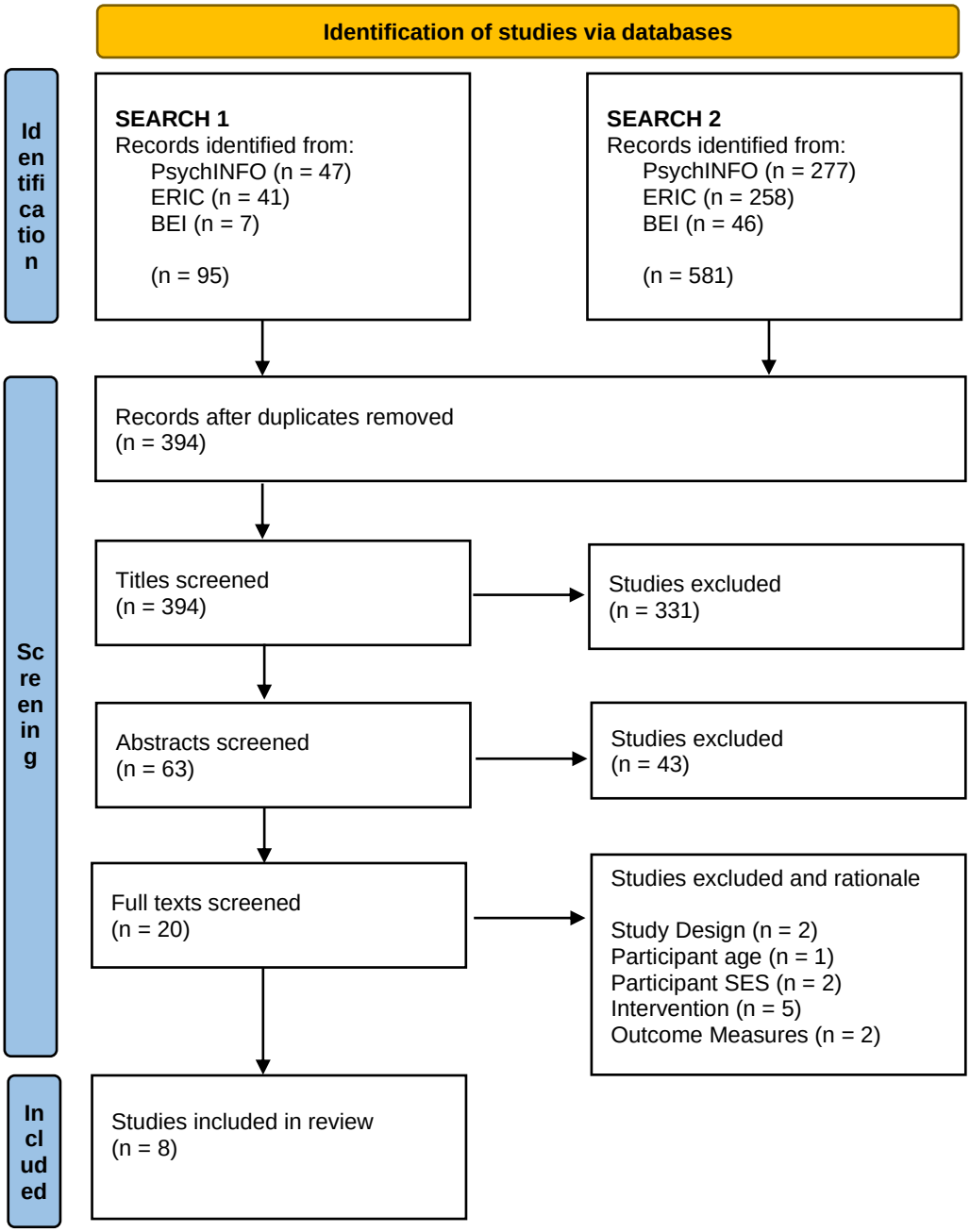

Figure 1: PRISMA flow diagram illustrating identification of studies for review.

Systematic Review

The 8 selected studies were evaluated according to the Weight of Evidence framework (Gough, 2007), which provides a systematic method to evaluate the extent to which each study contributes to the present research question. The framework comprises of three distinct areas; the Weight of Evidence A (WoE A); which evaluates the methodological

quality of the studies, the Weight of Evidence B (WoE B); which evaluates the methodological rigour of the studies, and the Weight of Evidence C (WoE C), which evaluates the relevance of the study to the current review question. The studies were of at least a quasi-experimental group design, thus were evaluated for WoE A using the APA Task Force Coding Protocol for group design (Kratochwill & Shernoff, 2004). For each protocol, scores from all WoE A sections were combined and averaged to form an overall WoE A score. For this review the protocol was amended for identifiable components, replications, site of implementation and follow-up. Rationale for these amendments and rating criteria are listed in Appendix C. An example of the completed coding protocol using the codebook is displayed in Appendix D.

The studies were then evaluated for methodological relevance (WoE B), and relevance to the current research question (WoE C) using defined rating criteria listed in Appendix C. When all studies were scored across the three weighting dimensions, an overall score, WoE D was calculated. WoE D is regarded as a measure of the effectiveness of each selected study in answering the current research question. The WoE D for each included study can be found in Table 3.

Table 3
Weight of Evidence Ratings

Study	WoE A	WoE B	WoE C	WoE D
Ergul et al. (2016)	1.6 Medium	2 Medium	2 Medium	1.86 Medium
Knauer et al. (2020)	1.6 Medium	1 Low	1 Low	1.2 Low
Lefebvre, Trudeau & Sutton (2011)	1.6 Medium	2 Medium	2 Medium	1.86 Medium
Lonigan et al. (2013)	2.6 High	3 High	2 Medium	2.53 High
Noble et al. (2020)	2.2 High	3 High	3 High	2.73 High
Opel, Ameer & Aboud (2009)	1.4 Low	1 Low	1 Low	1.13 Low
Reese et al. (2010)	2 Medium	1 Low	1 Low	1.33 Low
Simsek & Erdogan (2021)	1.7 Medium	3 High	1 Weak	1.9 Medium

Note: low =< 1.5, medium = 1.5 – 2, high >= 2.1

Characteristics of Included Studies

Participants.1,336 children participated in the studies with sample sizes ranging from 33 (Reese et al., 2010) to 510 (Knauer et al., 2020). Mean age of participants ranged from 2.6 (Noble et al., 2020) to 5.8 (Ergul et al., 2016) years old, with the mean age of participants across all studies being 4.6 years. All child participants in the studies were enrolled in a pre-school / kindergarten, with two exceptions: one study noted 74% of participants were enrolled in primary school (Knauer et al., 2020), and one study did not give information regarding the children's school enrolment, as they had been recruited via children centres (Noble et al., 2020). Demographic information was specified sufficiently for all studies.

Of particular interest is how the participants' SES was rated; two studies referred to participants as low-SES by proxy of being enrolled in a Head Start program in the United States (a government- funded program for preschool children from low-income families; Lonigan et al., 2013; Reese et al., 2010). One study operationalised low-SES as participants being from a disadvantaged area, with their school being state-funded (Simsek & Erdogan, 2020). Two studies referred to participants as low-SES due to residence within underdeveloped countries, Bangladesh and Kenya, namely (Knauer et al., 2020; Opel, Ameer & Aboud, 2009). There are both strengths and limitations associated with research using a participants' address or school as an indicator of their overall SES. A distinct strength is that it allows access to many participants (Braveman et al., 2005), and it is common practice within DR research, allowing for meaningful comparison of findings across studies (Szucs & Ioannidis, 2017). A limitation, however, it that this SES-measurement method does not thoroughly quantify SES. For example, residence in a low-income country does not automatically mean a participant is from a low-SES background (Braveman et al., 2005). To receive a higher WoE C rating; the above studies needed to acknowledge this, and further rate participants' SES based on commonly used measures within education research: family income, parent highest level of education, and parental occupation (Yang & Gustafsson, 2004). The other three included studies (Ergul et al., 2016; Lefebvre et al., 2011; Noble et al., 2020) rated the participants' SES based on family's income and parental (or maternal) education. Studies which included participants from a high-SES background as a comparison group (Lefebvre, Trudeau & Sutton, 2011), or mixed within the intervention conditions (Noble et al., 2020) were given a higher WoE C rating. Evidently, a variety of SES-measurement methods were used across included studies; and it must be acknowledged that this can affect the research findings, and has implications for this review, when comparing studies and drawing conclusions (Braveman et al., 2005).

It is well-established within the literature that children from low-SES backgrounds generally have lower oral language skills than children from middle- and high-SES backgrounds upon entry into school (Hart & Risely, 1995; Hoff, 2003). This discrepancy was found pre-intervention in two studies which compared children from low- and high-SES backgrounds (Lefebvre et al., 2011; Noble et al., 2020). As mentioned, other studies did not compare children from high- and low-SES backgrounds (affecting their WoE C rating); however, one other study established pre-intervention that participants had a below-average level of oral language using norm-referenced measures (Lonigan et al., 2013). Contrastingly, the study completed by Simsek and Erdogan (2020) noted that participating children had average to above-average levels of oral language using a norm-referenced measure. This study did not quantify SES, instead indicating that the pre-school being attended was state-funded. This perhaps indicates that children attending the school were not necessarily from low-SES backgrounds and affected the study's WoE C rating.

Power analyses were used to determine whether the sample size used within each study was large enough to detect effect sizes. The analysis conducted was based on being able to establish a medium effect size at power .8 with an alpha level of .05 (Cohen, 1988). Two studies did not have sufficient power for the analyses completed (Ergul et al., 2016; Lefebvre et al., 2011). One study completed post-hoc power analyses and found that they did not have sufficient power for one outcome variable (MLU; Noble et al. 2020). This means that the findings should be interpreted with caution, and also affected the studies' WoE A rating.

Setting. Studies took place in a multitude of countries and settings. One study was based in in a French speaking area of Canada (Lefebvre et al., 2011), one in Bangladesh (Opel et al., 2009), one in Kenya (Knauer et al., 2020), one in the United Kingdom (Noble et al., 2020), two in Turkey (Ergul et al., 2016; Simsek & Erdogan, 2020), and the two

remaining in the United States. Therefore, less than half of studies contained interventions which were implemented in English. Participants in Knauer and colleagues' (2020) study had the option of reading in English, Swahili or Luo – 70% chose Luo, 16% English and 14% Swahili. Intervention setting also ranged considerably amongst studies; three studies were implemented within the participants' home (Knauer et al., 2020; Noble et al., 2020; Reese et al., 2010), one study took place within the child's normal classroom (Opel et al., 2009), and three further studies took place in the child's school but in a separate classroom using a 'pull-out' method (Lefebvre et al., 2011; Lonigan et al., 2013; Simsek & Erdogan, 2020). Of note is Ergul and colleagues (2016) study where the intervention setting was an experimental factor.

Design. All studies included in the review were of experimental or quasi-experimental design. Four of the school-based interventions employed group-based designs, established group equivalency by using a randomised block design based on prior selection of schools, and randomly assigned groups to conditions, which positively affected WoE A ratings. All home-based studies utilised a completely randomised design, with Noble and colleagues (2020) using a double-blind randomised design. This positively affected the WoE A rating.

All included studies utilised a pre-post-test design. It is important to note that none of the eight studies completed a follow-up test, so no data concerning maintenance of intervention gains is available to analyse. This negatively affected all WoE A ratings, as some studies of long-term effects of early education interventions suggest that positive benefits reduce over a short period of time (Whitehurst et al., 1999), and whether this is true for the included studies cannot be determined within this review.

All studies included adequate controls, with majority including a 'waitlist' control group. Four of the studies also included an 'active' control group which received a shared

reading intervention that did not employ DR techniques (Lefebvre et al., 2011; Lonigan et al., 2013; Noble et al., 2020; Opel et al., 2009). This allowed for the effect of the experimental condition to be examined more accurately, leading to higher WoE B ratings. One study (Simsek & Erdogan, 2020) had three experimental conditions (DR, digital storybooks and active control), which should equate to a higher WoE B rating, however the conditions were not equivalent, with DR being provided to smaller groups by a researcher for a longer amount of time, introducing potentially confounding variables, thus leading to a lower WoE B rating.

Intervention. The length of interventions varied considerably amongst the studies – the shortest interventions took place over a 4-week period (Opel et al., 2009; Knauer et al., 2020), and the longest interventions were implemented over the course of one academic year (Lonigan et al., 2013). Varying levels of intensity also occurred across studies, with the most intense intervention involving 10-20 minutes a day, 5 days a week for one academic year (Lonigan et al., 2013).

In terms of intervention content, two of the studies amended the intervention appropriately to suit their specific research question, which was to also teach literacy skills such as phonological awareness and print knowledge (Levebvre et al., 2011; Lonigan et al., 2013). For these two studies, having a description of the intervention described clearly enough to allow for replication led to a high WoE C rating. The six other studies focused upon a non-amended DR intervention where a storybook was read dialogically to an individual or class group, with slight amendments to account for cultural differences.

Implementing a method of tracking intervention fidelity was also a criterion for achieving a high WoE C rating, as only three interventions were entirely carried out by researchers involved in the study (Lefebvre et al., 2011; Lonigan et al., 2013; Simsek & Erdogan, 2020). All studies which required the intervention to be carried out by teachers or

parents supplied training, and manuals or pamphlets explaining the intervention at the beginning of the programme. One opted to video record and analyse DR sessions (Simsek & Erdogan, 2020), and two further studies provided weekly classroom supervision and feedback (Ergul et al., 2016; Opel et al., 2016). For the home-based studies; one (Noble et al., 2020) asked parents to audio-record every reading session, as well as log time spent reading within a reading diary. The researchers also provided weekly contact to parents and answered any questions. This high level of fidelity monitoring resulted in a high WoE C rating. The two other home-based studies did not ask parents to log any intervention activities undertaken, opting to provide weekly SMS reminders (Knauer et al., 2020) or monthly telephone calls to answer questions (Reese et al., 2010). These options do not adequately monitor intervention fidelity, making it difficult to verify if the intervention was implemented as intended, and the amount of time participants individually received the intervention, which both affect the validity of results found (Mertens, 2015). As a result, both these studies received low WoE C ratings.

Measures. As it was a component of the inclusion criteria, all studies used tests of oral language or vocabulary to measure the effectiveness of the intervention. Higher WoE B ratings were given to studies which measured language outcomes with norm-referenced, standardised measures (Ergul et al, 2016; Lonigan et al., 2013; Noble et al., 2020; Reese et al., 2010), as any positive post-test results then indicate towards a generalised positive effect on language skills. Some studies used criterion-referenced tests due to a lack of available standardised tests in the language spoken by participants (Knauer et al., 2020; Lefebvre et al., 2011; Opel et al., 2009; Simsek & Erdogan, 2020). Lefebvre and colleagues (2011) did not report any reliability coefficients for the criterion-referenced measures used within their study, which negatively affected the WoE B rating. Three studies used tests of expressive vocabulary wherein the specific vocabulary being tested within the measure was also being

explicitly taught within the intervention (Knauer et al., 2020; Lefebvre et al., 2011; Opel et al., 2009). This risks a "teaching to the test" outcome, indicating that positive post-test results are not generalisable. This affected the WoE B rating for such studies. Studies which used multiple sources and/or methods of data collection received a higher rating for WoE A, as having more than one source of outcome data lowers the risk of test effects (Mertens, 2019).

Findings. Finally, to assess the review question, only measures which give an indication of the effect of a DR intervention on participants' oral language shall be focused upon (some studies also measured literacy skills). All but three studies (Lefebvre et al., 2011; Noble et al., 2020; Reese et al., 2010) reported a statistically significant increase in measures of oral language from pre- to post- intervention. Chosen statistical analyses and measures used to calculate the effectiveness of the intervention and WoE A ratings for all studies have been considered when inspecting outcomes, which shall be briefly presented.

Lefebvre and colleagues (2011) displayed very little data within the study; they reported no significant vocabulary increase for the experimental group when compared to the 'active' control group, which also exclusively contained children from low-SES backgrounds. They reported a significant increase in vocabulary scores for the experimental group when compared to the high-SES comparison group which received no intervention. No effect sizes were reported. Simsek and Erdogan (2020) used non-parametric tests to compare pre- and post- test results of three conditions: DR, digital storybooks and active control. Participants in all conditions significantly improved their expressive language skills as measured by MLU, however the largest gains were exhibited by the DR condition. The DR condition was the only condition to exhibit language gains as measured by a criterion-referenced measure of expressive and receptive language. No effect sizes were reported. Lonigan and colleagues (2013) reported that participants who received a DR intervention as part of their experimental condition scored significantly higher than groups that did not receive a DR intervention as

measured by standardised tests of expressive vocabulary and language development. Effect sizes ranged from d = .17 to d = .21 (small; Cohen, 1988), however when a Benjamini-Hochberg procedure was applied, all effects on the vocabulary outcome remained significant, which indicates a strong result. Knauer and colleagues (2020) used an OLS regression model to estimate treatment effects on their criterion-referenced measures. They found no effects on receptive vocabulary, but found a small, significant effect of storybook-specific expressive vocabulary when parents were provided storybooks, and a DR training. No effect sizes were reported.

Opel and colleagues (2009) reported a significant post-test increase in expressive vocabulary skills for participants in comparison to control, as measured by the previously mentioned criterion-referenced vocabulary measure. The effect size found was d = 2.0, which is very large according to Cohen's (1988) descriptors; this casts doubt upon the internal validity of the study and highlights how the results of the post-test outcomes were specific to the intervention. Ergul and colleagues (2016) reported significant results for experimental groups improving expressive vocabulary on standardised measures at post-test when compared to control. Of interest is that students enrolled within experimental conditions where DR was implemented within the home displayed significantly higher results for expressive language when compared to other experimental groups, and control. Effect sizes ranged from d = .04 to d = .09 (small; Cohen, 1988). Reese and colleagues (2010) compared effects of a DR intervention with an 'elaborative reminiscing' intervention and control, and after conducting several three-way ANCOVAs on post-test outcomes (controlling for maternal education, and pre-test measures) found that no children significantly improved their expressive vocabulary skills as measured by a standardised measure. Narrative skills did improve for children within the elaborative reminiscing condition but not DR – the authors hypothesised that parent training in DR is not particularly effective without an accompanying

pre-school component; a hypothesis also shared by Mol and colleagues (2008) in their meta-analysis. Another study which found few results was Noble and colleagues (2020), who used multiple regressions to understand the added-value of DR and 'Pause Reading' (Colmar, 2011) in comparison to active control, as well as the impact of SES. Their results indicated that the DR intervention was effective at changing parent reading behaviours, regardless of SES-status. This result was identified using observational methods. However, their quantitative data gathered from measuring children's oral language skills using standardised measures revealed that the DR intervention did not significantly improve children's language skills, in comparison to active control. The authors hypothesised that the lack of improvement may be due to the use of an active control group (rather than passive), the length of the intervention (6 weeks), or because DR "is not more effective than simply asking parents to read with their children" (Noble et al., 2020, p. 1894). Such an explanation would be at odds with previous literature.

Conclusion

The purpose of this review was to examine the effectiveness of a DR intervention at improving oral language skills of children from low-SES backgrounds, as a meta-analysis conducted over 10 years ago indicated that whilst DR can improve the oral language skills of young children, it has smaller effects for children from low-SES backgrounds (Mol et al., 2008). It was hoped that within this review potential factors that influence or mediate low-SES children's responsiveness to DR interventions could be identified. Using Gough's (2007) weight of evidence ratings, two studies received high ratings (Lonigan et al., 2013; Noble et al., 2020), meaning that the studies had a high level of methodological rigour, used an appropriate research design, and answered the current review question appropriately. Contrastingly, half of the studies which met the inclusion criteria received low ratings, meaning that although these studies answered the review question, the quality of the studies

may not be sufficient to generalise findings to a wider educational context. A distinct outcome from this review is that the DR intervention was interpreted and implemented in a variety of manners thus drawing definitive conclusions and implications for future research is difficult.

Firstly, to review the two studies which received high WoE ratings; one study (Lonigan et al., 2013) was implemented within-school by researchers, did not involve parental input, took place over the course of one academic year, and found that the intervention positively impacted children's expressive language skills, in comparison to control. The second study (Noble et al., 2020) was implemented at home by parents from both low- and high-SES backgrounds, used a high level of fidelity monitoring, took place over 6 weeks and found that the intervention did not significantly impact children's language skills, in comparison to active control. The two studies took contrasting methods to answer the review question; however, it may indicate that more intense interventions result in significant language outcomes. This finding is shared by Dowdall and colleagues (2020) who observed that shared reading interventions that provide more than 60 minutes of intervention time have higher effect sizes (d = 0.54) than those with less (d = 0.34). In addition, Noble and colleagues (2020) high quality study may not have found significant results due to an active control condition, which has been found to moderate the effect of shared reading interventions (g = 0.028; Noble et al., 2019). One promising finding from the study was that parents from low- and high-SES backgrounds were capable of changing reading behaviours over the course of 6 weeks, with no significant difference between groups (Noble et al., 2020).

Reiterating the assertion of two recent meta-analyses (Dowdall et al., 2020; Noble et al., 2019) inspecting shared book reading practices, the investigation of shared reading interventions with families from low-SES backgrounds is an important direction for future

research, and following the present review, it appears that continued research in the area is required. Following a critical analysis of the studies involved in the systematic review, some limitations emerged, many of which relate to the methodological rigour of the included studies. Firstly, none of the eight studies included within this review included follow-up tests, meaning the durability of effects is unknown. This significant gap in the literature was also noted by two recent meta-analyses of shared book reading interventions (Dowdall et al., 2020; Noble et al., 2019). Secondly, three of the included studies (Ergul et al., 2009; Lefebvre et al., 2013; Noble et al. 2020) did not have sufficient power to detect meaningful intervention effects for at least one of their outcome measures. Thirdly, three of the included studies used criterion-referenced measures of target vocabulary to measure oral language gains (Knauer et al., 2020; Lefebvre et al., 2013; Opel et al., 2009), which led to results indicating that using a DR intervention led to significant gains in children's vocabulary knowledge. This certainly indicates that DR is a practical, cost-effective option if educators wish to teach children specific vocabulary. However, the identified language gap between high- and low-SES children extends beyond target vocabulary, and thus should DR be a feasible option to support closing this 'language gap', it needs to be identified whether there is a meaningful impact on children's general language skills. Fourthly, two of the home-based studies received low WoE D ratings; notably, neither of these studies implemented effective fidelity monitoring systems, so it is difficult to discern if the intervention was implemented by parents as instructed, or how much time children spent being read to dialogically. The third home-based study (Noble et al., 2020) used a high level of fidelity monitoring, asking parents to audio-record every reading session, fill in a reading diary, and weekly check-ins across the 6-week intervention period – this resulted in the study receiving a high WoE rating. However, within this study, the parents work was not translated into children improving oral language scores in comparison to an active control, regardless of

SES-status. The researchers noted that for all parents, the level of DR behaviours significantly changed from pre- to post-test, but there was a wide variability in the number of sessions conducted by parents, ranging from 0 to 60 (Noble et al., 2020). However, lack of intervention fidelity monitoring presented within home-based shared reading research is a widespread problem within the literature (see Dowdall et al., 2020; Towson et al., 2017). Therefore, a clear gap remains in the literature for a study which implements DR with families from low-SES backgrounds and effectively monitors the quality of the intervention, and the quantity of time spent reading dialogically. Using a logbook, and frequent home visits or telephone check-ins are suggested effective fidelity monitoring techniques (Mertens, 2019).

Despite such findings, there are limitations associated with the systematic review process undertaken. It must be noted that the quality indicators for WoE B and WoE C were not standardised, which may affect the validity of the overall WoE D rating. However, this review highlights that there is a need for a study which includes a follow-up test, has sufficient statistical power, uses a range of standardised language outcome measures, and if working with parents; includes an intervention fidelity monitoring system. A second limitation pertains to the fact that this review focused solely on the language scores as indicators of the effectiveness of the DR intervention. Qualitative information derived from participating parents and children has the potential to provide meaningful information in relation to their subjective experience of the intervention and bolster the effectiveness of future DR studies. Such information would ensure that the individual experiences of children and their parents form the foundation upon which DR interventions are based. Furthermore, from a policy perspective, pursuant to the UN Convention on the Rights of the Child (1989) and the Child and Youth Participation Strategy 2019-2023 (TUSLA, 2019), children have a right to be consulted in all activities that affect their lives. None of the eight included studies

gathered information pertaining to participants experience of engaging in the DR invention. Therefore, the scope of the current review, and indeed the broader research area is significantly limited by the absence of the voice of the child. This is a distinct limitation of the included studies that is not adequately captured within the studies' overall WoE D ratings.

The study undertaken by Noble and colleagues (2020) was the only study reviewed which explicitly compared language outcomes for children from high-SES backgrounds and low-SES backgrounds within the same experimental conditions and found that parents from all backgrounds were equally able to attend to the experimental condition and read dialogically to children (i.e., attend to the intervention with high fidelity). The other studies reviewed either compared children from low-SES backgrounds within an experimental condition to children from high-SES backgrounds within a waitlist control condition (Lefebvre et al., 2011), or compared children from low-SES backgrounds to children from similar backgrounds. It does indicate that perhaps a DR intervention may be used as a preventative strategy within specific 'at-risk' populations, such as those attending DEIS schools, or members of the travelling community. Currently, there are no empirical studies completed and adapted to an Irish context, which is important as both NEPS and the NCCA highlight the intervention as a strategy to increase young students' vocabulary and early literacy skills (Nugent et al., 2015), and DR is currently suggested as a suitable intervention to increase home-school engagement within Irish schools, as demonstrated with the Marino Storytime Project in Co. Dublin, Ireland (as detailed within Ryan & Lannin, 2021). Furthermore, there is growing recognition within Irish policy that educational disadvantages related to SES cannot be redressed by schools alone (Eivers et al., 2005); and as such, families from low-SES backgrounds need to be enabled by the education system to support their children's learning (DES, 2017; National Economic and Social Forum, 2009). Preventative interventions such as DR provide parents with a low-cost, easily implemented

intervention which can support their children's oral language and emerging literacy skills (Mol et al., 2008; Dowdall et al., 2010; Manz et al., 2010; Marulis & Neuman, 2010). As such, it is argued that the implementation of a parent-led DR intervention should be empirically validated within an Irish context to provide policy and practitioners high-quality evidence pertaining to the efficacy of the intervention within the specific context.

Following this review, it is clear there are a few significant gaps within the literature which could help ascertain factors which may influence children from low-SES backgrounds' responsiveness to DR interventions. It is hypothesised that a parent-led DR intervention which is implemented by a researcher in a group design may lead to increase in oral language skills. Based on findings of included studies, it is suggested that such an intervention take place for a period longer than four weeks, and use reliable, standardised measures of oral language to establish if language effects are generalisable. Creating such an intervention and testing its effects on children from low-SES backgrounds' oral language skills will promote an understanding of how to appropriately implement a DR intervention with this specific population, which, if appropriately used as a preventative intervention will contribute to closing the 'word gap' between children from high- and low-SES backgrounds before beginning their academic careers.

Chapter Three: Empirical Paper

Introduction

Language impairment rates are not equally distributed across the socioeconomic spectrum internationally (Fernald et al., 2013; Fitzgerald, Robillard & O' Grady, 2016; Hindman, Wasik & Snell, 2016; Hoff, 2003; Locke et al., 2002; McGillion et al., 2017), or in Ireland (McAvinue, 2018). For example, in the United States studies have shown that children from high-SES families begin school with almost twice as many words as children from low-SES families (Graves, Brunetti & Slater, 1982; Hindman, Wasik & Snell, 2016; White, Graves & Slater, 1990). In the United Kingdom, differences in vocabulary production between children from low- and high-SES backgrounds have been found from as early as 18 months (Fernald et al., 2013; McGillion et al., 2017). In Ireland, a small, yet significant association between SES and vocabulary size has also been found (McAvinue, 2018). This disparity in oral language skills between children from low- and high-SES backgrounds begins in the early years (McGillion et al., 2017), persists throughout schooling (Biemiller, 2001; Hart & Risely, 1995) and can have a cumulative effect (Biemiller & Boote, 2006; Farkas & Beron, 2004). This finding is particularly significant given the strong correlation between early language skills and later literacy ability (Buckingham, Wheldall & Beaman-Wheldall, 2013; Farkas & Beron, 2004; Flynn, 2011; Weikle & Hadadian, 2004). In addition, poor early language skills are correlated with later poor social skills, and increased problem behaviours (Yew & O' Kearney, 2013; Morgan & Meier, 2008).

It is indisputable that internationally, there are high rates of language delay, and poor language skills can have a significant effect on a child's life (Hoff, 2003; Pace et al., 2019). Thus, "the need for language interventions that are effective and accessible for all socioeconomic groups is stark" (Noble et al., 2020, p. 1878). One specific intervention that has been shown to effectively support children's oral language development is Dialogic

Reading (DR; Whitehurst, 1988). DR has been found to facilitate expressive and receptive language development (Chow & McBride-Chang, 2003; Mol et al., 2008; Vally et al., 2015; WWC, 2007), knowledge of print concepts (Sim & Berthelson, 2014) and narrative skills (Lever & Senechal, 2011; Zevenbergen et al., 2003) of young children. In experimental research, DR has been found to significantly increase children's language skills in comparison to active controls (Mol et al., 2008). It is a method of interactive reading wherein adults are taught to elicit conversation from children using two acronyms; PEER and CROWD (Justice & Pullen, 2003; Whitehurst et al., 1994). PEER supports the adult to remember the sequence in which to respond to children's verbalisations during a shared reading session – Prompt, Evaluate, Expand and Repeat. The adult first prompts a child to answer or contribute, evaluates their response, corrects if necessary, expands upon the child's answer, and asks the child to repeat any new words encountered. CROWD then, represents five different prompts that adults can use to develop children's responses over time – Completion (asking the child to complete a sentence or phrase), Recall (asking the child to remember what has happened), Open-ended questions, Wh- questions (why, where and what), and Distancing (questions which encourage the child to make links between the book and their own life). Adults are further instructed to follow the child's interests and have fun (Whitehurst et al., 1994).

Dialogic Reading with Low-SES Populations

Given that DR is relatively low-cost, has high face validity and is brief (Marulis & Neuman, 2010), there has been a strong focus on using DR to improve the language and literacy skills of children from disadvantaged backgrounds. When originally researching the method, Whitehurst and colleagues (1988) found that DR was effective at improving expressive language of children from low-SES backgrounds (Whitehurst et al., 1994). There have been several studies that have replicated such findings (e.g., Lonigan & Whitehurst,

1998; Wasik & Bond, 2001; Whitehurst et al., 1999). However, meta-analyses which synthesise shared reading and DR studies highlight that SES can moderate effect, with children from low-SES backgrounds generally producing smaller effect sizes than their more advantaged counterparts. One meta-analysis of 16 studies investigating the added value of home-based DR studies revealed smaller effect sizes for oral language outcomes for children 'at risk' (d = .13) than for children not 'at risk' (d = .53; Mol et al., 2008). A second meta-analysis of shared reading interventions revealed smaller effect sizes for language skills for children from low-SES backgrounds (d = .14) than for children from high-SES backgrounds (d = .39; Manz et al., 2010)

Given the importance of closing the language gap, the findings of such syntheses are important to understand. There are several potential reasons which may explain why children from low-SES backgrounds exhibit an impeded response to the DR intervention. Arguments generally relate to the relationship between SES and language development. It is understood that language develops via an interaction between biological processes and social demands (Cregan, 2007; MacWhinney, 2004), therefore social contexts such as SES are important in relation to how a child's language develops (Hoff, 2003). Research indicates that the disparity in oral language abilities found between children from low- and high-SES backgrounds may be attributed to parents' education level, their attitudes towards reading, the culturally-bound expectations placed upon their children in relation to emergent literacy skills, and environmental factors such as the number of books in the home or the amount of time parents can dedicate to their children (Curenton & Justice, 2008; Korat et al., 2007; Garvey et al., 2006; Roberts et al., 2005; Waldfogel & Washbrook, 2011; Yarosz & Barnett, 2001). Therefore, the difference in the effectiveness of DR interventions may be related to parents' own attitudes, availability of resources, or their own perceived competence in using DR techniques (Manz et al., 2010; Marulis & Neuman, 2010; Mol et al., 2008).

Consequently, Mol and colleagues in their meta-analysis conclude that an intervention originally standardised on middle- and high- income samples may not be sufficient for samples from low-income backgrounds (Mol et al., 2008).

In recent years, many studies evaluating the efficacy of DR in improving the oral language skills of children from low-SES backgrounds have been published, revealing mixed outcomes. Some empirical studies found that DR significantly improved children's oral language scores using standardised measures of language (Ergul et al., 2016; Lonigan et al., 2013), or criterion-referenced measures (Knauer et al., 2020; Opel et al., 2009; Simsek & Erdogan, 2020). Other studies have found that DR was not effective at significantly improving children's language scores (Lefebvre et al., 2011; Noble et al., 2020; Reese et al., 2010). It is noteworthy that there is large methodological heterogeneity within such studies; some are school-based and researcher-led or teacher-led (e.g., Lebefvre et al., 2011; Lonigan et al., 2013), others are home-based and parent-led (e.g., Knauer et al., 2020; Noble et al., 2020; Reese et al., 2010). Therefore, it is difficult to generalise such findings and indicate whether DR is an intervention which can be used to improve this population's oral language scores. Whilst there are strengths associated with each methodology, the focus of the current study shall be home-based, parent-led DR interventions. This decision is in relation to current national and international recommendations which recognise that family literacy approaches represent a significant capacity to improve student language and literacy outcomes (Morgan & O' Donnell, 2016; Carpentieri et al., 2011). Decades of research indicate a strong, positive correlation between parent engagement and student achievement, for all socioeconomic groupings, races, and genders (Desforges & Abouchaar, 2003; Epstein et al., 2018; Park, Stone & Holloway, 2017). Currently, disadvantaged schools in Ireland have access to DEIS (Delivering Equality of Opportunity in Schools; DES, 2017) support which provides a comprehensive package of supports to address literacy problems such as reduced teacher-

student ratios, access to resources and CPD, and increased access to special education teachers (DES, 2005; 2017; Smyth, McCoy & Kingston, 2015). Such supports have produced minimal improvement in children's achievements in the past two decades (DES, 2017; NESF, 2009; Eivers et al., 2005). Thus, there is a growing recognition in national research the need to adopt a wide, inclusive approach to supporting literacy of parents and children in areas designated as disadvantaged (O' Donnell & McPhillips, 2018; DES, 2017). DR, given its strong evidence base, is theoretically well-suited to meet this need (Whitehurst et al., 1994; Zevenbergen et al., 2003). However, as previously outlined, it is not clear whether it is a suitable, accessible intervention for parents and children from low-SES backgrounds.

Investigating home-based DR studies conducted with children from low-SES backgrounds reveals three salient factors which may influence results. Firstly, meta-analyses reveal that none to date have included a follow-up test of language skills, thus maintenance effects are not known (Noble et al., 2019; Dowdall et al., 2020; Mol et al., 2008; Manz et al., 2010). Secondly, meta-analyses reveal that quality intervention fidelity monitoring is lacking, thus results cannot be directly attributed to the intervention (Dowdall et al., 2020; Noble et al., 2019; de la Rie et al., 2017). Thirdly, many studies administer one DR training session at the beginning of the programme and provide handout resources to support parents' implementation of DR throughout the intervention (e.g., Knauer et al., 2020; Reese et al., 2010). This method of DR training is largely commonplace within the literature, as confirmed in a review by Towson and colleagues (2017). However, this may not be the best method of supporting parents' competence in implementing DR techniques, as it does not allow time to attend to challenges posed by socio-economic disadvantage such as literacy difficulties, negative attitudes towards education, lowered self-efficacy or family discord (Curenton & Justice, 2008; Mol et al., 2008; Whittaker & Cowley, 2012). It is clear there is a gap in the literature which attends to all three factors. Two recent qualitative studies completed with

low-SES families investigating the use of DR highlighted recommendations that researchers hypothesised would bolster the effectiveness of the intervention (Zevenbergen et al., 2018; Manz et al., 2017). Recommendations included managing parent expectations of the programme, training a few DR strategies at a time, allowing for individualisation of programme pace, and ensuring parents have fun. It is clear from reviews that there is a paucity of research that follows such recommendations (e.g., Mol et al., 2008; Noble et al., 2019; Towson et al., 2017).

Dialogic Reading Online

One under-researched method which could allow researchers time to meet parents' needs and individualise the pace of the intervention is the use of digital technology. In addition, the recent COVID pandemic caused schools to close, and for many services to migrate online (Department of Taoiseach, 2020; UNESCO, 2020). This has accelerated the digitalization of education and increased the role of parental involvement in supporting children's education (Goudeau et al., 2021). Thus, given the gap in the literature, and the context in which this study is being carried out, it is worthwhile investigating the use of a DR intervention using digital means. To ensure a high-quality intervention is conducted, current literature was consulted prior to commencing the study.

A review of DR literature to date finds only one study specifically examining the efficacy of online delivery to parents (Beschorner & Hutchinson, 2016). This uncontrolled study compared the experiences of parents completing a DR intervention face-to-face versus online-only. Children's language outcomes were not inspected, however results indicated that both groups of parents significantly increased their use of DR techniques, as measured by the Adult Child Interactive Reading Inventory (ACIRI; DeBruin-Parecki, 2006). Investigation of post-hoc qualitative information gave valuable information: attendance was higher for the online group, but the face-to-face group provided social networking opportunities for parents

that could not be mimicked online. The researchers indicated that posting easily accessible PowerPoints, videos and resources online was an attractive feature for parents, who accessed the information frequently. This finding is reflected in another recent study which conducted parent literacy training online (Kaiper-Marquez et al., 2020). Within DR research, the release of the commercially available 'Read Together, Talk Together' DR video training programme has highlighted that providing video training is an effective means of supporting parents' and practitioners' understanding of DR (Towson et al., 2017). Within shared-reading literature, a small number of controlled studies using video-based programmes indicate improved language outcomes for participating children (High et al., 2000; Sharif et al., 2002). Thus, for the current study, it was recommended that parents be trained to use DR via synchronous video sessions, and for the video resources also be made available for parents to access outside of session times.

However, providing videos alone is not sufficient, as previous studies conducted with parents indicate that instructor input is also required for parents to effectively utilise the DR technique (Huebner & Meltzoff, 2005; Pillinger & Wood, 2014). Broader research investigating successful parent interventions indicates that developing a consistent, personal teacher-learner relationship with regular communication leads to increased enrolment, retention, and learning (Gungor & Prins, 2011; Inverso, Kobrin & Hashimi, 2017; Porter & Sturm, 2006; Zhao et al., 2005). This indicates that spending time to develop rapport is an integral aspect of high-quality online interventions. This was accounted for in the current intervention, by dedicating time prior to beginning the intervention to develop a personal relationship with participants (Barley & Bath, 2014; Lingwood et al., 2019), and communicating availability and willingness to discuss the intervention with participants outside of intervention sessions (Quality Matters, 2020).

Regarding other specific aspects of DR intervention training, a review of DR interventions found that approximately 73% of DR training sessions include didactic training and modelling of DR techniques during sessions (Towson et al., 2017). This was easily transferred to online delivery. It was also found that 53% of studies include role-play, and constructive feedback to enhance parents DR practise, which was also possible using online means. Finally, research indicates strong evidence for the efficacy of 'nudges', i.e., text and email reminders and encouragements for parents to read to their children during the week (Hurwitz et al., 2015; Kraft & Monti-Nussbaum, 2017; York, Loeb & Doss, 2019;). These studies have found that periodically sending parents tips, ideas, reminders, resources, or suggested activities encourages increased engagement with an intervention, in comparison to parents who receive none. The use of nudges was also employed within the current study.

The Current Study

As mentioned, there are currently some gaps and limitations existing within the literature pertaining to the use of parent-led DR in improving the oral language skills of children from low-SES backgrounds. Firstly, most studies use DR training methods which do not allow time to attune the intervention to parents' needs and overcome potential challenges related to socioeconomic disadvantage, such as beliefs, lifestyles, and limited resources (Zevenbergen et al., 2018; Manz et al., 2010; 2017). Secondly, many studies lack appropriate intervention fidelity monitoring, which is critical to translate evidence-based interventions into practice (Carroll et al., 2007; Mihalic, 2004). Thirdly, there are no known studies conducted with children from low-SES backgrounds which complete follow-up tests of language skills (Dowdall et al., 2020; Noble et al., 2019). Finally, there are currently no known studies which investigate the use of online methods to deliver a DR intervention to families from low-SES backgrounds. A study that attends to each of these gaps would provide high-quality information which could support clinicians and educators in

understanding how to effectively implement DR interventions with parents from low-SES backgrounds using digital technologies. It would also provide valuable information as to whether any language gains are maintained over time.

Of particular interest to the researcher is the implementation of DR within an Irish context. Presently in Ireland, there is a small, but significant 'language gap' between low- and high-SES children (McAvinue, 2018). As mentioned, there is an increasing recognition in Irish policy that more inclusive approaches to supporting literacy for families living in disadvantaged areas is required (DES, 2017; DYCA, 2014), and the current study can provide meaningful information as to whether the DR intervention is a suitable method for doing so. Furthermore, DR is recommended as an effective intervention by both the Irish National Educational Psychologist Service (NEPS; Nugent et al., 2015) and the National Council for Curriculum and Assessment (NCCA; Kennedy et al., 2012), yet it has not yet been empirically evaluated within an Irish context.

In this study, it was investigated whether DR is an effective intervention for improving the oral language skills of children attending a DEIS school in Ireland. The research question is as follows; "Is an online, parent-led DR intervention effective at improving the oral language skills of young children attending a DEIS school in Ireland, in comparison to waitlist control?" It is hypothesised that an online DR programme, which provides time and supports for parents to build competency using DR methods would significantly improve oral language skills of young children from low-SES backgrounds in Ireland, in comparison to waitlist control. In addition, this study was designed to attend to the clear methodological gaps in DR literature; namely competing follow-up tests of oral language skills and implementing appropriate intervention fidelity measures.

Method

Design

To address the research question, an experimental pre-post design was employed. Most studies investigating the efficacy of DR use this research design (for reviews see Dowdall et al., 2020; Mol et al., 2008; Towson et al., 2017). Furthermore, such a design allows for quantitative analysis which aligns with the post-positivist epistemological position of the study. The independent variable was the intervention group (DR or waitlist-control), and the dependent variable was children's oral language skills, as assessed by standardised measures. Oral language skills were operationalised by three measures: receptive vocabulary, expressive vocabulary, and expressive language. The research received full ethical approval from the Mary Immaculate Research Ethics Committee, Limerick, in December 2020.

As highlighted in the introduction, there is a dearth of DR studies completed with children from low-SES backgrounds. Within this study's original study design, a follow-up was planned. However, follow-up tests were not completed due to insignificant results at the post-intervention stage. As there are no known studies completed with families from low-SES backgrounds which involve follow-up tests of language (Noble et al., 2019; Towson et al., 2017; Dowdall et al., 2020), there was no evidence-based justification to suggest a delayed response to the intervention may occur. This would mean any significant findings at the follow-up stage may be at risk of Type 1 error (Rothman, 2010). Additionally, the completion of follow-up tests with a vulnerable population was considered from an ethical viewpoint (PSI, 2019; BPS, 2018). The repeated testing of young children despite insignificant results was weighed in terms of potential societal benefits versus cost (Principle 2.4; BPS, 2019), and it was decided that in this instance, further testing may be considered an undue process.

Participants

To examine the efficacy of DR on the oral language skills of Irish students from low-SES backgrounds, the required sample was parents and young children attending an Irish DEIS school (one parent/carer per child). For the purposes of this study, low-SES is operationalised as attendance at a Band I Urban DEIS school. Whilst acknowledging that attendance at a DEIS school does not equate to a student being from a low-SES background, for a school to be admitted into DEIS, many criteria are considered, including percentage of unemployed parents and percentage of students living in local authority (DES, 2005; Fleming & Hardford, 2021). Since 2017, the Irish Department of Education also uses information gleaned from the Pobal HP Deprivation Index (HP Index; DES, 2017) when administering DEIS status to schools. The HP Index provides a method of measuring the relative affluence or disadvantage of small geographical areas using data compiled from the National Census (DES, 2017; Fleming & Hardford, 2021). When all relevant information is gathered, schools are rank ordered and designated as Band I (most highly disadvantaged), Band II (disadvantaged) and non-DEIS (not disadvantaged; DES 2005; Molloy, Murtagh & McAvinue, 2016).

An a-priori analysis was conducted using the G*Power calculator (Faul, Erdfelder, Lang & Buchner, 2007). N was calculated considering the main statistical analyses used (factorial ANOVA), the desired power level (0.90), a significance value of 0.05, the desired effect size (i.e., > 0.4), and the average rates of attrition when conducting research with low-SES families (10%; Lingwood et al., 2020). It was determined that 20 parent child-dyads were required for the study to reach sufficient power, this would mean 10 dyads per condition (intervention and waitlist-control).

School Context. The participating school is a Band 1 Urban DEIS school, meaning this schools' student population has a much higher concentration of disadvantage than other

schools, and caters for more complex needs, with a greater prevalence of non-English speaking students and students with special educational needs (Smyth, McCoy & Kingston, 2015). It is a small, Junior school serving both boys and girls from Junior Infants up to 1st class, with a current enrolment of approximately 120 students. The school employs 9 Mainstream Teachers and 6 Special Education Teachers (SETs). The school is located in the city centre in the south of Ireland and shares a campus with a Senior primary school. The school's principal indicated a large immigrant population attends the school, leading to school staff engaging with local project aiming to support migration integration.

A 2019 whole-school inspectorate report for the school noted strong commitment of staff, high quality wellbeing support for pupils and effective partnerships with parents and community links. This report further detailed how school-parent relationships are built and maintained in the school: the school's principal and HSCL meet and greet parents at drop-off and collection times, HSCL home visits, family baking sessions, afterschool clubs, conversation groups for EAL parents, an active parent association, and adult education classes. The school's principal and HSCL indicated that home visits continued during the COVID home-schooling period. It was further reported that parents experiencing digital literacy difficulties, or lack of resources were adequately supported by school staff during lockdown periods**.**

Participant Recruitment. Participants were recruited via the school's Home School Community Liaison Teacher (HSCL; Circular 0016/2019). The primary role of the HSCL is to encourage, support and facilitate collaboration between parents, schools, and community agencies to enhance educational outcomes for students (DES, 2019; Ryan & Lannin, 2021). Thus, the school's HSCL provided an important link between the researcher and families for the current study. The HSCL personally provided Information Sheets (Appendix E) to all parents of children attending Junior and Senior Infants in the school during drop-off and

collection times. Parents that expressed interest were then provided with consent forms, which were signed at home and returned to the HSCL. The HSCL then provided a list of parent-child dyad names to the researcher, along with consent forms.

Participants were 22 parent-child dyads, with children aged between 50 and 95 months (M = 68.32, SD = 13.10). Within this participant group, children were mostly male (54.5%), 6 children were a member of a twin pair, and 41% of participating parents were single mothers. As parent-led shared reading interventions are a suitable intervention for English language learners (meta-analysis: Fitton, McIlraith & Wood, 2018), inclusion criteria was open to students who spoke languages other than English at home. The home language for most participants was English (86%), with two dyads speaking Urdu and one dyad speaking Portuguese at home. As DR is also a suitable intervention for students with learning and developmental disabilities (e.g., Fleury & Shwartz, 2017; Gyrgas, Floyd & Rahn, 2018), inclusion criteria were open to all children, and three participating children had a diagnosis of ASD (14%). Data inspection showed that these children did not pose as outliers for any language measure. No participating children had reported specific language, eyesight, hearing, or physical difficulties. Tables 4 and 5 display mothers' highest level of education and current occupation according to the Irish Central Statistic's Office socio-economic groupings (2016).

Table 4
Mothers' Highest Level of Education

	Primary	Post-Primary	Some college education	Undergraduate degree
N	4	8	4	6
%	18%	37%	18%	27%

Table 5
Mothers' Occupation

	Unemployed	Unskilled	Semi-skilled	Non-manual skilled
N	12	2	4	4
%	55%	9%	18%	18%

Due to the high level of single-parent families participating in the study (41%), only mother's highest level of education and occupation are considered in the current study. Taken together, the results displayed on Table 4 and 5 indicate that participants may not all be from low-SES backgrounds, despite attendance at a Band 1 Urban DEIS school. As indicated in Table 4, 45% of mothers have at least some college education, with 27% of participating mothers having an undergraduate degree. This was an unexpected finding, given the DEIS status of the school, and the level of disadvantage indicated in the school's catchment area; an average HP Index score of -23.18 (very disadvantaged; Haase & Pratschke, 2017). To ensure all participants were from low-SES backgrounds, it was considered removing parent-child dyads wherein the mother had at least some college education. However, inspection of the data highlighted that the results displayed in Table 4 and 5 were not positively correlated, i.e., 50% of mothers with at least college education were unemployed. Furthermore, 40% of mothers with at least some college education were single parents. This highlighted the complexity of quantifying SES for the purposes of research (Braveman et al., 2005), and indicated that perhaps quantifying SES using mother's highest level of education alone did not reflect the multifaceted nature of SES (Diermer et al., 2013). Discussion with the school's HSCL and with parents during intervention sessions indicated that many mothers had received their college education overseas and were not able to secure employment once immigrated to Ireland. Thus, achieving a homogenous 'low-SES' participant group was not as simple as removing parent-child dyads containing mothers with third level education. However, before determining that attendance at a DEIS school would be how SES is

operationalised for the current study, pre- and post-intervention data was inspected. A median split analysis based on mothers' highest level of education (low versus high) revealed no significant differences between language scores. Thus, due to the complex nature of SES measurement, it was decided that participants' SES would be operationalised as attendance at an Urban Band 1 DEIS school, whilst also acknowledging that some participants in the current study may not be from low-SES backgrounds.

Measures

Using norm-referenced measures of language allows for the study to predict if the intervention has a positive effect upon general language skills, rather than intervention-specific skills, increasing external validity (Mertens, 2019). Consequently, two norm-referenced language assessments were used to measure receptive and expressive vocabulary. As having more than one source of outcome data lowers the risk of test effects (Mertens, 2019), a second measure of expressive language was used. All measures are described in detail below.

Receptive Vocabulary. ***British Picture Vocabulary Scales.*** The British Picture Vocabulary Scales, Third Edition (BPVS-III; Dunn & Dunn, 2009) is a standardised receptive vocabulary test that can be used with children aged 3 to 16 years old. The BPVS-II is an established test, that provides age-equivalent norms for individuals based on a UK sample, with excellent reliability (r = .91; Dunn & Dunn, 2009). Using tests normed on a UK sample are generally suitable for an Irish cohort, given similar cultural norms and education systems (Circular 0058/2019; DES, 2019). There is no published test-retest reliability statistic available for the BPVS-III, but the Peabody Picture Vocabulary Test (Dunn & Dunn, 2007), upon which the BPVS is based (Dunn & Dunn, 2009), has a moderate to strong test-retest reliability, after a minimum of 8 days (r = .78 - .92; Bracken & Murray, 1984; Tillinghast, Morrow & Uhlig, 1983). The BPVS-III is individually administered. For each question, the

administrator presents a page that contains 4 pictures. The administrator then says a word that corresponds with one of the pictures, and the child responds by selecting a picture from the four options which best illustrates the word's meaning. For each word provided, a new page containing four pictures is presented. There are 168 test items arranged in 14 sets of 12, and a higher score indicates a larger receptive vocabulary. No reading or spoken response is required. Therefore, the BPVS-III is frequently used to assess receptive vocabulary in non-readers. The administration is untimed, but normally lasts approximately 10 minutes (Education Endowment Foundation, n.d.). Within the current study, 50% of BPVS-III test booklets were blindly corrected by an independent colleague, and the inter-rater reliability when correcting was r = .99, which was sufficient.

Expressive Language. *British Ability Scales 3.* The 'Naming Vocabulary' subtest from the British Ability Scales, Third Edition (BAS II; Elliot & Smith, 2011) is a standardised expressive vocabulary test that can be used with children ages 2 years 6 months to 17 years old. The Naming Vocabulary subtest is well-established, having been used as a measure of expressive language within the Growing Up in Ireland study (McNally et al., 2019) and the Millennium Cohort Study in the UK (Joshi & Fitzsimmons, 2016). It provides age-equivalent norms based on a UK sample, has excellent reliability (Elliot & Smith, 2011), high test-retest reliability (at 2 to 7-week intervals; Elliot & Smith, 2011) and high internal validity (α = .65 - .86; Elliot et al., 1997).

The Naming Vocabulary subtest is individually administered. It is a verbal task wherein a child is presented with a picture and asked to say its name. There is a maximum number of 36 items, and a higher score indicates a larger expressive vocabulary. The administration is untimed but normally lasts approximately 10 minutes (Education Endowment Foundation, n.d.). The resulting score is a T-score which is an age-based, normalised standard score (M = 50, SD = 10, range = 20 to 80). Within the current study,

50% of Naming Vocabulary test pages were blindly corrected by an independent colleague, and the inter-rater reliability when correcting was r = .99, which was sufficient.

Mean Length of Utterance. Mean Length of Utterance (MLU) is the analysis of the number of words and morphemes used in children's everyday language (Rice et al., 2010). MLU is regarded as one of the most robust, reliable indices or children's structural language development (Parker & Brorson, 2005; Rice et al., 2010). It is considered a useful marker of language maturation as is allows for the specific measurement of naturally occurring speech, something which more standardised measures of language cannot always capture in short periods of time (Parker & Brorson, 2005). Using MLU along with standardised measures of language is in line with previous DR literature (e.g., Crain-Thoreson & Dale, 1999; Noble et al., 2020; Simsek & Erdogan, 2020).

For this research, MLU was calculated from transcriptions of the child's speech during pre-and post-intervention testing sessions, wherein spontaneous language occurred during the session, and the researcher asked each child about their favourite movie, videos, and games. These sessions were recorded using a Dictaphone. MLU was then analysed using the calculation of dividing the number of morphemes by the number of utterances spoken (Rice et al., 2010). A higher MLU score indicates a higher level of language proficiency (Parker & Brorson, 2005). Within the current study, 25% of transcribed language samples were independently analysed by a DECPsy colleague using the MLU calculation and r = .85, which was sufficient.

Family Questionnaire. An online family questionnaire was composed and distributed to all participating parents prior to the intervention beginning, using Google Forms. The questionnaire contained within Appendix F aimed to gather demographic information about the family to measure the family's socioeconomic status and understand the family's current reading habits. Maternal education and parental occupation are the two most widely used

indicators of socioeconomic status in Irish and international research (Beck & McKeown, 2007; McAvinue, 2019), with parent education having the strongest influence in language research (Cheadle, 2008; Downer & Pianta, 2006). As such, the questionnaire contained questions regarding such to establish an understanding of the participant's socioeconomic status. Areas of disadvantage in Ireland generally have lower levels of educational attainment (Weir et al., 2014), therefore potential low levels of literacy were considered when writing the parent information and consent forms, resources provided to parents during the intervention, and the information contained within each intervention session's presentation. All texts provided to parents were written in plain English, using the Irish National Adult Literacy Agency guidelines (NALA, 2012). The Gunning Fog Readability Index (Gunning, 1952) was used to indicate the reading age required to understand all provided information, an average score of 8.6 was achieved, indicating that any person with the reading age of 12 years old could access the texts.

Materials

DR Intervention Sessions. Six intervention sessions were provided to parents within the experimental group, over 8 weeks (due to school closures). These sessions were hosted online, using 'Zoom' as the meeting platform. This platform was chosen due to parents' familiarity with the technology – school staff advised that within the participating school, many COVID home-schooling sessions were hosted on the Zoom platform. Each session had a different PowerPoint presentation. Sessions were developed in adherence to the 'Read Together, Talk Together' DR programme (Whitehurst, 2005) and recommendations derived from qualitative DR studies completed with low-SES populations (Zevenbergen et al., 2018; Manz et al., 2017), as follows: (i) create rapport with parents and assess their self-efficacy in reading before beginning the intervention, to tailor the intervention to parents' needs (ii) at the beginning of the intervention specifically plan with parents an appropriate time within a

distraction-free environment to read with their child, (iii) provide extensive training with parents, (iv) talk about typical challenges of implementing DR before beginning, (v) train fewer DR strategies at a time, and (vi) individualise the sequence and pace of the intervention.

Further to this, to create a supportive online environment which prioritised the development of a meaningful relationship with parents (Ryan, 1985; Ryan & Lannin, 2021) recommendations were derived from studies evaluating efficacious online teaching methods. Recommendations which were adhered to during the intervention design and delivery are as follows:

(i) Provide opportunities for creating community and collaboration between participants (McConnell, 2000; Ruhleder & Twildale, 2000; Curtis & Lawson, 2001; Pohan, 2020).

(ii) Provide opportunity for creative problem-solving during sessions (Moore & Diehl, 2019; Hodges et al., 2020)

(iii) Provide opportunities for active learning during sessions for participants to develop their skills over time through practice (Ruhleder & Twidale, 2000; Quality Matters, 2020)

(iv) Ensure information provided during sessions is appropriately scaffolded, with cognitive aids present where needed, and exemplars of practise (Ruhleder & Twidale, 2000; Pohan, 2020)

(v) Create a climate of empathy through care and emotional presence during sessions (Bozkurt & Sharma, 2020)

As such, each presentation began with a reflection on the previous week, with any successes or challenges discussed amongst parents. If challenges were encountered, opportunity was provided for other parents to provide alternative ideas or solutions. Each

session contained an explanation of DR techniques, video presentations and discussion, opportunities for role-plays and feedback, and answering queries. An overview of session content is contained within Table 6.

Table 6
DR Intervention Session Content

Session Number	Content	Objective
Session 1: Rapport Building and Planning	• The importance of reading • Explaining what DR is, underlying principles • Planning and managing expectations: what will be read, for how long, and when	• Understand what DR is, and what it looks like in practice • Understand the principles that underpin DR • Manage parents' expectations, and brainstorm time to read.
Session 2: Questioning Techniques and Giving Feedback	• Open discussion and feedback • DR basics: asking 'what' questions, praise, and encouragement. • 'Wh' Questioning techniques, and reasons for inclusion • Giving your child appropriate feedback, and what to expect	• Understand appropriate questions to elicit responses and create dialogue with their child • Understand appropriate feedback to encourage conversation • Queries answered and challenges discussed
Session 3: PEER Acronym	• Open discussion and feedback • Introduction to the acronym: PEER (Prompt, Evaluate, Expand, Repeat) • Expansions: elaborating on what the child says by adding a few words to the answer (Whitehurst, 2005).	• Understand and practise expanding answers • PEER understood and practised • Queries answered and challenges discussed
Session 4: Questioning Techniques	• Open discussion and feedback • Completion, Recall and Open-ended questions, how such questions relate to different skills	• Understand and practising different types of questions and how they relate to their child's learning • Queries answered and challenges discussed
Session 5: Distancing and Praise	• Open discussion and feedback • How to facilitate encouraging children to relate stories to their own	• Understand and practice 'distancing' • CROWD understood and practised • Understanding and

	experiences • Introduction to CROWD (completion, Recall, Open-Ended, Wh- Questions, Distancing) acronym • Revision of praise and encouragement	practising different types of praise • Queries answered and challenges discussed
Session 6: Revision	• Revision of topics covered • Open discussion and feedback	• Understand DR, Peer & CROWD acronyms, and how to implement them effectively at home • Queries answered and challenges discussed

Books. Many disadvantaged households do not have a large choice of books in the home (Curenton & Justice, 2008) therefore a book-pack containing 6 books was provided to each parent-child dyad within the intervention group prior to the intervention beginning. These books were provided by the child's school, and criteria for the selection of books were similar to previous DR studies which provided books to parents (e.g., Hargrave & Senechal, 2000; Zevenbergen & Whitehurst, 2003). Each book was required to: (i) be limited to 30 pages or less (ii) contain coloured illustrations on each page, (iii) provide potentially new vocabulary they appear in illustrations or text, (iv) be appropriate for the child's age and (v) not contain subject matter specific to certain holidays (e.g., Christmas).

Logbook. To monitor intervention fidelity, physical logbooks were provided to parents during the first week of the intervention, to be returned to the school's HSCL each week in-person. These logbooks followed a similar format to other DR studies (e.g., Zevenbergen et al., 2018) and asked parents to provide information on the date, the book that was read, time spent reading and to log any challenges encountered. The logbook can be found in Appendix G. For the first two weeks, 0% of logbooks were returned. At this point, it was considered whether an online logbook, such as a weekly survey, may be more feasible for parents to return. The HSCL consulted with parents within the intervention group (see Appendix J for details), and it was reported that parent's felt that they did not have time to

complete them and return them each week. Some parents indicated difficulty with online survey technologies. As maintaining a positive relationship with parents was paramount to the current study, parents were not pressured to return the logbooks, and 0% were returned by the final intervention session.

Procedure

Participants were recruited via purposive sampling. Principals of five separate Band 1 DEIS schools located in an urban area of southern Ireland were initially contacted via email and letter. Two schools expressed interest in participating, and they were provided with information letters for principal and school staff (Appendix H), information letters for all parents of children attending Junior and Senior Infants (Appendix E) and consent letters for parents (Appendix I). After expression of interest, one school agreed to participate in the study. For a full, detailed intervention timeline (including dates and times of sessions and meetings) please refer to Appendix J. Of note, as DR has proven to be an effective intervention across languages (Fitton et al., 2018) parents and children who speak English as an additional language and speak a different language at home were welcomed to participate in the study. Before sending information or consent forms to parents, the HSCL indicated to the researcher whether parent's English proficiency was adequate to understand a letter written in plain English. If not, the information sheets and consent forms were translated into parents' primary language by native speakers. Two letters needed to be translated, into Urdu and Portuguese. Native speakers were sourced via colleagues of the principal researcher.

After parents agreed to partake within the study, children's language skills were individually assessed prior to the intervention beginning. In October 2021, pre-assessments carried out by the principal researcher took place within participating children's school. Pre-, and post- assessments followed the same protocol. Firstly, assent forms (Appendix K) were read by the principal investigator to the participating child, if the participant agreed to the

study, they indicated by ticking the ‘yes’ box. Modifications were provided to any student who indicated discomfort using a pen – they were asked to point to the ‘yes’ or ‘no’ box, and with their permission, the researcher ticked the box on their behalf. All ASD students were accompanied by their class teacher, who explained the expectations and right to withdraw. Teachers were also able to indicate non-verbal indicators of discomfort (BPS, 2019), if any occurred during testing sessions. If the child did not agree, they ticked ‘no’ and were walked back to their classroom by the researcher. The BPVS-III was then administered, followed by the Naming Vocabulary subtest from the BAS-II. After this, participants were asked to describe the story of their favourite book, tv show or movie, to obtain a further language sample. Throughout the testing session, the principal researcher asked open ended questions, and encouraged children to speak using verbal fillers to ascertain 50 to 100 utterances from each child. Each testing session was recorded using a Dictaphone. Participating children were then thanked for their time and accompanied by the principal researcher back to their classroom.

After children’s oral language was individually assessed pre-intervention, parent-child dyads were split into two conditions: intervention and waitlist control. Due to a large variation in participating children’s age (range: 50 - 95 months); parent-child dyads were randomised using a pair-matched, cluster-randomised design based on age (Imai, King & Nall, 2009). Parents within the experimental condition were invited to attend 6 weekly Zoom meetings, which took place over the course of 8 weeks, and lasted an average of 18 minutes. The schools HSCL consulted with parents, and it was decided that 9:30AM on a Friday morning was the time that would suit most parents within the intervention group to attend the online sessions. Halfway into the intervention period, when parental engagement decreased, parents were consulted by the school’s HSCL regarding the time and day the online sessions were being conducted. Parents indicated that evenings or weekends were not suitable times to

conduct online sessions due to busy schedules and children being home from school. At this time parents indicated that 9.30AM on a Friday was still the best time and day to complete online sessions. See Appendix J for further details. After each synchronous online session, a private link to a pre-recorded video of the session wherein the principal researcher presented the information was emailed to participating parents by the school's HSCL. The number of parents which attended each session, and the total view count for the pre-recorded video for each week are presented in Table 7.

Table 7
DR Intervention Session Parent Attendance and Video View Count

Session number	Date	Synchronous session attendance	Pre-recorded Video View Count
1	08/10/2021	5 parents	11 views
2	15/10/2021	4 parents	6 views
3	22/10/2021	3 parents	7 views
4	05/11/2021 & 12/11/2021	0 parents	8 views
5	19/11/2021	0 parents	2 views
6	26/11/2021	2 parents	5 views

Between each intervention session, parents were encouraged to read with their child during the week, by using one of the 6 books provided by the school, a book their child had borrowed from the school library, or a book they had at home.

Intervention fidelity was monitored by check-in's conducted by the principal researcher during each intervention session. Unfortunately, information on intervention quantity (i.e., how often children were read to) is not available for this study due to logbooks not being returned. Furthermore, one weekly text reminder, one weekly email reminder, and fortnightly phone call check-ins were conducted by the school's HSCL (for details on times and days these were sent, refer to Appendix J). Such methods of tracking fidelity are extensively used within DR research (Towson et al., 2017), and more generally, are

recommended within studies conducting interventions with low-SES populations (Breitenstein et al., 2010).

Data Analysis

Following the post-positivist philosophy of the current study, the research question was addressed using quantitative data analysis. After pre- and post-intervention assessments were conducted, all data was anonymised and entered into SPSS. The data was then explored and analysed using statistical analyses. A codebook containing participants' details was stored on a USB separate to the computer to allow for complete anonymity, and to allow for participants to withdraw from the study after data had been collected and/or analysed. The computer on which the statistical analysis was completed, and the codebook accessed was password protected. Confidentiality was also maintained in the storage of consent and assent forms; with the strict use of identification numbers instead of names placed on all consent and assent forms. Furthermore, no names appeared on test booklets or MLU transcriptions. Hard copies of the consent, assent and test booklet forms were stored in a locked filing cabinet located in the principal researchers' home office. Consent and assent forms, and the codebook will be retained for four years, due to participants' names being contained within which. After this point, they will be permanently destroyed.

Results

Family Questionnaire

Prior to beginning the intervention, parents provided information regarding the number of books in children's homes and amount of time spent reading by answering the family questionnaire. The results are displayed in Table 8.

Table 8
Storybooks owned and time spent reading

	Number of storybooks in home					
	0	1-5	6-10	11-15	15-20	20+
N	2	1	4	3	5	7
%	9%	4%	18%	14%	23%	32%
	Number of days spent reading per week					
	0	1-2	3	4-6	7 (daily)	
N	2	4	4	4	8	
%	9%	18%	18%	18%	37%	

As noted within the Table 8, 91% of homes had at least 1 storybook in the home prior to beginning the intervention, with 32% of homes containing more than 20 books. Furthermore, prior to beginning the intervention, 91% of parents were reading to their children in the home at least once a week, with 37% of parents reading to their children daily prior to beginning the intervention.

Data Exploration

Before any analyses were completed, the data was examined. For this design it is critical that baseline equivalence between groups was achieved (Song & Hermen, 2010). An independent samples t-test indicated no significant difference ($t(20) = -1.42$, $p = .46$, two-tailed) in age in months at pre-test between the intervention group ($M = 64$, $SD = 11$) and waitlist ($M = 72$, $SD = 14$). Regarding missing data, one student achieved scores that were too low to be translated into standardised scores on the BPVS-III, thus $N = 21$ for this language outcome. A further participating child did not want to speak during the individual testing procedures, meaning no spontaneous language sample was obtained, and MLU could not be calculated, meaning $N = 21$ for the MLU analyses. To see if missing cases were missing completely at random, Little's Missing Completely at Random (MCAR) test was conducted. The MCAR test indicated that cases were missing at random [$X_2(10) = 14.34$, $p = .16$].

All variables to be used within the analyses were examined for potential outliers by examining boxplots. No outliers were found to be beyond 3 Standard Deviations (SDs) of the

median. The means of all variables were then compared to the 5% trimmed means, and limited differences were present. Therefore, an inclusive approach was adopted, and all data was kept for the present analyses. The descriptive statistics for all variables are summarized in Table 9. Of particular interest is the variable 'BAS T-score Time 2' (the expressive vocabulary score achieved by all participants post-intervention), as it is positively skewed and platykurtic. Tests of normality indicate the distribution may not be normally distributed (*SW* = .88, *df* = 22, *p* = .01; *KS* = .18, *df* = 22, *p* = .08). This particular variable is to be used within a mixed-model factorial Analysis of Variance (ANOVA). It was decided that transformation of this variable was not required as the ANOVA is a robust test (Field, 2009; Tabachnick & Fidell, 2007).

Table 9
Descriptive Statistics for Dependent Variables

	N	Min	Max	M	SD	Zskew	ZKurt
Age time 1	22	50	95	68.32	13.10	0.96	-0.89
BAS T-Score Time 1	22	31	64	45.27	9.90	0.98	-1.07
BAS Percentile Rank Time 1	22	3	92	34.86	29.52	1.55	0.05
BPVS Standard Score Time 1	21	72	119	91.14	13.87	1.08	-0.44
BPVS Percentile Rank Time 1	21	3	90	32.62	27.56	1.80	-0.26
MLU Time 1	21	1.31	6.04	3.82	1.42	-0.39	-1.05
BAS T-Score Time 2	22	32	75	45.82	10.81	2.85	2.04
BAS Percentile Rank Time 2	22	4	99	34.68	28.92	2.23	0.23
BPVS Standard Score Time 2	21	77	119	94.29	10.95	1.27	0.03
BPVS Percentile Rank Time 2	21	6	90	37.14	24.03	1.63	-0.22
MLU Time 2	21	1.5	6.47	3.90	1.38	-0.09	-0.35

As highlighted in Table 9, there was large individual differences between children across all language scores. For example, for the BPVS Time 1, scores ranged from 72 (3rd percentile) to 119 (90th percentile). Within the BAS Time 1, scores ranged from 31 (3rd percentile) to 62 (92nd percentile). Mean scores across all participants for BPVS Time 1 indicate a score of 91, and a mean percentile of 33, which is within the average range. Furthermore, for Time 2, the mean BPVS score was 94, a mean percentile of 37, which again is within the average range. Similarly, the mean t-score for all participants for the BAS Time

1 and 2 was 45, and a mean percentile of 34, which is within the average range. Mean scores within the average range for both norm-referenced measures at pre-intervention indicate that the oral language competence of the current sample is not as compromised as literature would suggest (Hart & Risely, 1995; Hoff, 2003).

For each language outcome, a 2 (group: intervention and control) X 2 (time: pre- and post-intervention) mixed model factorial ANOVA was used, with the independent variable as the participants' group assignment (intervention or waitlist control), and dependent variable as the language scores achieved, as measured by the three separate measures: receptive vocabulary, expressive vocabulary, and expressive language. This ANOVA was chosen as it allows consideration of the main effect for each variable and their interaction (Field, 2018). It was hypothesized that there would be a main effect for time and group for each of the three separate language measures. For this study, rejecting the null hypothesis would indicate that the intervention had a meaningful impact on the general language skills of the children who received a DR intervention at-home, delivered by parents, who participated in an online skill-building 6-week intervention session. A significant time*condition interaction would indicate that differences in language improvement are due to both time and the condition wherein participants were randomly assigned – i.e., that being in the DR intervention group significantly improved the language outcome scores of children.

Expressive Vocabulary

A mixed model factorial ANOVA was used to examine whether the online, parent-led DR intervention significantly improved the expressive vocabulary skills (as measured by the Naming Vocabulary subtest of the BAS-II) of young children attending Irish DEIS schools, in comparison to waitlist control. The independent variable was the group a participant was placed into (i.e., intervention or control group), and the dependent variable was the Naming Vocabulary T-Score achieved by participating children at pre- and post-intervention.

Prior to conducting the ANOVA, tests for assumptions were performed. Mauchly's test of sphericity was not conducted, as the independent variable had two conditions, thus sphericity was assumed (Field, 2018). Levene's test of equality of variances was not violated, and thus indicated that homogeneity for between-subject factors can also be assumed. It was hypothesized that there would be a main effect for group, and significant interaction for time and group. Firstly, there was no significant main effect for time [$F(1, 20) = .165$, $p = 0.69$], with all participating children achieving similar scores at Time 1 ($M = 45.27$, $SD = 9.9$) and Time 2 ($M = 45.82$, $SD = 10.81$). Secondly, there was no significant main effect for group [$F(1, 20) = 0.379$, $p = 0.55$], with no significant difference in scores at Time 2 between the intervention ($M = 44.27$, $SD = 12.08$) and control group ($M = 47.36$, $SD = 9.72$). Thirdly, the ANOVA indicated no significant interaction effect [$F(1, 20) = .114$, $p = .74$)], showing that for both intervention and control group, there was no significant change in expressive vocabulary scores from pre- to post-intervention. Overall, results indicate that for the Naming Vocabulary subtest, this study failed to reject the null hypothesis, which indicates that this DR intervention was not successful at improving children's expressive vocabulary, in comparison to waitlist control.

Receptive Vocabulary

A second mixed model factorial ANOVA was then used to examine whether the DR intervention improved children's receptive vocabulary skills as measured by the BPVS-III, in comparison to waitlist control. The independent variable was the group a participant was placed into (i.e., intervention or control group), and the dependent variable was the BPVS-III standard scores achieved by participating children at pre- and post-intervention.

As with the previous ANOVA, sphericity and homogeneity of variances was assumed. Firstly, there was no significant main effect for time [$F(1, 19) = 3.64$, $p = 0.07$], with no significant difference between scores achieved at Time 1 ($M = 91.4$, $SD = 13.87$) and

Time 2 (M = 94.29, SD = 10.96). Secondly, there was no significant main effect for group [$F(1, 19) = 0.57$, $p = 0.46$], with no significant difference in scores achieved at Time 2 by the intervention (M = 93.27, SD = 10.34) or waitlist control group (M = 95.40, SD = 10.96). Finally, there was no significant interaction effect [$F(1, 19) = 1.34$, $p = .26$), showing that for both intervention and control group, there was no significant change in receptive vocabulary scores from pre- to post-intervention. Overall, results indicate that for the BPVS-III measure, this study failed to reject the null hypothesis, which indicates that this DR intervention was not successful at improving children's receptive vocabulary, in comparison to waitlist control.

Expressive Language

A final mixed model factorial ANOVA was used to examine whether the DR intervention improved children's expressive language as assessed using MLU, in comparison to waitlist control. The independent variable was the group a participant was placed into (i.e., intervention or control group), and the dependent variable was the MLU score achieved, as measured using a transcribed language sample obtained during both pre- and post-intervention testing sessions with participating children.

As with the previous two analyses, sphericity and homogeneity of variances was assumed. The first finding was that there was no significant main effect for time [$F(1, 19) = 0.14$, $p = 0.72$], with no significant difference found between MLU at Time 1 (M = 3.82, SD = 1.42) and Time 2 (M = 3.90, SD = 1.38) for all participating children. Secondly, no significant main effect was found for group [$F(1, 19) = 0.31$, $p = 0.59$], with no significant difference found between scores achieved at Time 2 between the intervention (M = 3.76, SD = 1.61) and waitlist control group (M = 4.04, SD = 1.21). Finally, as with the other analyses, there was no significant interaction effect found [$F(1, 19) = 0.05$, $p = .84$), showing that for both intervention and control group, there was no significant change in expressive language

scores from pre- to post-intervention. Overall, results indicate that for the MLU measure, this study failed to reject the null hypothesis, which indicates that this DR intervention was not successful at improving children's expressive language, in comparison to waitlist control.

Clinical Impressions

As the principal researcher was implementing the online sessions and completing check-ins with parents, it was possible to derive impressions of parents engaging with the DR intervention. For the parents that engaged with synchronous sessions, impressions of the intervention were overwhelmingly positive. Reports from parents to the researcher indicated that they enjoyed asking questions while reading, spending the time with their child, and the conversations elicited from using the DR method. Parents reported feeling impressed as they watched their child grow in confidence speaking about a book, and in their ability to answer their parents' questions. Three separate parents reported to the principal researcher that they had joined a local library to continue their shared reading practice after the intervention was completed. No challenges or difficulties with implementing the DR intervention were brought forward during sessions. Within check-ins with the HSCL, parents indicated that work commitments, childcare and contracting COVID compromised their attendance at synchronous sessions.

Discussion

The purpose of this study was to understand whether an online DR intervention specifically designed to support families from low-SES backgrounds would improve the oral language skills of young children attending an Irish DEIS school. The intervention aligned with the 'Read Together, Talk Together' programme (Whitehurst, 2005), research recommendations to enhance parents' competence using the DR method (e.g., Manz et al., 2017; Zevenbergen et al., 2018), and empirical evidence investigating efficacious methods to

create supportive online communities (e.g., Beschorner & Hutchinson, 2016; Hodges et al., 2020). The final bespoke intervention consisted of six online sessions, lasting an average of 18 minutes, facilitated by the principal researcher, and attended by parents of children attending a Band 1 Urban DEIS school. The research question asked, "Is an online, parent-led intervention effective at improving the oral language skills of young children attending a DEIS school in Ireland, in comparison to waitlist control?" It was hypothesised that the DR intervention would significantly improve participating children's oral language skills. A pre-post cluster-randomised design and three distinct measures of children's oral language skills were used to attend to the research question. Data analysis indicated that contrary to prediction, the children in the intervention condition, whose parents were taught the DR method within online sessions, did not show a significant improvement on any of the language measures when compared to children in the waitlist control group.

The results are not consistent with previous literature, which has indicated that DR is an effective intervention that supports a wide range of language skills (Barret, 2019; Dowdall et al., 2020; Manz et al., 2010; Mol et al., 2008). However, as highlighted in Table 7, most parents only attended 50% of sessions, with attendance significantly decreasing for the second half of the intervention period. Therefore, results are indicative of outcomes from a DR intervention with low parental engagement, and consequently, low implementation fidelity monitoring. Thus, despite the insignificance of results, there are constraints on how conclusively it can be claimed that this intervention is not effective for the population.

The most compelling explanation for the present set of findings is related to parental engagement. As a slower, more individualized training approach was adopted for this intervention (as recommended by Manz et al., 2017; Zevenbergen et al., 2018), the DR method was being chronologically taught throughout 6 sessions. This means that if parents were not tuning into the synchronous sessions or watching the videos, they may not have

been following the method as prescribed, despite stating otherwise during check-ins. This indicates that participating children may not have been taking part in reading sessions whereby the intervention was being implemented as prescribed. Although unexpected, poor parental engagement is not unusual in research conducted with disadvantaged families (Justice, Logan & Damschroder, 2015; Sheridan et al., 2011). Literature indicates that barriers to engagement most often experienced by parents from low-SES backgrounds include personal factors (such as beliefs, lifestyles and limited resources; Brown et al., 2012; Eisner & Meidert, 2011; Hackworth et al., 2018; Heinricks et al., 2005; Sanders & Kirby, 2012) and intervention specific factors (such as delivery, content, and relationship with the intervention facilitator; Ingoldsby, 2010; Berthelson et al., 2012; Mendez et al., 2009). Within the current study, work commitments, childcare and contracting COVID were the most cited reasons for parents not attending synchronous sessions. These personal life factors are frequently cited within literature as structural barriers preventing parents from low-SES areas from engaging with interventions (Barlow et al., 2005; Cunningham et al., 2000; Garvey et al., 2006), and indicates a need for future research to adopt a more flexible approach to when and where an intervention is delivered (Hackworth et al., 2018). Some studies indicate that scheduling the intervention in accessible locations at convenient times, providing transport and childcare, and providing home-based options such as home visits effectively enhance parent engagement within disadvantaged areas (Snell-Johns et al., 2004; Smith et al., 2014; Ingoldsby, 2010). Future larger-scale studies may endeavor to use such evidence-based solutions.

Within the current study, two main factors were incorporated to enhance engagement. Firstly, the referral source for parents was a trusted member of staff, the HSCL. Research indicates that for parents from low-SES backgrounds, the referral source is an important contributor to parental engagement (Peters et al., 2005; Whittaker & Cowley, 2012), with

positive interest expressed from trusted community members deemed a facilitator of parent enrolment in educational interventions (Le Compte & Shensul, 2010). Secondly, provision of individualised support was offered to all parents, to enhance their competency in using DR techniques, and enhance their engagement (Hackworth et al., 2018). This was incorporated by the HSCL sending personalised texts and email nudges to parents during the intervention period, and the principal researcher giving their contact information and expressing availability outside of synchronous sessions to support each parent. As such methods were not successful in engaging parents within the current study, further recommendations to enhance parental engagement are detailed at the end of this chapter.

There are two alternative potential explanations for the results found in the study: the intervention duration and chosen outcome measures. The present intervention consisted of 6 sessions taking place over 8 weeks. The duration was chosen due to positive findings in other studies of the same length (e.g., Chacko et al., 2018; Lonigan et al., 1999; Whitehurst et al., 1994) and a DR meta-analysis indicating that 4 weeks is the minimum period to allow for significant language improvements to occur (Mol et al., 2008). However, some evidence suggests that children from low-SES backgrounds require more intensive interventions than children from high-SES backgrounds (Lonigan et al., 2013; Noble et al., 2020). For example, some school-based interventions completed with the target population taking place over one academic year resulting in significantly improved language outcomes (e.g., Barnes & Puccioni, 2017; Farrant & Zubrick, 2013; Lonigan et al., 2013). Therefore, is possible that the intervention was too short to generate substantial language improvements. Furthermore, evidence suggests that the impact of shared reading interventions may vary depending on the chosen outcome measures (Noble et al., 2020; WWC, 2007). Some studies that use norm-referenced measures of language seem less likely to find significant language improvement (e.g., Holt & Asagbra, 2021; Noble et al., 2020) compared to studies using criterion-

referenced measures, such as tests of target vocabulary acquisition (e.g., Lefebvre et al., 2011; Opel et al., 2009; Simsek & Erdogan, 2020). However, observational data from research completed with parents implementing the DR method indicate that generally, parents increase DR behaviours whilst reading over the intervention periods, regardless of SES (Beschoner & Hutchinson, 2016; Knauer et al., 2020; Noble et al., 2019). Thus, significant results may have emerged from the study should a wider variety of outcome measures been used.

Despite the intervention not significantly improving children's oral language skills as hypothesised, this study has several strengths. This research presents the first known instance of using online methods to deliver a DR intervention to families from low-SES backgrounds. The purpose of using online methods was twofold: to overcome COVID social distancing restrictions in place, and to allow for time to attune the intervention to parents' needs (Aston & Grayson, 2013; Campbell, 2011). Many reviews are unanimous in the suggestion that using information technology is a good option for researchers and educators to enhance engagement and overcome typical barriers experienced by families from low-SES backgrounds (such as transport, childcare, and communication issues; Campbell, 2011; Hoover-Dempsey et al., 2005). Within literature, there is recognition of a 'digital divide' between families from low- and high-SES backgrounds, whereby families from low-SES backgrounds have less access to digital tools and less familiarity with digital skills compared to their more advantaged counterparts (Harris, Straker & Pollock, 2017; M. Zhang, 2015). It is possible that this digital divide impacted participating parents' ability to engage with the current intervention. However, based on limited qualitative feedback gathered from participating parents during check-ins and DR sessions, the use of IT was convenient and enjoyable. Furthermore, parents were familiar with 'Zoom' due to the COVID home-schooling period, and the HSCL was available to parents during every synchronous session to

provide technical support. However, as parental engagement was low, it is recommended that future researchers anticipate potential challenges parents may encounter using digital technologies, and qualitatively ascertain parents' comfort engaging with technology prior to conducting an online intervention (Angrist, Bergman & Matcheng, 2021; Carlana & La Ferrara, 2021).

The second distinct strength of the current study is that it anticipated and accommodated for parents needs during the DR training period. Many DR studies completed with disadvantaged families use one or two training sessions at the beginning of the intervention (e.g., Reese et al., 2010; Knauer et al., 2020) an identical research design to DR studies completed with middle- and high-SES cohorts (see Towson et al., 2017). However, it is widely recognized within literature that low- and high-SES families have different educational needs, attitudes, and levels of self-efficacy (Hart & Risley, 1995; Harris & Goodall, 2007; Hoover-Dempsey et al., 2005); and this should be attended to appropriately within research (Mol et al., 2008). This study highlights that with careful planning, it is possible to adhere to literature recommendations and attend to such needs with a DR intervention. However, parents are not a homogeneous group - any parent can enter an intervention with a variety of potential challenges (e.g., literacy difficulties, negative attitudes, beliefs, limited resources, time or knowledge; Desforges & Abouchaar, 2003; Eccles & Harold, 1993). Therefore, it is recommended that future studies ascertain challenges using qualitative methods pre- and post-intervention. This would allow for the parent perspective on challenges to be discussed and described in detail and effectively attended to within the intervention. Some studies investigating the use of shared-reading interventions with parents have used the Parent Reading Belief Inventory (PRBI; DeBaryshe & Binder, 1994), which assesses parental beliefs about the goals and structure of shared reading

interactions (Curenton & Justice, 2008). The use of such a questionnaire may be a fruitful source of information in future studies.

This study also represents the first time a DR intervention has been empirically studied with an Irish cohort. This is notable, as the intervention is both recommended for use by NEPS (Nugent, et al., 2015) and the NCCA (Kennedy et al., 2012) as an effective intervention to improve the vocabulary skills of young children. Additionally, as noted within the introduction, there is a growing recognition in national research of the need to adopt a wide, inclusive approach to supporting literacy for parents and children in disadvantaged areas (O' Donnell & McPhillips, 2018; Morgan & O' Donnell, 2016). The current study has high ecological validity – check-ins were completed by the HSCL, and an inclusive approach to participant recruitment was adopted. Thus, the results of the present study indicate that within Irish DEIS schools, if a school or EP sought for parents to implement the DR intervention at home, some careful, innovative measures would have to be implemented to ensure that parents were facilitated to engage with the programme, understood it, and implemented it with high fidelity. Such measures are detailed at the end of this chapter.

Limitations

The most significant limitation of the current study concerns the monitoring of implementation fidelity. As noted within the method section, logbooks designed to track intervention quantity (i.e., how often parents read to their child during the intervention period) were not returned. However, the use of check-ins is also a sufficient and widely accepted method for tracking implementation fidelity (Towson et al., 2017; Breitenstein et al., 2010); but meagre parental engagement meant the ability to track implementation fidelity using check-ins was compromised. Tracking implementation fidelity is critical to the successful translation of evidence-based interventions into practice (Carroll et al., 2007; Mihalic, 2004), and not gaining sufficient data can lead to faulty conclusions about

intervention effectiveness (Breitenstein et al., 2010). Within shared reading literature, systematic information on implementation fidelity is particularly lacking, despite being a key feature of effectiveness measurement (de la Rie, van Steensel & van Gelderen, 2017; Manz et al., 2010). Thus, whilst acknowledging that this is a common issue faced by researchers within the literature, the present study cannot conclusively state whether parents implemented the DR method as prescribed, and the intensity of the intervention, thus affecting the results achieved. More rigorous methods of tracking intervention fidelity and adherence such as direct observation or recordings of parents reading to their child, or the use of observational checklists, such as the Adult-Child Interactive Reading Inventory (ACIRI; DeBruin-Parecki, 2007; Towson et al., 2017) would have enhanced the quality of the study. Observing parent-child reading sessions via video recording could have been completed for the current study, however many parents are uncomfortable being recorded in their homes (Parecki & Gear, 2013). Additionally, it is difficult to know if pre-recorded parent-child reading sessions accurately represent everyday reading (DeBruin-Parecki, 2009). Future studies completed in-person may find the opportunity to observe parent-child interactions naturalistically during sessions, which would provide valuable implementation fidelity data, as well as opportunity to provide constructive feedback to parents (Towson et al., 2017).

A second limitation is the omission of the voice of the child. As mentioned in Chapter 2, in line with the UN Convention on the Rights of the Child (1989) and the Child and Youth Participation Strategy 2019-2023 (TUSLA, 2019), children have the right to be consulted in all activities that affect their lives. The primary reason for this omission related to the post-positivist paradigm adopted at the outset of the study, and the consequent quantitative research design adopted to answer the research question. This study sought to evaluate the effectiveness of the DR intervention solely using measures of children's language, thus qualitative data gathering methods (such as interviews or focus groups) were not considered.

This choice of paradigm and research design was primarily adopted to minimise bias (Grix, 2004), as the principal researcher was involved in both delivering the intervention and the data analysis. Furthermore, this research design is standard in most studies investigating the efficacy of DR (Dowdall et al., 2020; Mol et al., 2008; Towson et al., 2017). Notwithstanding the rationale for the exclusion of their voice, it is clear from the research procedure that all participants (parent and children) were well-placed to discuss their experience of engaging with the DR intervention. Inspection of DR reviews and meta-analyses indicate that this is an unattended gap within the broad DR literature; no previous DR study has included the voice of participating children (see Mol et al., 2008; Dowdall et al., 2010; Manz et al., 2010; Marulis & Neuman, 2010). Hence, it is suggested that future research explore children's experience of engaging with a DR intervention.

Implications

The current study evaluated a novel DR intervention, training parents from low-SES backgrounds using online methods. The study is small-scale, completed over a brief period, and encountered challenges in engaging parents. Thus, it is cautioned against coming to a general conclusion that DR does not support the language development of this population. Alternatively, it is hoped that the challenges encountered will provide valuable lessons to future researchers and practitioners aiming to use DR with families from low-SES backgrounds. It is anticipated that the current research will stimulate further investigation of this important area, and a list of recommendations for future studies and practitioners is as follows:

1) Further tailor the intervention to parents' specific needs by gathering qualitative information about parents prior to beginning the intervention (Padak, Rasinski & Fike, 1997). Qualitative interviews or surveys should endeavour to understand challenges frequently cited as barriers to engagement by parents from low-SES

backgrounds, including their current schedule, literacy skills, attitudes towards education, their understanding of their role in their child's education, and shared-reading beliefs (Brown et al., 2012; Berthelsen et al., 2012; Mendez et al., 2009; Barlow et al., 2005; Heinrichs et al., 2005; Curenton & Justice, 2008). Additionally, interviews will allow researchers to identify complex needs, and help parents develop trust in the researcher (Bull et al., 2004; McNaughton, 2000)

2) Do not underestimate the importance of developing a quality relationship with parents prior to beginning the intervention, and the amount of time it takes to develop such a relationship. Literature indicates that developing a bond between facilitator and parents' pre-intervention increases parental engagement (Ingoldsby, 2010; Lingwood et al., 2020). Suggestions include building rapport prior to data collection using a 'familiarisation period' (Ingoldsby, 2010; Barley & Bath, 2014) with informal 'taster sessions' to become familiar with the researcher (Koerting et al., 2013; Lingwood et al., 2020) or a buddy scheme, where a parents can bring a friend to feel more comfortable (Cortis et al., 2012; Smith et al., 2014).
3) Examine feasible, efficient methods for parents to report the frequency and length of DR sessions. Previous shared-reading studies have provided parents with audio equipment to record shared reading sessions (Breitenstein et all., 2010; Noble et al., 2020). Other novel methods may include weekly online surveys emailed to parents (akin to Lee et al., 2008), or a messaging system whereby parents answer a daily text asking how many minutes spent reading per day (Kurki & Brown, 2021).
4) Evaluate a similar study completed in-person, to compare to the present study which used online methods. In-person would provide the opportunity, as in many other studies, for the facilitator to observe the parents naturalistically using the DR method

and provide meaningful feedback, a didactic technique favoured by many in DR studies (Towson et al., 2017).

Chapter 4: Critical Review and Impact Statement

Introduction

This thesis concludes with a critical reflection upon the study completed. In this concluding chapter, each step of the research process is reflected upon, with strengths and limitations highlighted within each reflection. These reflections are followed by ethical considerations, COVID contingency planning and ethical dilemmas encountered during the research process. Proposed implications of the research in terms of understanding the research topic, policy, practice, and future research are then provided. This chapter concludes with an impact statement that outlines how the knowledge, analysis and challenges encountered presented in the current thesis may benefit professionals within both education and academia.

Study Overview

The present study completed a systematic literature review and original empirical research to augment the understanding of DR interventions completed with families from low-SES backgrounds within an Irish context. Following meta-analyses which concluded that SES is a significant mediating factor affecting children's responsiveness to the DR intervention, a systematic review investigating the use of DR with low-SES/low-income samples was conducted. The review of 8 studies concluded that many studies lack methodological rigour, including the use of standardised measures of language, appropriate tracking of intervention fidelity and use of follow-up testing. Interestingly, many studies reviewed concluded that they had not applied an appropriate level of sensitivity to parents' needs, affecting results achieved. These research gaps informed the empirical research. A bespoke intervention was created in adherence to the 'Read Together, Talk Together' programme (Whitehurst, 2005), and evidence-based recommendations for working with parents from low-SES backgrounds and creating supportive online communities. The

resulting 6-session intervention was completed online with participating parents, with pre-recorded videos supplementing each session. Parents were instructed to read in between each session. Implementation fidelity was tracked via check-ins completed during each session and phone call check-ins completed by the school's HSCL. Most parents attended 50% of sessions, and overall parental engagement decreased halfway through the intervention period. Participating children's oral language skills were obtained using 3 separate measures of language, at the pre-and post-test stage. The results were analysed using quantitative data analyses, and it was concluded that the intervention did not have a significant effect on children's oral language skills, compared to waitlist control. Follow-up tests of language were not conducted (reasons detailed under 'ethical dilemmas'). It was hypothesised that the unexpected results could be explained by parental engagement levels, the length of the intervention and chosen outcome measures. As participant engagement with the intervention was low, implementation fidelity monitoring was impacted. Consequently, results of the current study should be interpreted with caution.

Reflection on Epistemological and Theoretical Perspective

As highlighted within Chapter One, the current study adheres to a post-positivist paradigm. The methodological approaches commonly associated with this paradigm are primarily quantitative and interventionist (Creswell et al., 2011; Grix, 2004), thus the study adopted an experimental design. Guiding the research with post-positivist principles was a strength of the study, particularly in relation to the validity of the outcome measures (Olsen, 2004). Using multiple measures of language confirmed the trustworthiness of results and provided an accurate view of reality (Maxwell, 2012; Olsen, 2004; Ryan, 2018). Furthermore, as the principal researcher was involved in both delivering the intervention and the data analysis, there was a risk of potential bias (Grix, 2004). However, strictly adhering to the post-positivist epistemological position meant that knowledge was accrued via following

the scientific method (Breakwell et al., 2006). This meant a controlled experiment was conducted, and the results were quantified and interpreted with consideration of the best possible evidence available at the time (Creswell et al., 2011; Macionis, 2011). This ensured that the research did not succumb to potential bias (Philips & Burbules, 2000; Deluca, Gallivan & Kock, 2008).

However, when reflecting on the results obtained, it is considered that grounding the research in a more pragmatic approach may have been more beneficial to the study, particularly in terms of the research design and methodologies. Pragmatism is an alternative paradigm that is concerned with 'what works' and proposes that researchers should use the methodological approach that works best with the research problem being investigated (Johnson & Christensen, 2019). Considering the novelty of the intervention used in the current study, and the resulting levels of parental engagement, adopting a mixed-methods approach would have allowed for qualitative information to be gleaned regarding parents' experience of the intervention and any challenges they encountered (Creswell et al., 2011; Tashakkori & Teddlie, 1998). This paradigm would have also allowed for the voice of the child to be included within the research, whereby children's lived experience of engaging with the DR intervention would be considered, and shape future DR intervention studies (Harding & Atkinson, 2009; Q. Zhang, 2015). A complete examination of the intervention's effectiveness, by using qualitative methods such as naturalistic observations, interviews or focus groups with participating parents and children would have included important perspectives not accounted for in the current study. Furthermore, such data could provide implications for future studies completing DR with parents from low-SES backgrounds, similar to previous studies (see Manz et al., 2017; Zevenbergen et al., 2018). However, as detailed under the 'Ethical Considerations' section, naturalistic observations were included

within the original research design, but COVID contingency planning meant an alternate research design without observations was adopted.

Reflection on Research Design, Data Collection and Sample

Research Design

Experimental Design. To understand the efficacy of the intervention, a cluster-randomised experimental design was adopted, which aligns with the study's post-positivist epistemological position (Creswell et al., 2011). The research design is a distinct strength of the study, as literature regards evidence from single randomised controlled trials to be the highest level of evidence, after meta-analyses and systematic reviews of RCTs (Sackett, 1993; Page & Meerabeau, 2004; Morse, 2006). The study's sample was cluster-randomised due to an unexpected wide variability in participating children's age. This method of randomisation ensured that the chance of finding differences in oral language that could be attributed to group differences was minimised (Olsen, 2004).

The study also included a waitlist-control group, which reduced experimental bias and increased the generalisability of the study (Breakwell et al., 2006). A waitlist control was chosen instead of an active control; as a previous meta-analysis established the added-value of DR in comparison to typical shared reading practices (Mol et al., 2008). Furthermore, required resources to include an active control (such as time and additional researchers) were not available for the current study. However, a recent meta-analysis investigating shared reading practices indicated that the type of control group moderates the effect of shared book reading interventions (Noble et al., 2019). The meta-analysis found that studies using a passive control group showed small effects (g = 0.231), and studies using an active control group showed negligible effects (g = .038; Noble et al., 2019). Indeed, some research indicates that what parents *do* in the home has a larger impact on children's literacy and

language learning than the effects of parent income, level of education or social class (O' Toole, 2019; Doctoroff & Arnold, 2017). Thus, future experimental studies investigating the use of DR with any sample should consider using an active control group, such as typical shared reading, as it may provide evidence that simply asking parents to read at home with their children is just as effective as employing the DR method (Noble et al., 2020).

Intervention Duration. The length of the intervention was 6 sessions provided over 8 weeks. This was due to Mol and colleagues (2008) meta-analysis which concluded that 4 weeks is the minimum timeframe an intervention should run to significantly improve language outcomes, with most interventions lasting 6 – 8 weeks reporting medium-to-large effect sizes. Some emerging evidence suggests that 8 weeks is not a sufficient intervention duration for this target population, and that 'more intensive' interventions may be required to facilitate significant change in oral language production (Lonigan et al., 2013; Noble et al., 2019; 2020). For example, some school-based interventions taking place over one academic year have resulted in significantly improved language outcomes for children from disadvantaged backgrounds (e.g., Barnes & Puccioni, 2017; Lonigan et al., 2013; Farrant & Zubrick, 2013). This would imply that increased intervention intensity results in increased outcomes for children from low-SES backgrounds. Reflecting this, a recent review of shared reading interventions suggests that children benefit significantly more in their expressive language outcomes when parents partake in intensive shared reading interventions (d = .54), compared to low-intensity interventions (d = .34; Dowdall et al., 2020). This review operationalises 'high intensity' as any intervention which provides more than 60 minutes of training to parents, and concludes that interventions involving multiple sessions with extended contact time between the intervention facilitator and parents are "highly likely" to result in improvements to child language outcomes (Dowdall et al., 2020, p. 396) In the current study, despite low engagement for one-third of synchronous sessions, many parents

reported during check-ins that they were watching videos each week, and at least 2 parents engaged with 4 synchronous sessions (approximately 72 minutes). When parents attended synchronous sessions; all cameras were on, and all didactic techniques such as open discussions and roleplays were engaged with. This means that most participating parents in the current study received a high intensity intervention, according to Dowdall and colleagues (2020) definition. However, results illustrate that children's expressive language outcomes did not significantly improve. Thus, when considering the results of the current study, it is possible that the intervention was a suitable length of time, and factors such as intervention fidelity, outcome measures, or parental engagement more significantly contributed to the results found. Therefore, future studies should examine the possibility that the intervention needs to be more intensive to incite significant changes in the outcome language measures (Dowdall et al., 2020; Noble et al., 2021). However, it is unclear how a longer, more intensive intervention may affect the issue of parental engagement, as 'demanding' interventions are barriers to participation for many parents (Barlow et al., 2005; Hoagwood, 2005; Heinrichs et al., 2005). Therefore, further work is needed to determine the minimum length and intensity to engender meaningful change for such families.

Interventionist. The chosen interventionists for the current research were parents of children attending an Urban Band 1 DEIS school. As noted within the systematic review, there is wide methodological heterogeneity amongst DR literature, making direct comparison of DR studies difficult (Dowdall et al., 2020). Within this systematic review (Chapter 2), two studies received a high WoE rating; one was home-based, and parent-led (Noble et al., 2020), and the second was school-based and researcher-led (Lonigan et al., 2013). This indicated that either parents or researchers can be effective DR interventionists. However, when designing this study, parents were chosen as interventionists for two reasons. Firstly, there is overwhelming evidence that suggests that parents have the greatest influence on the

achievement of their children, via supporting their learning in the home (Epstein, 2001; Harris & Chrispeels, 2006; Harris & Goodall, 2007). Secondly, from an Irish perspective, there is growing recognition within policy the need to shift reliance from school-based interventions to improve language and literacy outcomes, and instead adopt a wider and more inclusive approach which incorporates families and communities (NLS, 2011-2020; Eivers et al., 2005; O' Donnell & McPhillips, 2018). As such, considering the potential implications the current study has for future studies and practice, having parents as interventionists is seen as a distinct strength of the research design.

Data collection methods

Outcome Measures. Consistent with the post-positivist ontological assumption adopted for the current study, the research utilised multiple measures of language. This is a distinct strength of the study, as results indicated the efficacy of DR on children's general oral language skills (Noble et al., 2019). Furthermore, MLU is a robust, sensitive indicator of children's language growth over time (Rice et al., 2019). However, some meta-analyses have indicated that the efficacy of book sharing interventions is variable and subject to the specific outcome measure chosen for the study (Noble et al., 2019; WWC, 2007), thus the use of a criterion-referenced test may have produced positive outcomes and indicated the efficacy of DR in improving target vocabulary acquisition, similar other studies referenced in the systematic review of literature in Chapter 2 (Knauer et al., 2020; Lefebvre et al., 2011; Opel et al., 2009; Simsek & Erdogan, 2020). Future research may consider the use of criterion-referenced measures as well as observational measures, such as the ACIRI (DeBruin-Parecki, 2006). The use of both norm-referenced and criterion-referenced outcome measures would indicate the efficacy of DR in improving both generalised and specific language outcomes, which could provide useful implications for the use of DR within home and school settings.

Implementation Fidelity. Implementation fidelity was monitored via check-ins during synchronous sessions and phone calls made by the HSCL. Such methods are widely used in research, and accepted as valid (Breitenstein et al., 2010; Towson et al., 2017). It is argued that by the principal researcher completing check-ins with parents engaging in synchronous sessions, implementation quality was monitored and addressed in the current study (Justice, Logan & Damschroder, 2015). However, as the principal researcher did not have opportunity to engage with each parent during each synchronous session, the ability to monitor implementation quality was heavily compromised. Parents reported no issues implementing the DR intervention; however, a limitation of self-report data relates to the validity and accuracy of information provided – it is possible that participating parents had a desire to provide a positive assessment of their adherence to the DR intervention (Breitenstein et al., 2010; Perepletchikova et al., 2007). Thus, unfortunately, no firm conclusion can be drawn regarding parents' compliance to the DR method (Breitenstein et al., 2010). Furthermore, as reading logbooks were not returned, there is no data available for implementation quantity, i.e., how often children were read to. This is a limitation, as it risks the study evaluating the effects of the intervention as reported, rather than as performed (de la Rie, 2017). This is important to discern as some research argues that wide variability in effects found in interventions completed by parents is due to the implementation quality (de la Rie et al., 2017; Bellg et al., 2004).

This information is important to consider for the present study, as there is a hypothesised relationship between parental SES and literacy intervention implementation (Manz et al., 2010; Mol et al., 2008; Van Steensel et al., 2012), and systematic information on intervention implementation is particularly lacking in most family-based shared reading literature (Manz et al., 2020; Rie et al., 2017; van Steensel et al., 2011; Senechal & Young, 2008). This is likely due to the effort required to measure all dimensions – for example examining parental

adherence to the intervention would require naturalistic observations, which is time-consuming and costly, in comparison to self-reports (Breitenstein et al., 2010; de la Rie et al., 2017). Therefore, this is a significant factor that must be considered by future studies in the area. Future researchers may use a checklist such as Powell and Carey's (2012) implementation quality framework for family literacy interventions, and creatively find a method that controls and quantifies the measurement of parents' implementation delivery, receipt and/or enactment of a DR intervention. As mentioned in Chapter Three, future studies may choose to use novel methods of implementation fidelity tracking, such as audio-recordings, web surveys or text messaging. It must be noted, however, that to have more accurate information regarding implementation quality, the researcher requires the parents to complete more work, voluntarily. It has been heavily noted that parents from low-SES backgrounds are busy and juggling many priorities, which affects engagement with interventions (Axford et al., 2012; Berthelsen et al., 2012; Mendez et al., 2009; Morawska & Sanders, 2006). Therefore, researchers must reach an undefined balance between methodological rigour, and retention of participants, which unfortunately was not attained in the present study.

Parental Engagement. Within the present study, maintaining parental engagement for the 6 synchronous sessions proved difficult, with one-third of the online sessions unattended by any participating parent. Video view counts also highlighted poor parental engagement. This outcome is not unusual, with the maintenance of parent engagement being described as challenging and often disappointing across many domains (Gross, Julion & Fogg, 2001; Ingoldsby, 2010; Justice et al., 2015; Orrell-Valente et al., 1999; Panter-Brick et al., 2014; Sheridan et al., 2011). More broadly, parents from low-SES backgrounds are consistently under-represented in research (Manz et al., 2010), as they are less likely to sign up to research, and more likely to drop out before the research finishes (Justice et al., 2015;

Lengua et al., 1992; Neuhauser et al., 2015). This is important to note for the current study, as failing to reach under-represented populations limits the external validity and generalisability of DR studies (Bonevski et al., 2014). Within shared reading literature, it is indicated that frequently, parents may implement fewer intervention sessions than recommended, not maintain implementation records, or drop out (Justice et al., 2015; Lonigan & Whitehurst, 1998).

As mentioned, parent engagement is heavily linked to SES (Desforges & Abouchaar, 2003; Harris & Goodall, 2007), with parents from low-SES backgrounds less likely to engage with schools and interventions than parents from high-SES backgrounds (Axford et al., 2012; Miller & Prinz, 2003; Desforges & Abouchaar, 2003; Harris & Goodall, 2007). This does not mean that parents from low-SES backgrounds 'care less' than parents from high-SES backgrounds (Epstein, 2001); qualitative research of parents from all backgrounds indicates that all parents care, deeply (Healy, 1997; Whalley, 2001). Instead, it is an unfortunate paradox that many family risk factors associated with SES are also associated with an increased likelihood that parents will not sign up, actively engage, or remain as a participant for the entirety of an intervention (Axford et al., 2012; Miller & Prinz, 2003; Morawska & Sanders, 2006). There is a multitude of reasons suggested as to why low-SES parents engage less with interventions, such as material deprivation (Desforges & Abouchaar, 2003; Sacker et al., 2002), negative past experiences of education (Campbell, 2011; Horvat et al., 2003; Sacker et al., 2002), work and childcare related time-constraints (Berthelson et al., 2012; Mendez et al., 2009) and sense of personal efficacy (Campbell, 2011; Hoover-Dempsey et al., 2005; Hornby & Lafaele, 2011). Within the present study, work commitments, childcare, and contracting COVID were the most cited issues as reported to the HSCL during phone-call check-ins. It must be noted that poor parental engagement can lead to the effectiveness of the programme being under-reported (Morawska & Sanders, 2006), thus future studies should

aim to utilise novel methods to engage parents. Suggested methods are detailed in Chapter 3's discussion and include using a 'familiarisation period' to develop rapport with parents prior to data collection, providing parents with taster sessions, providing transport or childcare, assessing all parents availability and schedules prior to intervention sessions, and ascertaining qualitative information such as self-efficacy and shared-reading beliefs prior to beginning the intervention.

Research Sample

Regarding the ecological validity of psychological studies, Breakwell and colleagues note that "there is always a tension between tightly controlled clinical settings, such that ecological validity is questionable, and looser field-based settings where the control of variables becomes difficult" (2006, p. 486). This study is field-based, and embraced an inclusive approach to recruitment, for the sample to be representative of students attending a DEIS school in Ireland. For example, in Ireland, for the year 2014/15 approximately 2% of students attending mainstream primary school had a diagnosis of ASD (Daly et al., 2016). In the current study, 13% of participating children had a reported diagnosis of ASD. This indicates a higher representative of children with a diagnosis of ASD within the current sample than in a typical Irish classroom. This was not regarded as a confounding issue, as these children's oral language scores did not markedly differ from the scores achieved by other participating children, and increasing evidence proves DR to be an appropriate intervention for children with ASD (Fleury & Shwartz, 2017; Grygas et al., 2018).

Having a heterogeneous sample, and thus a potentially more ecologically valid study, as highlighted in the above quote, is both a strength and a limitation. As a future practising educational psychologist, it was important to consider the upcoming role which will involve identifying appropriate interventions which will support relevant stakeholders, and as such maintaining cognisance of individual strengths and needs that can influence a child or

parent's responsiveness to intervention (Cameron, 2006; Frederickson, 2002) Thus, being able to determine whether DR is an appropriate intervention for families attending DEIS schools was important to the researcher. Of course, as the quote highlights, it meant the current research contained several variables that could not be tightly controlled. For example, the research had to reconcile that 'parents of children attending an Irish DEIS school' is not a homogeneous group, and participating parents may have met a variety of challenges that prevented them from engaging with the current study, such as language and literacy barriers, previous negative experiences at school, feelings of incapacity, cultural barriers, lack of time, resources and knowledge (Deforges & Abouchaar, 2003; Eccles & Harold, 1993). Such potentially confounding variables were not fully captured within the current research, which affects the internal validity of the study (Breakwell et al., 2006; Mertens, 2019).

Furthermore, regarding the specific participant sample for this study, it must be noted that despite all students attending a Band 1 Urban DEIS school, 45% of mothers had at least some college education, and 36% of mothers were working in skilled jobs. Most participating had books in the home, and 91% of parents were reading to their children at least once a week, prior to the intervention beginning. Furthermore, despite capturing a large range in language skills within the current sample, inspection of all children's mean pre-intervention language scores indicates expressive and receptive language abilities in the average range. This may indicate that the sample for this study was not necessarily a low-SES cohort, despite attendance at a DEIS school. This is reflective of research which indicates that parents who are most confident in dealing with a school and in their role in their child's education are most likely to become involved, which may lead to an unintended consequence of increasing educational disadvantage for those most in need (Ryan & Lannin, 2021).

Reflections on Data Analysis

The research question and post-positivist epistemological approach to the study not only guided the design, but also the data analyses (Grix, 2004). The choice of statistical test is important, and as the data collected met all assumptions, parametric tests could be used to evaluate the data (Breakwell et al., 2006). The mixed-model repeated-measured ANOVA is a robust test (Field, 2018), and allows for the computing of variance caused by the intervention, as opposed to variance caused by experimental error and/or individual difference (Field, 2018). Alternatively, a series of several t-tests could have been used, however within literature this is recommended against as it increases the potential for Type 1 or familywise errors (Mertens, 2019).

Regarding reliability, it must be noted that the principal researcher both delivered the intervention and conducted quantitative data collection, due to resources not being available to employ staff to complete either task. Such a situation presents a potential threat to the reliability of the study, and validity of results achieved (van de Mortel, 2008). To counteract this, the potential for participant error within the present study was minimised by the principal researcher delivering the pre- and post-tests, and standardised test forms then blindly marked by a separate researcher. For the BPVS and Naming Vocabulary subtest, inter-rater reliability was $r = .99$, which is very high, and a strength of the study. To minimise bias with MLU, a second observer checked 25% of the transcriptions and MLU codes against the original recordings. Inter-rater reliability between the coder and the principal researcher was tested on the same 25%, and intraclass correlations were $r = 85$.

Reflections on Ethical Considerations

Mary Immaculate Research Ethics Committee, Limerick, granted this research full ethical approval in December 2020. The research adhered to principles of professional

psychological ethics, as outlined by the Psychological Society of Ireland (2019) and the British Psychological Society (2018). As the research procedure included a vulnerable population and involved the individual testing of young children, thorough and detailed ethical considerations needed to be considered prior to commencement of the study. An example of one consideration regards informed consent and assent. According to the BPS (2018), "language should be clear and accessible to people with limited literacy, using short words and sentences, written in the active voice and avoiding the use of technical terms" (p. 19). Therefore, all information provided to parents (information form, consent form, emails, texts, PowerPoint slides during online sessions) were all written in adherence with NALA (2010) plain English writing guidelines. The Gunning Fog Readability Index (Gunning, 1952) was also used to indicate the reading age required to understand all provided information, an average score of 8.6 was achieved, indicating that any person with the reading age of 12 years old could access the texts. When staff indicated a need, information and consent sheets were translated for EAL parents. All information letters stated clearly that participation was voluntary, and that participants had the right to withdraw at any stage during the study (see Appendix D; PSI, 2019; BPS, 2018). Informed consent was also obtained from all participating children at both the pre-and post-test stage, by ticking a box, or for children unsure of how to use a pencil, pointing, and the researcher making a mark on their behalf. A large concern was ensuring children with additional needs both understood and fully agreed to participation; teachers of EAL children indicated whether they would be able to understand and agree to take part, and for children with ASD; their teacher accompanied them into the testing room with the principal researcher and supported their understanding. Furthermore, all children's non-verbal behaviour was monitored throughout each testing session to ensure children were comfortable in the situation and continued to assent to take part (Principle 4.7; BPS, 2018).

After receiving full ethical approval for the study, three ethical dilemmas emerged during the research process that had to be considered and overcome 'on the fly' (Dockett et al., 2009). These were: the completion of follow-up tests, changing the intervention delivery method and changing the method of tracking implementation fidelity due to COVID restrictions. The first, and most salient ethical dilemma was the decision to change the research design following the immediate post-intervention data analysis. As outlined, post-intervention results indicated that the DR intervention did not significantly improve children's oral language skills, in comparison to control. A follow-up test of children's oral language was within the original research design due a paucity of DR studies that include a follow-up test of language to determine whether any language gains are maintained across time (Dowdall et al., 2020; Manz et al., 2010; Mol et al., 2008; Noble et al., 2019). However, the lack of intervention effects, and lack of evidence to suggest a delayed response to the intervention (Dowdall et al., 2020; Noble et al., 2020) meant that testing for potential maintenance effects in the absence of intervention effects could be considered unethical. It could be argued that due to the number of EAL and ASD participants within the current study that a delayed response to the intervention could occur - both EAL and ASD students exhibit slower rates of language development, compared to 'typically' developing children (Eigsti et al., 2011; Murphy & Unthiah, 2015; Tek et al., 2014). This argument would warrant follow-up tests of language to be completed, to ascertain whether such students experienced a delayed response to the intervention. However, given the meagre levels of parental engagement, and subsequent difficulties tracking intervention fidelity, any hypothetical significant improvements at the follow-up stage could not be meaningfully attributed to the DR intervention conducted for the current study (de la Rie, 2017). Consequently, the repeated testing of young children despite insignificant results was weighed in terms of potential

societal benefits versus cost (Principle 2.4; BPS, 2018), and it was decided that in this instance, further testing may be considered an undue process.

COVID Contingency Plan

Within the original research design for the current study, it was planned to conduct in-person intervention sessions with parents, in the child's school. It was this research design that was originally granted ethical approval in December 2020 from Mary Immaculate Research Ethics Committee (MIREC). However, extended lockdown periods from January – March 2021 (Department of the Taoiseach, 2020) and uncertainty regarding the timing of school's re-opening and COVID requirements (Department of Education, 2021) meant a contingency plan with change in research design minimising human contact was necessary. Therefore, a contingency plan which used digital technologies to provide the DR intervention sessions and resources was created in January 2021 and approved by MIREC. By April – May 2021 when schools were being contacted in relation to participation, a lack of clarity regarding COVID restrictions continued, and it was decided that the research design using digital technologies would be the safest option to present to interested schools. Furthermore, there was an increased likelihood that schools would be more comfortable with an online intervention delivery, as it would allow for the minimisation of footfall within the school, which was recommended by the Department of Education (2021).

The decision to switch intervention delivery to online methods also meant the effective tracking of intervention fidelity also had to be reconsidered. It was originally proposed that during face-to-face sessions, role-playing, modelling and one session with children in attendance would provide valuable qualitative information as to whether the parents were completing the intervention as intended. This design aligned with a review of DR studies which highlighted that commonly used intervention fidelity tools are phone call check-ups, interviews, checklists, video and audio recordings, and naturalistic observations

with/without feedback (Towson et al., 2017). When creating the contingency plan, it was decided that for tracking implementation quantity, a physical logbook could still be used. However, another method to ensure that parents were implementing the DR intervention as intended needed to be included (Towson et al., 2017; de la Rie et al., 2017). This was to ensure that any increases in children's target literacy skills could be more likely attributed to the effects of the interactive reading, thus improving internal validity of the program outcomes (van Otterloo, Van der Leij, & Veldkamp, 2006; Parecki & Gear, 2013). The potential to model and role-play was still possible during online delivery and used in the final bespoke intervention (see Table 6). With regard observing parents reading with their children, it was considered that parents could upload videos of a DR reading session. However, many parents are uncomfortable being recorded in their homes (Parecki & Gear, 2013), and it would be difficult to know if a pre-recorded parent-child reading session accurately represents everyday reading (DeBruin-Parecki, 2009). Furthermore, the researcher having access to videos of children would entail parents considering additional informed consent procedures (Principle 4; BPS, 2018). Therefore, parents were not asked to upload a video recording of themselves reading with their children. It was instead argued that check-ins with parents and gathering information relating to their understanding of DR and discussing any challenges encountered would suffice as implementation quality monitoring, which is in line with literature (Breitenstein et al., 2010; Towson et al., 2017).

Implications for Policy, Practice, and Future Research

The current research was small-scale, and as noted, presented several strengths and limitations. As such, some provisional recommendations and implications related to how researchers may understand the DR intervention, and how it may be used with this specific population can be made. Further implications relate to Irish policy, EP's practice, and future research studies in the area.

Implications for Policy

The current study was conducted with parent-child dyads attending an Irish DEIS school. The DEIS initiative currently provides 850 of the most disadvantaged schools in Ireland a comprehensive package of supports designed to tackle literacy problems, amongst other issues (DES, 2005). Various literacy-focused policy initiatives in the past three decades have focused on curricula reform, reducing teacher-student ratios, increasing access to special education teachers, provision of CPD and provision of school-based literacy interventions (DES, 2011; 2017; NESF, 2009; Eivers et al., 2005; Smyth, McCoy & Kingston, 2015). However, such initiatives have not resulted in significant literacy gains, as highlighted in reports which indicate one in ten Irish children have serious difficulties with reading or writing, and in some DEIS schools this is as high as one in three children (DES, 2011; Eivers et al., 2005). Furthermore, inspection of English Junior Cert results indicates a significant gap between DEIS and non-DEIS schools (McAvinue & Weir, 2015; Weir & Kavanagh, 2018). As a result, there is now an increasing recognition in Irish policy that more inclusive approaches to supporting literacy for families living in disadvantaged areas is the best move forward (DES, 2016; 2017; O' Donnell & McPhillips, 2018). The Irish National Strategy for Literacy and Numeracy (revised in 2017; DES, 2017) highlights that enabling families to support children's learning and supporting children with socio-economic disadvantages as some of its primary targets. A recent Irish policy brief has also stated that "there is an urgent need to provide a national policy framework to support literacy development for both parents and pupils" (O' Donnell & McPhillips, 2018, p. 10).

The current research indicates that DR presents as a clear opportunity for schools and parents to develop a relationship, work together, and emphasise the importance of parents' role in their children's learning (Kelleghan, 1993; Ryan & Lannin, 2021). In fact, DR has been implemented as a parent engagement initiative in Dublin, with the Marino Storytime

Project (as detailed in Ryan & Lannin, 2021). This project states that it effectively coordinates and connects community networks such as the local libraries, a local university and school's HSCLs to provide an evidence-based shared-reading intervention to parents within disadvantaged communities. As of 2020, it has provided the intervention to over 900 parent-child dyads (NALA, 2020). Despite a lack of empirical evidence to support the efficacy of the project in terms of children's language outcomes, the number of families who have engaged with the project implies that strong community networks enhance programme enrolment (Eisner & Meidert, 2011).

Due to challenges related to parental engagement, the current study cannot conclusively conclude whether DR can enhance children's oral language skills. However, results indicate that whilst parents from low-SES backgrounds may be motivated to engage, they face many personal, structural, and practical barriers related to their socio-economic status which can impact their ability to engage with interventions (Lingwood et al., 2020; Whittaker & Cowley, 2012). Thus, it is recommended that future policy aiming to enhance student literacy attainments via family literacy initiatives maintain cognizance of potential SES-related barriers to engagement. Policy may further provide schools and communities recommendations of feasible means for overcoming such barriers, such as increasing school's access to HSCLs (Ryan & Lannin, 2021), and creating school practices which aim to involve parents (Whalley, 2001). Lastly, in order to meaningfully effect change, policy must formally recognise a crucial factor in relation to supporting families from low-SES backgrounds: the development of relationships is key (Hackworth et al., 2018; Ryan, 1995; Ryan & Lannin, 2021; Whittaker & Cowley, 2012), and developing meaningful relationships requires sensitivity, flexibility, and persistence (Bleach, 2010; Ryan & Lannin, 2021; Whalley, 2001).

Implications for Practice

A distinct strength of the study is the fact that it was field-based and completed with a heterogeneous sample representative of populations attending Irish DEIS schools. Although small-scale; results of the present study provide useful information to clinicians and teachers working parents and children attending DEIS schools. As mentioned, the current study experienced a significant challenge engaging parents from low-SES backgrounds. It is hypothesised that if qualitative information from parents had been gathered prior to commencement of the intervention, the researcher would have identified complex needs that required attention (Bull et al., 2004; McNaughton, 2000; Whittaker & Cowley, 2012). As such, it is recommended that any practitioner planning to begin a DR intervention with families from low-SES backgrounds gather contextual information before initiating the programme. Information related to the potential challenges parents from low-SES backgrounds encounter such as work commitments, transport or childcare issues (Berthelson et al., 2012; Mendez et al., 2009), literacy difficulties (Weigel et al., 2006), or attitudes towards education and shared-reading (Curenton & Justice, 2008) would allow for practitioners to attend to parents needs in a meaningful way (Whittaker & Cowley, 2012). Furthermore, developing a collaborative, open relationship can provide opportunity to clinicians to ascertain important contextual information, which in turn may improve the quality of service provided (Manz et al., 2010; van Steensel et al., 2011).

Regarding the specific role of EPs, it must be noted that NEPS has recommended DR as an evidence-based intervention suitable for supporting the oral language skills of young children (Nugent et al., 2015). The PSI states a core responsibility of EPs is promoting the educational development of young people attending the Irish education system (PSI, 2017). Therefore, EPs must be accountable for the interventions that they promote or recommend for use (Frederickson, 2002; Wolfson et al., 2003). The clear implication for EPs from the

current study is that engaging parents from low-SES backgrounds in a DR intervention may prove challenging, especially if the intervention is provided via digital means. As stated, the effective delivery of a DR intervention with parents from low-SES backgrounds may require building and maintaining meaningful relationships prior to beginning the intervention, as parental involvement is more complex and wide-ranging than previously thought (Ryan & Lannin, 2021). Much theory posits that schools, families and communities are overlapping spheres of influence that need to work together to meet children's needs (Bronfenbrenner, 1979; Epstein, 2001). It is argued that NEPS psychologists are well-positioned to support such partnerships, as firstly, working with key stakeholders for children is a central tenant of their work (PSI, 2017). Secondly, all practising psychologists in Ireland have masters or doctoral-level training in child and adolescent development and the delivery of group interventions (PSI, 2017), and must display critical knowledge of theory and research on effectiveness of psychological and educational interventions at the individual, family, group, and systems levels prior to beginning their practice (BPS, 2019). In DEIS schools, working with the HSCL whose central role is to empower and reinforce parents to support their children's learning at home and at school (Ryan & Lannin, 2021) may support this further. Implications from the current study for EP practice are summarised in Table 10.

Table 10
Implications for EP Practice

Implications for EP Practice
1. It is recommended that EPs gather contextual information pertaining to families prior to initiating or recommending the DR intervention. Information may include the families' resources, parent literacy skills, parent attitude towards reading, and understanding of shared reading practices.
2. It is recommended that EPs can improve the quality of their service by developing a collaborative, open relationship with parents, prior to initiating or recommending literacy interventions.
3. It is recommended that EPs effectively collaborate with families, schools, community links and school's HSCL (where appropriate), and build upon pre-existing relationships to support children from low-SES backgrounds language development.
4. Future EPs investigating the use of DR with children from low-SES backgrounds should seek to include the voice of the child.
5. As EPs must be accountable for all interventions recommended to families and/or schools, it is recommended that appropriate literature is consulted prior to making recommendations, i.e., do not recommend that the DR intervention be taught to parents from low-SES backgrounds 'as prescribed'.

Implications for Future Research

Despite any limitations noted within the thesis, all methodologies, measures, and statistical methods used within the current study were supported by empirical evidence. For each ethical consideration, dilemma or contingency plan created, best possible evidence was consulted, and the overarching post-positivist philosophical assumptions guided each decision. As mentioned in Chapter Three, results of the current study are indicative of outcomes from a DR intervention with low parental engagement, and consequently, low implementation fidelity monitoring. Thus, despite the insignificance of results, there are constraints on how conclusively it can be claimed that this intervention is not effective for the population. Future studies may consider the limitations of the current study as opportunities to replicate the current intervention on a larger, more considered scale, and revisit the research question of the current study. As such, four recommendations for future studies are suggested: (i) allow for time pre-intervention to develop a meaningful relationship with parents, (ii) adopt a mixed methods research design to gather qualitative information related

to parents' experience of the intervention, (iii) complete the intervention in-person, and (iv) complete follow-up tests of children's language skills.

Firstly, allowing time to develop a relationship with parents prior to data collection may enhance engagement with the intervention, as argued in previous studies completed with parents from low-SES backgrounds (Barley & Bath, 2014; Ingoldsby, 2010; Koerting et al., 2013; Lingwood et al., 2020). The current study hypothesised that allowing time within each synchronous session to informally chat with parents and develop rapport would create a relationship, however meagre engagement would suggest that this method was not sufficient. Future studies may consider a familiarisation period or informal taster sessions for parents to meet researchers in a pressure-free environment and develop trust (Barley & Bath, 2014; Koerting et al., 2013). Alternatively, the DR intervention could be embedded into a pre-existing programme or practice within a school or community where established relationships between professionals and parents exist (Ryan & Lannin, 2021). In this instance practitioners can opt to adopt a 'train the trainer' approach, which can build upon pre-existing quality relationships between parents and educators (Ryan & Lannin, 2021). This approach would also appropriately account for resource or time constraints experienced by many professionals (Lingwood et al., 2019).

Secondly, adopting a mixed methods research design would allow for meaningful qualitative information related to parents' experience of the intervention to be gathered (Manz et al., 2017; Zevenbergen et al., 2018). Interviews, focus groups or surveys may be included within future research designs to ascertain such information. Thirdly, it is recommended that a replication of the present study be completed in-person, rather than using online methods. It is possible that an SES-related digital divide (Goudeau et al., 2021) limited parents' ability to engage with the present study. In-person would provide the opportunity for the facilitator to observe the parents naturalistically using the DR method, and provide

meaningful feedback, a didactic technique favoured by many in DR studies (Towson et al., 2017). It would also serve as an opportunity for a researcher to use a checklist, observing parents' use of DR methods as a pre-and post- measure (similar to Noble et al., 2020). This would quantify intervention adherence and increase the external validity of the study (de la Rie, 2017; Hackworth et al., 2018). Finally, it is recommended that future studies aim to complete follow-up tests of children's oral language skills. As the current study did not have the opportunity to complete a follow-up, there remains a dearth of DR research completed with families from low-SES backgrounds which investigates whether language gains are maintained over long periods of time. This is important information to gather, as some studies of long-term effects of early education interventions suggest that positive benefits reduce over a short period of time (Whitehurst et al., 1999), and whether this is true for DR is yet to be determined.

Dissemination

The present study explored the use of a DR intervention with a vulnerable population and contributes to the ever-developing evidence-base which investigates the efficacy of DR interventions with families from low-SES backgrounds. The results of the current study were unexpected, and due to low parental engagement and consequent low implementation fidelity monitoring, it is not possible to conclude whether an online, parent-led DR intervention is effective for improving the oral language skills of young children attending DEIS schools in Ireland. However, challenges encountered provide valuable recommendations and implications for future researchers and practitioners. Therefore, the dissemination of current findings is vital. Dissemination of research is a key role for EPs (Keith, 2008) and aligns with best practice outlined by professional codes of ethics (PSI, 2018; BPS, 2017). Notably, dissemination of the current research has already commenced, via a conference presentation at the Annual PSI Conference 2021 (O' Shea & Ambrose, 2021). It is the intention of the

researcher that this dissemination be extended further to applied settings by presenting findings at various other conferences. It is further hoped that the systematic review contained within Chapter Two of the thesis be published in a peer-reviewed journal, for the research to have a meaningful impact on the research community. Crucially, the participating school will be provided with an overview of findings to inform them for future planning when considering the implementation of parent-led language interventions, or shared reading practices.

Impact Statement

The current research aimed to ascertain whether an online, parent-led DR intervention would improve the language skills of young children attending DEIS schools in Ireland, in comparison to waitlist control. Quantitative results indicated that the intervention did not significantly improve children's oral language skills. A distinct challenge encountered during the intervention process was engaging parents from low-SES backgrounds, and restrictions related to the COVID-19 pandemic. As such, the intervention cannot conclusively state whether the intervention was implemented as prescribed, affecting the generalisability of results obtained. However, as the study was the first empirical evaluation of the DR intervention within an Irish context, and as first empirical evaluation of implementing a digital DR intervention with parents from low-SES backgrounds, the results and challenges encountered provide important contributions to knowledge across three domains: policy, practice, and future research.

Firstly, as the current study concerned children's oral language skills, and was parent-led, it has clear implications for current Irish policy. The current National Policy for Literacy and Numeracy 2011-2020 (DES, 2017) emphasises (i) oral language (ii) working with families and (iii) engaging with families from disadvantaged areas as three important factors

which can lead to increases in literacy attainments for Irish students. As the current study worked with each of these three factors, policy needs to maintain cognisance of the difficulty engaging with parents from low-SES backgrounds and provide meaningful recommendations to educators on how to effectively create and maintain relationships with parents.

Secondly, regarding practice, the DR intervention is recommended as an effective intervention for improving the oral language skills of young children by both the NCCA (Kennedy et al., 2012) and NEPS (Nugent et al., 2015). It is important for EPs to be accountable for the interventions recommended to parents and schools and thus, should understand that the DR intervention may not be a suitable recommendation for families from low-SES backgrounds if the intervention is delivered "as prescribed". Instead, EPs should understand that qualitative information derived from parents regarding any potential challenges they may encounter (literacy difficulties, negative beliefs, attitudes, limited resources, time, knowledge, etc.) is important contextual information that is required before asking a parent to implement DR in the home.

Thirdly, regarding future studies, it is hoped that the current study will inspire future researchers to approach this intervention with parents from low-SES backgrounds from a place of sensitivity of parents' needs. Clearly, developing a meaningful relationship via digital means may have impacted the current study. Thus, it is recommended that future researchers evaluate the current DR intervention that was designed to support parents build competence in using DR techniques in-person. To increase the replicability of the current study, all PowerPoints with facilitator notes, supplementary resource videos and parent information letters used in the current study can be accessed for future research by emailing readinglimerick2021@gmail.com.

It was stated in Chapter Three that the need for identifying language interventions that are effective and accessible for all socioeconomic groups is stark. Although the current intervention did not successfully improve children's oral language outcomes, it is hoped that the current thesis has highlighted the need for attending to parents' needs in a sensitive manner that respects their autonomy and the variety of challenges they may experience which may affect their ability to engage with educational interventions. If future researchers and practitioners enter a relationship with parents and continue to be responsive, flexible, and persistent (Bleach, 2010; Whalley, 2001), there is hope for closing the 'language gap' and providing equity of opportunity for all students in Ireland.

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Zevenbergen, A. A., Worth, S., Dretto, D., & Travers, K. (2018). Parents' experiences in a home-based dialogic reading programme. *Early Child Development and Care, 188*(6), 862-874.

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Appendices

Appendix A: Excluded Studies

Table 10
Studies Excluded During Abstract and Full-Text Reading Stages with Exclusion Criteria

Reference	Code for Exclusion
Beach, K. D., & Traga Philippakos, Z. A. (2021). Effects of a summer reading intervention on the reading performance of elementary grade students from low-income families. *Reading & Writing Quarterly: Overcoming Learning Difficulties*. doi:10.1080/10573569.2020.1760154	7
Beschorner, B., & Hutchison, A. (2016). Parent Education for Dialogic Reading: Online and Face-to-Face Delivery Methods. *Journal of Research in Childhood Education, 30*(3), 374-388.	5 (iii), 7
Blewitt, P., Rump, K. M., Shealy, S. E., & Cook, S. A. (2009). Shared Book Reading: When and How Questions Affect Young Children's Word Learning. Journal of *Educational Psychology, 101*(2), 294-304.	5 (iii), 6
Callaghan, G., & Madelaine, A. (2012). Levelling the Playing Field for Kindergarten Entry: Research Implications for Preschool Early Literacy Instruction. *Australasian Journal of Early Childhood, 37*(1), 13-23.	4
Chacko, A., Fabiano, G. A., Doctoroff, G. L., & Forston, B. (2018). Engaging Fathers in Effective Parenting for Preschool Children Using Shared Book Reading: A Randomized Controlled Trial. *Journal of Clinical Child & Adolescent Psychology, 47*(1), 79-93	6 (ii)
Chlapana, E., & Tafa, E. (2014). Effective Practices to Enhance Immigrant Kindergarteners' Second Language Vocabulary Learning through Storybook Reading. *Reading and Writing: An Interdisciplinary Journal, 27*(9), 1619-1640.	6
Chow, B. W.-Y., McBride-Chang, C., Cheung, H., & Bonnie Wing-Yin Chow, C. M.-C. a. H. C. (2010). Parent-child reading in English as a second language: effects on language and literacy development of Chinese kindergarteners. In (Vol. 33, pp. 284-301). United Kingdom.	5 (iii)
Chow, B. W.-Y., McBride-Chang, C., Cheung, H., & Chow, C. S.-L. (2008). Dialogic Reading and Morphology Training in Chinese Children: Effects on Language and Literacy. *Developmental Psychology, 44*(1), 233-244.	5 (iii)
Cohen, L. E., Kramer-Vida, L., & Frye, N. (2012). Using Dialogic Reading as Professional Development to Improve Students' English and Spanish Vocabulary. NHSA Dialog, 15(1), 59–80.	4
Curenton, S. M., & Justice, L. M. (2008). Children's Preliteracy Skills: Influence of Mothers' Education and Beliefs about Shared-Reading Interactions. *Early Education and Development, 19*(2), 261-283.	6 (i), 7
Ferreira, I. A., Silva, C. S., Neves, L., Guichard, S., & Aguiar, C. (2021). Predictors of shared book reading at home with preschoolers: Are there differences between roma and non-roma low-income families? *Social Psychology of Education: An International Journal.*	4
Fitzgerald, T., Robillard, L., & O'Grady, A. (2018). Exploring the impact of a Volunteer Shared Reading Programme on preschool-aged children. *Early Child Development and Care, 188*(6), 851-861.	6 (i)
Ganotice, F. A., Jr., Downing, K., Mak, T., Chan, B., & Lee, W. Y. (2017). Enhancing Parent-Child Relationship through Dialogic Reading. *Educational Studies, 43*(1), 51-66.	5 (iii), 7
Gettinger, M., & Stoiber, K. C. (2018). Effects of Shared Book Reading Focusing on	6 (i)

Letters and Sounds versus Vocabulary for Low-Income Prekindergarten Children. *Preventing School Failure, 62*(3), 149-160.	
Gonzalez, J. E., Pollard-Durodola, S., Simmons, D. C., Taylor, A. B., Davis, M. J., Kim, M., & Simmons, L. (2011). Developing Low-Income Preschoolers' Social Studies and Science Vocabulary Knowledge through Content-Focused Shared Book Reading. *Journal of Research on Educational Effectiveness, 4*(1), 25-52.	6 (i)
Grolig, L., Cohrdes, C., Tiffin-Richards, S. P., & Schroeder, S. (2020). Narrative dialogic reading with wordless picture books: A cluster-randomized intervention study. *Early Childhood Research Quarterly, 51*, 191-203. doi:10.1016/j.ecresq.2019.11.002	5 (iii)
Hendrix, N. M., Hojnoski, R. L., & Missall, K. N. (2019). Shared Book Reading to Promote Math Talk in Parent-Child Dyads in Low-Income Families. *Topics in Early Childhood Special Education, 39*(1), 45-55.	4, 7
Hirsh, H. K., Richmond, M. K., Pampel, F. C., Jones, S. S., Molieri, A. C., & Jones, J. (2019). Results from a Randomized Control Trial of the Motheread/Fatheread Early Literacy Intervention: Evidence of Impact in a Rural Community. *Early Education and Development, 30*(2), 216-237	7
Holt, Y., & Asagbra, E. (2021). Implementing Dialogic Reading Intervention through Community-Based Participatory Research: A Tutorial. *Language, Speech, and Hearing Services in Schools, 52*(1), 4-15.	4
Huennekens, M. E., & Xu, Y. (2016). Using dialogic reading to enhance emergent literacy skills of young dual language learners. *Early Child Development & Care, 186*(2), 324-340. doi:10.1080/03004430.2015.1031125	7
Huennekens, M. E., & Xu, Y. (2010). Effects of a Cross-Linguistic Storybook Intervention on the Second Language Development of Two Preschool English Language Learners. *Early Childhood Education Journal, 38*, 19-26	4
Kelley, E. S., Barker, R. M., Peters-Sanders, L., Madsen, K., Seven, Y., Soto, X., . . . Goldstein, H. (2020). Feasible Implementation Strategies for Improving Vocabulary Knowledge of High-Risk Preschoolers: Results from a Cluster-Randomized Trial. *Journal of Speech, Language, and Hearing Research, 63*(12), 4000-4017.	6 (i)
Kim, M.-J. (2017). Efficacy of an Academic Vocabulary Intervention for Low-Income Children. *Asia-Pacific Education Researcher, 26*(1-2), 43-50.	6 (i)
Korat, O., & Blau, H. (2010). Repeated Reading of CD-ROM Storybook as a Support for Emergent Literacy: A Developmental Perspective in Two SES Groups. *Journal of Educational Computing Research, 43*(4), 445-466.	6 (i)
Korat, O., Shamir, A., & Heibal, S. (2013). Expanding the Boundaries of Shared Book Reading: E-Books and Printed Books in Parent-Child Reading as Support for Children's Language. *First Language, 33*(5), 504-523.	6 (i)
LaCour, M. M., McDonald, C., Tissington, L. D., & Thomason, G. (2013). Improving Pre-Kindergarten Children's Attitude and Interest in Reading through a Parent Workshop on the Use of Dialogic Reading Techniques. *Reading Improvement, 50*(1), 1-11.	7
Landry, S. H., Zucker, T. A., Williams, J. M., Merz, E. C., Guttentag, C. L., & Taylor, H. B. (2017). Improving school readiness of high-risk preschoolers: Combining high quality instructional strategies with responsive training for teachers and parents. *Early Childhood Research Quarterly, 40*, 38-51.	6 (i)
Lever, R., & Senechal, M. (2011). Discussing stories: On how a dialogic reading intervention improves kindergartners' oral narrative construction. *Journal of*	5 (iii)

Experimental Child Psychology, 108, 1-24	
Lingwood, J., Billington, J., & Rowland, C. (2020). Evaluating the Effectiveness of a 'Real-World' Shared Reading Intervention for Preschool Children and Their Families: A Randomised Controlled Trial. *Journal of Research in Reading, 43*(3), 249-271. doi:10.1111/1467-9817.12301	6 (i)
Lorio, C. M., & Woods, J. J. (2020). Multi-component professional development for educators in an Early Head Start: Explicit vocabulary instruction during interactive shared book reading. *Early Childhood Research Quarterly, 50,* 86-100	5 (i)
Loughlin-Presnal, J. E., & Bierman, K. L. (2017). Promoting parent academic expectations predicts improved school outcomes for low-income children entering kindergarten. *Journal of School Psychology, 62*, 67-80. doi:10.1016/j.jsp.2017.03.007	6 (i), 7
Manz, P. H., Eisenberg, R., Gernhart, A., Faison, J., Laracy, S., Ridgard, T. & Pinho, T. (2016). Engaging Eary Head Start parents in a collaborative inquiry: the co-consctruction of Little Talks. *Early Child Development and Care, 187*(8), 1311-1334	6 (i)
Morgan, P. L., & Meier, C. R. (2008). Dialogic reading's potential to improve children's emergent literacy skills and behavior. *Preventing school failure: alternative education for children and youth, 52*(4), 11-16.	4
Nelson, J. R., Sanders, E. A., & Gonzalez, J. (2010). The Efficacy of Supplemental Early Literacy Instruction by Community-Based Tutors for Preschoolers Enrolled in Head Start. *Journal of Research on Educational Effectiveness, 3*(1), 1-25.	6 (i)
Neuman, S. B., & Kaefer, T. (2018). Developing low-income children's vocabulary and content knowledge through a shared book reading program. *Contemporary Educational Psychology, 52*, 15-24. doi:10.1016/j.cedpsych.2017.12.001	6 (i)
Nevo, E., & Vaknin-Nusbaum, V. (2018). Enhancing Language and Print-Concept Skills by Using Interactive Storybook Reading in Kindergarten. *Journal of Early Childhood Literacy, 18*(4), 545-569.	5 (iii), 7
Nielsen, D. C., & Friesen, L. D. (2012). A Study of the Effectiveness of a Small-Group Intervention on the Vocabulary and Narrative Development of At-Risk Kindergarten Children. *Reading Psychology, 33*(3), 269-299.	6 (i)
Niklas, F., Cohrssen, C., & Tayler, C. (2016). Home Learning Environment and Concept Formation: A Family Intervention Study with Kindergarten Children. *Early Childhood Education Journal, 44*(5), 419-427.	5 (iii), 7
Niklas, F., & Schneider, W. (2017). Intervention in the home literacy environment and kindergarten children's vocabulary and phonological awareness. *First Language, 37*(5), 433-452	5 (iii)
Pillinger, C., & Wood, C. (2013). A Small-Scale Comparison of the Relative Impact of Dialogic and Shared Book Reading with an Adult Male on Boys' Literacy Skills. *Journal of Early Childhood Literacy, 13*(4), 555-572.	5 (iii)
Pollard-Durodola, S. D., Gonzalez, J. E., Simmons, D. C., Kwok, O., Taylor, A. B., Davis, M. J., . . . Simmons, L. (2011). The Effects of an Intensive Shared Book-Reading Intervention for Preschool Children at Risk for Vocabulary Delay.	6 (i)

Exceptional Children, 77(2), 161-183.	
Purpura, D. J., Napoli, A. R., Wehrspann, E. A., & Gold, Z. S. (2017). Causal Connections between Mathematical Language and Mathematical Knowledge: A Dialogic Reading Intervention. *Journal of Research on Educational Effectiveness, 10*(1), 116-137.	6 (ii)
Requa, M. K., Chen, Y.-J. I., Irey, R., & Cunningham, A. E. (2021). Teaching parents of at-risk preschoolers to employ elaborated and non-elaborated vocabulary instruction during shared storybook reading. *Journal of Research in Childhood Education.*	6 (i)
Senechal, M., Ouellette, G., Pagan, S., & Lever, R. (2012). The Role of Invented Spelling on Learning to Read in Low-Phoneme Awareness Kindergartners: A Randomized-Control-Trial Study. *Reading and Writing: An Interdisciplinary Journal, 25*(4), 917-934.	6 (ii), 7
Sim, S. S. H., Berthelsen, D., Walker, S., Nicholson, J. M., & Fielding-Barnsley, R. (2014). A shared reading intervention with parents to enhance young children's early literacy skills. *Early Child Development & Care, 184*(11), 1531-1549. doi:10.1080/03004430.2013.862532	5 (iii), 7
Thomas, N., Colin, C., & Leybaert, J. (2019). Impact of Interactive Reading Intervention on Narratives Skills on Children with Low Socio-Economic Background. *European Early Childhood Education Research Journal, 27*(6), 837-859.	6 (i)
Thomas, N., Colin, C., & Leybaert, J. (2020). Interactive reading to improve language and emergent literacy skills of preschool children from low socioeconomic and language-minority backgrounds. *Early Childhood Education Journal*. doi:10.1007/s10643-020-01022-y	6 (i)
Towson, J. A., & Gallagher, P. A. (2014). Training Head Start parents in dialogic reading to improve outcomes for children. *International Journal of Child Health and Human Development, 7*(3), 287-296.	5 (iii)
Troseth, G. L., Strouse, G. A., Flores, I., Stuckelman, Z. D., & Johnson, C. R. (2020). An enhanced ebook facilitates parent–child talk during shared reading by families of low socioeconomic status. *Early Childhood Research Quarterly, 50*(Part 1), 45-58. doi:10.1016/j.ecresq.2019.02.009	7
Tsybina, I., & Eriks-Brophy, A. (2010). Bilingual dialogic book-reading intervention for preschoolers with slow expressive vocabulary development. *Journal of Communication Disorders, 43*(6), 538-556.	5 (ii), (iii)
Vaahtoranta, E., Lenhart, J., Sug-gate, S., & Lenhard, W. (2019). Interactive elaborative storytelling: Engaging children as storytellers to foster vocabulary. *Frontiers in Psychology, 10*.	6 (i), 7
Vally, Z. (2012). Dialogic reading and child language growth—Combating developmental risk in South Africa. *South African Journal of Psychology, 42*(4), 617-627.	4
Weisleder, A., Mazzuchelli, D. S. R., Lopez, A. S., Neto, W. D., Cates, C. B., Gonçalves, H. A., . . . Mendelsohn, A. L. (2018). Reading aloud and child development: A cluster-randomized trial in Brazil. *Pediatrics, 141*(1), 1-12.	6 (1)

Zevenbergen, A. A., Worth, S., Dretto, D., & Travers, K. (2018). Parents' experiences in a home-based dialogic reading programme. *Early Child Development and Care, 188*(6), 862-874.	4

Appendix B: Summary of Included Studies (WoE)

Table 11
References of Included Studies

Cohen, L. E., Kramer-Vida, L. & Frye, N. (2012). Using Dialogic Reading as Professional Development to Improve Students' English and Spanish Vocabulary. *NHSA Dialog, 15*(1), 59-80

Ergül, C., Akoglu, G., Sarica, A. D., Karaman, G., Tufan, M., Bahap-Kudret, Z., & Zülfikar, D. (2016). An Adapted Dialogic Reading Program for Turkish Kindergarteners from Low Socio-Economic Backgrounds. *Journal of Education and Training Studies, 4*(7), 169-184.

Holt, Y. & Asagbra, E. (2021). Implementing Dialogic Reading Intervention Through Community-Based Participatory Research: A Tutorial. *Language, Speech and Hearing Services in Schools, 52,* 4-15

Knauer, H. A., Jakiela, P., Ozier, O., Aboud, F., & Fernald, L. C. H. (2020). Enhancing young children's language acquisition through parent-child book-sharing: A randomised trial in Kenya. *Early Childhood Research Quarterly, 50*(Part 1), 179-190.

Lefebvre, P., Trudeau, N., & Sutton, A. (2011). Enhancing Vocabulary, Print Awareness and Phonological Awareness through Shared Storybook Reading with Low-Income Preschoolers. *Journal of Early Childhood Literacy, 11*(4), 453-479.

Lonigan, C. J., Purpura, D. J., Wilson, S. B., Walker, P. M., & Clancy-Menchetti, J. (2013). Evaluating the Components of an Emergent Literacy Intervention for Preschool Children at Risk for Reading Difficulties. *Journal of Experimental Child Psychology, 114*(1), 111-130.

Noble, C., Cameron-Faulkner, T., Jessop, A., Coates, A., Sawyer, H., Taylor-Ims, R. & Rowland, C. F. (2020). The Impact of Interactive Shared Book Reading on Children's Language Skills: A Randomized Controlled Trial. *Journal of Speech, Language and Hearing Research, 63,* 1878-1897

Opel, A., Ameer, S. S., & Aboud, F. E. (2009). The Effect of Preschool Dialogic Reading on Vocabulary among Rural Bangladeshi Children. *International Journal of Educational Research, 48*(1), 12-20.

Reese, E., Leyva, D., Sparks, A., & Grolnick, W. (2010). Maternal Elaborative Reminiscing Increases Low-Income Children's Narrative Skills Relative to Dialogic Reading. *Early Education and Development, 21*(3), 318-342.

Şimşek, Z. C. & Erdoğan, N. I. (2021). Comparing the Effects of Different Book Reading Techniques on Young Children's Lnanguage Development. *Reading and Writing, 34,* 817-839

Table 12
Summary of Included Studies

Author(s)	Country	Participants	Study Design	Intervention	Measures	Primary Outcomes
Ergul, Akoglu, Sarica, Karaman, Tufan, Bahan-Kudret & Deniz (2016)	Turkey	112 pre-schoolers, 6 teachers, 26 parents Mean age = 69.2 months, 45% male All from low-SES backgrounds, as measured by maternal education and family monthly income	Pre-post quasi-experimental	Adapted DR intervention 6 different treatment conditions; whole group, small group, whole group-small group combined, home, whole group-small group-home combined and control 7 weeks (amount of time varied with intervention group placement)	DR measured by an Adapted Dialogic Reading Behaviours Checklist, parental opinions regarding DR measured by a Social Validity Survey. Language outcomes measured by the standardised Turkish Expressive and Receptive Vocabulary Test, Test of Early Language Development (Turkish), a criterion-referenced print awareness test and a criterion-referenced phonological awareness test	All groups, except for 'whole group-small group combined' showed a significantly higher performance on expressive vocabulary post-test measures, when compared to control. Results showed that effects of the intervention are more prevalent for expressive language skills. The home group displayed consistently higher performance among all DR intervention groups and performed significantly better in tests of expressive vocabulary compared to whole-group intervention groups. No follow up.
Knauer, Jakiela, Ozier, Aboud & Fernald (2020)	Kenya (Luo-speaking areas close to the city of Kisumu)	510 children, and their 357 parents Mean age = 54.77 months, 52% male All children low-SES as from a non-developed region in Africa	Cluster randomised control trial	Adapted DR intervention, sensitive to parents' culture and low levels of literacy within cohort Four incrementally intensive intervention conditions: (1) receiving storybooks written in English, Luo and Swahili, (2) receiving storybooks, DR training and SMS reminders, (3) all above and a supplementary DR training, (4) all above and a home visit. A waitlist control group was also used.	To assess the quality of parent-child book-sharing: an adapted Family Care Indicators Questionnaire, an adapted Mother-Child Picture Observation assessment, and a criterion-referenced storybook comprehension measure for children. Children's receptive vocabulary was measured using a translated British Picture Vocabulary Scale. Expressive vocabulary was a criterion-referenced	All intervention conditions which involved DR training increased the frequency of carer-child reading interactions, and the number of DR behaviours observed. Intervention conditions (2) and (3) significantly increased children's expressive vocabulary of target words, with children of illiterate parents showing largest improvements. There were no other significant vocabulary effects found when comparing intervention conditions and control. No follow up

				4/5 weeks, parents were not required to log time spent reading during intervention period	task based on words from the British Picture Vocabulary Scale, and target words from storybooks provided.	
Lefebvre, Trudeau & Sutton (2011)	Canada (French speaking Quebec)	35 pre-schoolers Mean age = 58.8 months, 40% male Children in intervention groups (n = 23) all low-SES (income below Statistics Canada's low-income cut-off). Comparison group (n = 12) high-SES. All participants' native language was French	Pre-post quasi-experimental	A "shared storybook reading" intervention, which explicitly targeted language, print awareness and phonological awareness via DR techniques was delivered by researcher involved with the study Control group received a similar intervention in which phonological awareness was not explicitly targeted, delivered by a researcher involved in the study Comparison group received no intervention 20/30 min sessions x 4 days a week x 10-week period	Criterion-referenced measures: a receptive vocabulary instrument (measuring the knowledge of words that were targeted by the intervention), a print-awareness measure and a phonological awareness measure	The children in experimental group performed significantly better than control in the phonological awareness tasks post-test, and no significant difference in post-test vocabulary or print-awareness scores. No follow up
Lonigan, Purpira, Wilson, Walker & Clancy-Menchetti (2013)	United States	324 pre-schoolers Mean age = 54.3 months, 54% male All enrolled in Head Start centres, all low-SES	Randomised Control Trial	5 intervention conditions: combinations of meaning focused (dialogic vs shared reading) and code focused (phonological awareness, letter knowledge, or both) and a waitlist control group 10-20 minutes a day x 5 days a week x one academic year	Standardised measures of oral language (Peabody Picture Vocabulary Tests, Expressive One-Word Picture Vocabulary Test), Basic Concepts subtests of the Clinical Evaluation of Language Fundamentals Criterion-referenced measures of phonological	Children in DR groups scores significantly higher in all measures of oral language, compared to children in shared reading or control groups. Children in phonological awareness groups scored significantly higher in all measures of phonological awareness, compared to the children who did not receive phonological awareness training and control. Children in print

				All intervention activities provided by researchers as a small-group pull-out method	awareness: rhyming, blending and elision Print knowledge measures: criterion-references letter name knowledge task, letter sound knowledge task	knowledge groups scored significantly higher in print knowledge measures compared to children in other groups and control. There were no larger effects found for combining interventions. No follow up.
Noble et al. (2020)	United Kingdom	186 children-caregiver dyads Mean age = 32 months, 55% male 41% of children low-SES, based on caregiver education level	Randomised Control Trial	Three experimental conditions: DR group, Pause Reading group, active control. All parents provided relevant video training, informational resources and a set of 20 books. During 6-week intervention, caregivers encouraged to read two books to their child 5 times a week over a 6-week intervention period (i.e., 60 sessions in 6 weeks). Mean rate of reading sessions = 50.63 (SD = 14.54). Each reading session was audio recorded by caregiver. Each caregiver was also instructed to log reading time in a reading diary.	Family questionnaire regarding demographic information and child's language exposure. Standardised measures of children's language: PLS-5 (Preschool Language Scale), Sentence Structure subtest of CELF Preschool-2. Non-standardised measure: MLU	Analysis of audio recordings showed that DR behaviours increased in DR group, and not in control, regardless of SES status. Experimental conditions did not have a significant impact on children's expressive and receptive language skills, their comprehension of syntax or their MLU. There were no SES-related effects, children from high- and low-SES made equal gains in language skills measures, and high and low-SES caregivers implemented the interventions equally effectively.
Opel, Ameer & Aboud (2009)	Bangladesh	80 pre-schoolers Mean age = 65.4 months, 35% male All children low-SES as from rural	Pre-post small scale randomised control trial	Trained teacher implemented whole-class DR intervention; teachers repeatedly read age-appropriate storybooks (written in Bangla) dialogically to whole class	Criterion-referenced expressive vocabulary tests, describing the meaning of 170 challenging Bangla words, which had been targeted within the	The mean vocabulary score of the intervention group increased from 26% to 54% compared to no change in control group No follow up

		Bangladesh, a non-developed country		30/40 mins daily x 6 days a week x 4-week period	intervention	
Reese, Lyva, Sparks & Grolnick (2010)	United States	33 mother-child dyads Mean age = 50 months, 39% male All children low-SES, as measured by maternal education and enrolment in a Head Start centre	Pre-post small scale randomised control trial	Two intervention conditions: DR and elaborative reminiscing. Mothers in DR condition received in-home DR technique training, a phone call once a month and five new books a month (x5 months). Mothers in elaborative reminiscing condition received in-home training, a phone call once a month and filled in a logbook of conversations held with child. There was a waitlist control group. 5 months, mothers in DR condition were not required to log time spent reading during intervention period, mothers in elaborative reminiscing condition required to log conversations daily	Standardised measures of vocabulary: Peabody Picture Vocabulary Test and the Expressive Vocabulary Test. Two tasks to measure narrative skills: a criterion-referenced story comprehension task, and an adapted version of a standardised story retell task. – these tasks produced measures of 'story recall', 'narrative quality' and 'story comprehension'. Print skills measured by an adapted version of the standardised Concepts About Print Test (using items 1-9 and 11 only). Interviews with all mothers concerning home literacy practices completed pre- and post-test for all conditions.	No difference was found between intervention conditions for expressive vocabulary, print skills or story recall. Children in the elaborative reminiscing condition had significantly higher narrative quality and story comprehension scores than children in DR condition or control. Effect sizes ranged from small to moderate. No follow up
Simsek & Erdogan (2020)	Turkey	56 pre-school children Mean age = 53.47 months, no gender breakdown provided All children low-SES due to	Convergent parallel mixed methods research (quantitative stage = pre-post-test group design)	Three experimental groups: digital storybook reading, DR and active control (traditional storybook reading). For digital reading and active control, children's teachers read to a whole-	Standardised measure of language: Turkish (normed) version of TELD-3 (Test of Early Language Development). Non-standardised: MLU All reading activities were video-recorded and	Children's expressive and receptive language scores significantly increased in the DR condition, in comparison to two other experimental conditions.

	attending public schools served to families in low-SES regions	class group appropriate to experimental condition (5 – 17 mins x 3 times a week x 8 weeks) For DR group, a small group pull-out method was used, and the researcher conducted the intervention (14 – 24 mins x 3 times a week x 8 weeks)	observed for time spent reading, pre- and post-reading activities, and children's participation.

Appendix C: WoE A, B & C Rating Criteria

Calculating the Weight of Evidence (WoE) A

Table 13
Amendments made to WoE A coding protocol

Sections Removed	Rationale
I B7 – B8	Only quantitative studies are included in the review
II C3 – C4	Current review is only interested in examining primary outcomes of studies, i.e. the effect of the intervention on the participants oral language skills
II E	This review only addresses one component, not several
II G	No replication of studies completed
II H	There is a preference within this coding system given to school-based interventions, however dialogic reading interventions have been shown to be effective when carried out both at home and at school (Whitehurst et al., 1994); thus, this current review shall not place a bias upon school-based interventions.
II I	No follow-up studies were completed in any of the studies reviewed

Table 14
Summary of Weight of Evidence A

Study	(A) Measure-ment	(B) Comparison Group	(C) Statistical Analyses	(D) Educational Significance	(F) Fidelity	Overall WoE A
Ergul et al. (2016)	2	2	1	1	2	1.6 Medium
Knauer et al. (2020)	1	2	2	2	1	1.6 Medium
Lefebvre, Trudeau & Sutton (2011)	0	2	1	2	3	1.6 Medium
Lonigan et al. (2012)	2	3	3	2	3	2.6 High
Noble et al. (2020)	3	3	1	1	3	2.2 High
Opel, Ameer & Aboud (2009)	1	2	1	1	2	1.4 Weak
Reese et al. (2010)	2	2	2	3	1	2 Medium
Simsek & Erdogan (2020)	2	1	1	1.5	2	1.5 Medium

Note: weak =< 1.5, medium = 1.5 – 2, high >= 2

Calculating the Weight of Evidence (WoE) B

The present WoE B is based on the work of Guyatt and colleagues (1995, 2008), which suggests that certain types of studies are more appropriate for addressing particular research questions than others. It investigates evidence hierarchies in which threat to internal validity is considered. When there is a low threat to internal validity presented in the studies, a high weight is given. In contrast, when there is a higher threat to internal validity presented in the study, a low weight is given. Table 1 displays the criteria that must be met for each weighting.

Table 15
WoE Weighting Criteria

Weighting	Criteria
Strong (3)	- Must have an "active" comparison group with randomisation in group allocation - Outcomes collected pre- and post-intervention for all groups - Multiple methods of outcome data are obtained for each outcome - The study has a systematic procedure in place to monitor intervention fidelity, if not being carried out by researchers (e.g., parents)
Promising (2)	- Must have a control group with randomisation in group allocation - Outcomes collected pre- and post-intervention for all groups - Multiple methods of outcome data are obtained for each outcome - The study has a procedure in place to monitor intervention fidelity, if not being carried out by the researchers (e.g., parents)
Weak (1)	- No evidence of a comparison group - Outcomes collected pre- and post- intervention for intervention group - One method of outcome data is obtained for each outcome - The study has does not have a procedure in place to monitor intervention fidelity, if not being carried out by the researchers (e.g., parents)

Rationale for WoE B criteria:

- In order to assess the efficacy of the intervention it is important that the treatment group is being compared to an 'active' control group, such that researcher effects or other effects of conducting research are accounted for within the research design. Studies with a 'no treatment' control group receive lower weightings as they may potentially over-estimate the effect of intervention.

- Random group assignment to conditions ensures groups are equivalent and there is no selection bias present
- To establish if an intervention is effective, pre- and post-intervention scores should be included for both experimental and control groups.
- Having more than one source of outcome data lowers the risk of test effects
- Monitoring of the intervention fidelity, especially when being carried out by teachers or parents at home ensures that person to person effects are lowered, and it is solely the intervention effects that are being measured, increasing the generalisability of results found.

Table 16
Overall Weighting for WoE B

Author	Overall WoE B Rating
Ergul et al. (2016)	2 Promising
Knauer et al. (2020)	1 Weak
Lefebvre, Trudeau & Sutton (2011)	2 Promising
Lonigan et al. (2013)	3 Strong
Noble et al. (2020)	3 Strong
Opel, Ameer & Aboud (2009)	1 Weak
Reese et al. (2010)	2 Promising
Simsek & Erdogan	3 Strong

Calculating the Weight of Evidence (WoE) C

WoE is a review question-specific judgement of evidence focus (Gough, 2007) that gives a score for the relevance of the study to the specific research question as presented within the introduction of this study. A study must meet all criteria to receive the weighting.

Table 17
WoE C Weighting Criteria

Weighting	Criteria
Strong (3)	- DR is a key part of the intervention being measured - DR intervention is implemented with participants from both high- and low-SES backgrounds, and compares effectiveness between two groups - Intervention is described within paper clearly enough to allow for replication, with fidelity being monitored - Pre- and post-intervention norm-referenced measures of oral language are used for primary outcomes
Promising (2)	- DR is a key part of the intervention being measured - DR intervention is implemented with participants from low-SES backgrounds - Intervention is described clearly, with clear description of how the authors created / replicated the intervention, with fidelity being monitored - Pre- and post- intervention criterion-referenced measures of oral language are used for primary outcomes
Weak (1)	- DR is a part of the intervention being measured - DR intervention is implemented with participants from low-SES backgrounds - Intervention is explained, and fidelity is partially monitored - Pre- and post-intervention measures of oral language are used for primary outcomes

Rationale for WoE C criteria:

- The research question refers explicitly to DR, therefore should be a key component of the intervention being measured: it does not need to be the sole intervention as the research question is open to discovering amended DR interventions which can increase the oral language skills of children from low-SES backgrounds.
- The intervention should be compared across two groups: high- and low-SES backgrounds as to measure whether the intervention can increase oral language skills of low-SES children to the same level as high-SES children
- To ensure ease of replication, the intervention should be described in detail, fidelity is monitored to ensure that the intervention is applied the same way with each group and therefore results are due to the intervention, and not experimenter bias, for example.
- Standardised measures of oral language imply that the effect of the intervention is generalised to overall language abilities, which is desirable, as some criterion-references measures of oral language may just measure the vocabulary being taught within the intervention, which increases the risk of a “teach to the test” bias.

Table 18
Overall Weighting for WoE C

Author	Overall WoE C Rating
Ergul et al. (2016)	2 Promising
Knauer et al. (2020)	1 Weak
Lefebvre, Trudeau & Sutton (2011)	2 Promising
Lonigan et al. (2013)	2 Promising
Noble et al. (2020)	3 Strong
Opel, Ameer & Aboud (2009)	1 Weak
Reese et al. (2010)	1 Weak
Simsek & Erdogan (2020)	1 Weak

Appendix D: WoE A Example Coding Protocol

Coding Protocol: Group-Based Design

Domain:
☐ **School- and community-based intervention programs for social and behavioural problems**
☒ **Academic intervention programs**
☐ **Family and parent intervention programs**
☐ **School-wide and classroom-based programs**
☐ **Comprehensive and coordinated school health services**

Name of Coder(s): 19092911 **Date**: 02/12/2019

05 / 07 / 2020

Full Study Reference in APA format:
Ergul, C., Akoglu, G., Sarica, A. D., Karaman, G., Tufan, M., Bahap-Kudret, Z, & Deniz, Z. (2016). An Adapted Dialogic Reading Program for Turkish Kindergarteners from Low Socio-Economic Backgrounds. *Journal of Education and Training Studies, 4*(7), 179-192

Intervention Name (description from study): Adapted Dialogic Reading Program
Study ID Number (Unique Identifier): 005

Type of Publication: (Check one)
☐ **Book/Monograph**
☒ **Journal article**
☐ **Book chapter**
☐ **Other (specify):**

I. General Characteristics
A. General Design Characteristics

A1. Random assignment designs (if random assignment design, select one of the following)
A1.1 ☐ Completely randomized design
A1.2 ☒ Randomized block design (between-subjects variation)
A1.3 ☐ Randomized block design (within-subjects variation)
A1.4 ☐ Randomized hierarchical design

A2. Nonrandomized designs (if non-random assignment design, select one of the following)
A2.1 ☐ Nonrandomized design
A2.2 ☐ Nonrandomized block design (between-participants variation)
A2.3 ☐ Nonrandomized block design (within-participants variation)
A2.4 ☐ Nonrandomized hierarchical design
A2.5 ☐ Optional coding of Quasi-experimental designs

A3. Overall confidence of judgment on how participants were assigned (select one of the following)

A3.1 ☐ Very low (little basis)
A3.2 ☐ Low (guess)
A3.3 ☐ Moderate (weak inference)
A3.4 ☒ High (strong inference)
A3.5 ☐ Very high (explicitly stated)
A3.6 ☐ N/A
A3.7 ☐ Unknown/unable to code

B. Statistical Treatment/Data Analysis (answer B1 through B6)

B1. Appropriate unit of analysis ☒ yes ☐ no
B2. Familywise error rate controlled ☒ yes ☐ no ☐ N/A
B3. Sufficiently large *N* ☐ yes ☒ no
Statistical Test: ANCOVA
Alpha level: 0.05
ES: Medium
N required: 210 total sample

B4. Total size of sample (start of the study): 112
N
B5. Intervention group sample size: 92
N
B6. Control group sample size: 20
N

C. Type of Program (select one)

C1. ☐ Universal prevention program
C2. ☐ Selective prevention program
C3. ☒ Targeted prevention program
C4. ☐ Intervention/Treatment
C5. ☐ Unknown

D. Stage of the Program (select one)

D1. ☒ Model/demonstration programs
D2. ☐ Early-stage programs
D3. ☐ Established/institutionalized programs
D4. ☐ Unknown

E. Concurrent or Historical Intervention Exposure (select one)

E1. ☐ Current exposure
E2. ☐ Prior exposure
E3. ☒ Unknown

II. Key Features for Coding Studies and Rating Level of Evidence/ Support

(3=Strong Evidence 2=Promising Evidence 1=Weak Evidence 0=No Evidence)

A. Measurement (answer A1 through A4)

A1. Use of outcome measures that produce reliable scores for the majority of primary outcomes. The table for Primary/Secondary Outcomes Statistically Significant allows for

listing separate outcomes and will facilitate decision making regarding measurement (select one of the following)

A1.1 ☐ Yes
A1.2 ☒ No
A1.3 ☐ Unknown/unable to code

A2. Multi-method (select one of the following)

A2.1 ☒Yes
A2.2 ☐ No
A2.3 ☐ N/A
A2.4 ☐ Unknown/unable to code

A3. Multi-source (select one of the following)

A3.1 ☒ Yes
A3.2 ☐ No
A3.3 ☐ N/A
A3.4 ☐ Unknown/unable to code

A4. Validity of measures reported (select one of the following)

A5.1 ☒ Yes validated with specific target group
A5.2 ☐ In part, validated for general population only
A5.3 ☐ No
A5.4 ☐ Unknown/unable to code

Rating for Measurement (select 0, 1, 2, or 3)**:** ☐ **3** ☒ **2** ☐ **1** ☐ **0**

B. Comparison Group

B1. Type of Comparison Group (select one of the following)

B1.1 ☒ Typical contact
B1.2 ☐ Typical contact (other) specify:
B1.3 ☐ Attention placebo
B1.4 ☐ Intervention elements placebo
B1.5 ☐ Alternative intervention
B1.6 ☐ PharmacotherapyB1.1
B1.7 ☐ No intervention
B1.8 ☐ Wait list/delayed intervention
B1.9 ☐ Minimal contact
B1.10 ☐ Unable to identify comparison group

Rating for Comparison Group (select 0, 1, 2, or 3)**:** ☐ **3** ☒ **2** ☐ **1** ☐ **0**

B2. Overall confidence rating in judgment of type of comparison group (select one of the following)

B2.1 ☐ Very low (little basis)
B2.2 ☐ Low (guess)
B2.3 ☐ Moderate (weak inference)
B2.4 ☐ High (strong inference)
B2.5 ☒ Very high (explicitly stated)

B2.6 ☐ Unknown/Unable to code

B3. Counterbalancing of Change Agents (answer B3.1 to B3.3)
B3.1 ☐ By change agent
B3.2 ☐ Statistical
B3.3. ☐ Other
B3.4 ☒Not reported/None

B4. Group Equivalence Established (select one of the following)
B4.1 ☒ Random assignment
B4.2 ☐ Post hoc matched set
B4.3 ☐ Statistical matching
B4.4 ☐ Post hoc test for group equivalence

B5. Equivalent Mortality (answer B5.1 through B5.3)
B5.1 ☒ Low Attrition (less than 20% for Post)
B5.2 ☐ Low Attrition (less than 30% for follow-up)
B5.3 ☐ Intent to intervene analysis carried out
Findings:

C. Primary/Secondary Outcomes Are Statistically Significant
C1. Evidence of appropriate statistical analysis for **primary outcomes** (answer C1.1 through C1.3)
C1.1 ☒ Appropriate unit of analysis (rate from previous code) ANCOVA
C1.2 ☒ Familywise/experimenter wise error rate controlled when applicable (rate from previous code)
C1.3 ☐ Sufficiently large *N* (rate from previous code)

C2. Percentage of **primary outcomes** that are significant (select one of the following)
C2.1 ☐ Significant primary outcomes for at least 75% of the total primary outcome measures for each key construct
C2.2 ☒ Significant primary outcomes for between 50% and 74% of the total primary outcome measures for each key construct
C2.3 ☐ Significant primary outcomes for between 25% and 49% of the total primary outcome measures for any key construct

Rating for Primary Outcomes Statistically Significant (select 0, 1, 2, or 3)**:** ☐ **3** ☐ **2** ☒ **1** ☐ **0**
C5. Overall Summary of Questions Investigated
C5.1 Main effect analyses conducted (select one) ☒ yes ☐ no
C5.2 Moderator effect analyses conducted (select one) ☐ yes ☒ no
Specify results: _____
C5.3. Mediator analyses conducted (select one) ☐ yes ☒ no
Specify results: _____
C. Primary/Secondary Outcomes Statistically Significant (only list p<= .05)
(List primary outcomes first in alphabetical order, followed by secondary outcomes in alphabetical order)

Outcome	Primary vs Secondary	Who changed	What changed	Source	Treatment Information	Outcome Measure Used	Reliability	ES	(1-_)
#1 Expressive Vocabulary and Receptive Vocabulary	Primary	Child	Knowledge	Test	Adapted DR intervention	Result from TERVT-Turkish	Test-retest = .97, split-half = .99, internal consistency = .99; correlation with WISC-R verbal score = .45	.04	111
#2 Expressive and Receptive Vocabulary	Primary	Child	Knowledge	Test	Adapted DR intervention	Result of TELD-T	Test-retest = .96, inter-rater = .99, internal consistency = .99, correlation with WISC-R verbal score = .66	.09	111

Type of Data Effect Size is Based on	Confidence rating in ES computation
(Check all that apply) ☐Means and SDs ☒t - value or F – value ☐Chi-square (df = 1) ☐Frequencies or proportions (dichotomous) ☐Frequencies or proportions (polytomous) Other (specify): Unknown	(Select one of the following) ☐Highly estimated (e.g., only have N p value) ☒Moderate estimation (e.g., have complex but complete statistics) ☐Some estimation (e.g., unconventional statistics that require conversion) ☐ Slight estimation (e.g., use significance testing statistics rather than descriptives) ☐ No estimation (e.g., all descriptive data is present)

D. Educational/Clinical Significance

Outcome Variables:	Pre-test	Post-test	Follow Up
D1. Categorical Diagnosis Data	Diagnostic information regarding inclusion into the study presented ☒Yes ☐no ☐unknown	Positive change in diagnostic criteria from pre to post-test: ☒Yes☐ No ☐Unknown	Positive change in diagnostic criteria from post-test to follow up: ☐Yes, No ☒Unknown
D2 Outcomes Assessed via Continuous Variables		Positive change in percentage of participants showing clinical improvement from pre to post-test: ☒Yes ☐No ☐Unknown	Positive change in percentage of participants showing clinical improvement from post-test to follow up: ☐ Yes ☐No ☒Unknown
D3 Subjective Evaluation The importance of behaviour change is evaluated by individuals in direct contact with the participants	Importance of behaviour change is evaluated: ☒Yes ☐No ☐Unknown	Importance of behaviour change from pre to post-test is evaluated positively by individuals in direct contact with the participant: ☐Yes ☒No ☐Unknown	Importance of behaviour change from post-test to follow up is evaluated positively by individuals in direct contact with the participant: ☐Yes ☐No ☒Unknown
D4. Social Comparison Behaviour of participant at pre- post- and follow-up is compared to normative data (e.g., a typical peers)	Participant's behaviour is compared to normative data ☒Yes ☐No☐ Unknown	Participant's behaviour has improved from pre to post-test when compared to normative data: ☒Yes☐ No ☐Unknown	Participant's behaviour has improved from post-test to follow up when compared to normative data: ☐Yes☐ No ☒Unknown

Rating for Educational/Clinical Significance (select 0, 1, 2, or 3)**:** ☐ **3** ☐ **2** ☒ **1** ☐ **0**
Note: the reason the study received a score of 1 is mostly due to a lack of follow-up study, and despite using standardised tests of language (which provide normative data), the results were compared to results of other low-SES children's scores, which is not a "typical peer".

F. Implementation Fidelity

F1. Evidence of Acceptable Adherence (answer F1.1 through F1.3)

- F1.1 ☒ Ongoing supervision/consultation
- F1.2 ☐ Coding intervention sessions/lessons or procedures
- F1.3 ☐ Audio/video tape implementation (select F1.3.1 or F1.3.2):
  - F1.3.1 ☐ Entire intervention
  - F1.3.2 ☐ Part of intervention

F2. Manualization (select all that apply)

F2.1 ☐ Written material involving a detailed account of the exact procedures and the sequence in which they are to be used

F2.2 ☒ Formal training session that includes a detailed account of the exact procedures and the sequence in which they are to be used

F2.3 ☐ Written material involving an overview of broad principles and a description of the intervention phases

F2.4 ☐ Formal or informal training session involving an overview of broad principles and a description of the intervention phases

F3. Adaptation procedures are specified (select one) ☒ yes ☐ no ☐ unknown

Rating for Implementation Fidelity (select 0, 1, 2, or 3)**:** ☐ **3** ☒ **2** ☐ **1** ☐ **0**

III. Other Descriptive or Supplemental Criteria to Consider
A. External Validity Indicators

A1. Sampling procedures described in detail yes ☒no
Specify rationale for selection: schools located in low-SES neighbourhoods, with participants of similar profile, educational environment and resources
Specify rationale for sample size: Opportunistic sample size, due to class sizes in selected schools

A1.1 Inclusion/exclusion criteria specified ☐ yes ☒ no

A1.2 Inclusion/exclusion criteria similar to school practice ☐ yes ☐ no ☒ not mentioned

A1.3 Specified criteria related to concern ☒ yes ☐ no

A2. Participant Characteristics Specified for Treatment and Control Group
(note (1): to enhance readability, this table has a different layout from the table originally in the code-book; all information is retained)

Participant Characteristics	**Specified**
Participants from Treatment group	Child/Student
Grade/age	All participants enrolled in pre-school, mean age = 69.2 months
Gender	48 girls, 44 boys (52% female)
Ethnicity or multi-ethnic	n/a
Race(s)	Turkish
Acculturation	n/a
Primary-language	Turkish
SES	All low-SES, as decided by family's income and maternal education (years spent)
Family Structure	Not specified
Locale	All studies located in Ankara, Turkey, in low-SES neighbourhoods (not specified), within pre-school and homes of children attending the preschool
Disability	None present in current study
Functional Descriptors	No functional descriptors which have not already

	been listed in this table.

Participant Characteristics	**Specified**
Participants from Control group	Child/Student
Grade/age	All participants enrolled in pre-school, mean age = 69.9 months
Gender	14 girls, 6 boys (70% female)
Ethnicity or multi-ethnic	n/a
Race(s)	Turkish
Acculturation	n/a
Primary-language	Turkish
SES	All low-SES, as decided by family's income and maternal education (years spent)
Family Structure	Not specified
Locale	All studies located in Ankara, Turkey, in low-SES neighbourhoods (not specified), within pre-school and homes of children attending the preschool
Disability	None present in current study
Functional Descriptors	No functional descriptors which have not already been listed in this table.

A3. Details are provided regarding variables that:

A3.1 Have differential relevance for intended outcomes ☒ yes ☐ no

Specify: Demographic data relating to SES is provided, as the DR intervention is being implemented to participants from low-SES backgrounds

A3.2 Have relevance to inclusion criteria ☐ yes ☒no

Specify: Inclusion criteria not stated

A4. Receptivity/acceptance by target participant population (treatment group)

Participants from treatment group	**Results (What person reported to have gained from participation in program)**	**General Rating**
Child / Student	Participants in all groups, except whole group-small group combined showed a significantly higher performance on expressive vocabulary and vocabulary post-test measures, when compared to control. Results showed that effects of the intervention are more prevalent for expressive language skills. The home group displayed consistently higher performance among all DR intervention groups and performed significantly better in	☐ Participants reported benefiting overall from intervention ☐ Participants reported not benefitting overall from intervention

	tests of expressive vocabulary compared to whole-group intervention groups	

A5. Generalization of Effects:

A5.1 Generalization over time

A5.1.1 Evidence is provided regarding the sustainability of outcomes after intervention is terminated ☐ yes ☒ no

Specify: _____

A5.1.2 Procedures for maintaining outcomes are specified ☐ yes ☒no

Specify: _____

A5.2 Generalization across settings

A5.2.1 Evidence is provided regarding the extent to which outcomes are manifested in contexts that are different from the intervention context yes ☒ no

Specify: _____

A5.2.2 Documentation of efforts to ensure application of intervention to other settings ☒ yes ☐ no

Specify: the premise of the study is to examine effect of implementation of intervention within home and / or school contexts

A5.2.3 Impact on implementers or context is sustained ☒ yes ☐ no

Specify: teacher and/or parent are trained to implement the intervention

A5.3 Generalization across persons

Evidence is provided regarding the degree to which outcomes are manifested with participants who are different than the original group of participants for with the intervention was evaluated

☐ yes ☒ no

Specify: _____

B. Length of Intervention (select B1 or B2)

B1. ☐ Unknown/insufficient information provided

B2. ☒ Information provided (if information is provided, specify one of the following:)

B2.1 weeks 7
N

B2.2 months _____
N

B2.3 years _____
N

B2.4 other _____
N

C. Intensity/dosage of Intervention (select C1 or C2)

C1. ☐ Unknown/insufficient information provided

C2. ☒ Information provided (if information is provided, specify both of the following:)

C2.1 length of intervention session 10-15 minutes
N

C2.2 frequency of intervention session: dependent on intervention group. Whole-class group and home group received intervention 3 times a week. Whole-class / small-class group received intervention 5 times a week. Whole-class / small-class / home group received intervention 8 times a week

E. Program Implementer (select all that apply)
E1. ☐ Research Staff
E2. ☐ School Specialty Staff
E3. ☒ Teachers
E4. ☐ Educational Assistants
E5. ☒ Parents
E6. ☐ College Students
E7. ☐ Peers
E8. ☐ Other
E9. ☐ Unknown/insufficient information provided

F. Characteristics of the Intervener
F1. ☒ Highly similar to target participants on key variables (e.g., race, gender, SES)
F2. ☐ Somewhat similar to target participants on key variables
F3. ☐ Different from target participants on key variables

G. Intervention Style or Orientation (select all that apply)
G1. ☐ Behavioural
G2. ☒ Cognitive-behavioural
G3. ☐ Experiential
G4. ☐ Humanistic/interpersonal
G5. ☐ Psychodynamic/insight oriented
G6. ☐ other (specify): _____
G7. ☐ Unknown/insufficient information provided

H. Cost Analysis Data (select G1 or G2)
H1. ☒ Unknown/insufficient information provided
H2. ☐ Information provided (if information is provided, answer H2.1)
H2.1 Estimated Cost of Implementation: _____

I. Training and Support Resources (select all that apply)
I1. ☐ Simple orientation given to change agents
I2. ☒Training workshops conducted
# of Workshops provided 1
Average length of training 4 hours
Who conducted training (select all that apply)
I2.1 ☐ Project Director
I2.2 ☒ Graduate/project assistants
I2.3 ☐ Other (please specify):
I2.3 ☐ Unknown

I3. ☐ Ongoing technical support

I4. ☒ Program materials obtained (specific storybooks provided to teachers and parents)
I5. ☐ Special Facilities
I6. ☐ Other (specify):

J. Feasibility

J1. Level of difficulty in training intervention agents (select one of the following)

J1.1 ☐ High
J1.2 ☐ Moderate
J1.3 ☐ Low
J1.4 ☒ Unknown

J2. Cost to train intervention agents (specify if known): _____

J3. Rating of cost to train intervention agents (select one of the following)

J3.1 ☐ High
J3.2 ☐ Moderate
J3.3 ☐ Low
J3.4 ☒Unknown

Indicator	**Overall evidence rating NNR = no numerical rating Or 0-3**	**Description of Evidence Strong Promising Weak No/limited Evidence OR Descriptive ratings**
General Characteristics		
General Design Characteristics	NNR	Use of a randomised block design. Very high confidence in understanding of how participants were assigned
Statistical Treatment	NNR	Sample size not sufficient to obtain a medium effect size at an alpha level of 0.05
Type of Program	NNR	A targeted prevention program was used
Stage of Program	NNR	Model/demonstration
Concurrent / Historical Intervention Exposure	NNR	Unknown / unspecific
Key Features		
Measurement	2	Promising
Comparison Group	2	Promising
Statistical Analyses	1	Weak
Educational Significance	1	Weak
Fidelity	2	Promising

Appendix E: Parent Information Form

Information Letter for Parents / Guardians

'The effectiveness of a dialogic reading intervention on the oral language skills of students attending DEIS schools in Ireland.'

Dear Parents/Guardians,

My name is Sarah Jane O' Shea, and I am completing a Professional Doctorate in Educational and Child Psychology in Mary Immaculate College, Limerick. For my research, I am examining a programme called **Dialogic Reading**. Dialogic Reading is when a parent/guardian reads with their child and asks them several questions about the story and pictures. It helps parents have conversations about books with their children. Research shows that this way of reading improves children's language skills, in particular their vocabulary.

What is the research about?

The use of Dialogic Reading has not been explored in Ireland. This research aims to find out if Dialogic Reading would be a good programme to carry out in Irish DEIS schools. I will provide short Dialogic Reading training sessions online. I will then ask you to read with your child at home. To see if the programme is effective, I will assess your child's language skills before and after the programme.

What will me and my child have to do?

The Dialogic Reading programme will be mostly home-based. Before beginning the programme, you will be asked to fill a short questionnaire. This includes questions about your child, your family, and your reading habits. You will then be asked to attend six 30-minute training sessions online. These training sessions will teach you the Dialogic Reading technique. Sessions will involve presentations, videos and interactive role-plays. You will then be asked to read at home with your children. Your child will take home one book a week to do this. I will provide you with a 'logbook', where you will tick what days you read with your child, and for how long. During each session I will ask all participants if you are having any challenges, and we will problem solve together.

I will assess each child individually before and after the programme, and again three months after the programme has finished. The language assessments will be one-on-one, and last for 20 minutes. The assessments will involve your child being asked questions and answering questions. For one part of the assessment, I will record your child telling a short story.

Who will be running the programme?
Trainee Educational Psychologist Sarah Jane O' Shea will run the programme. Sarah has a lot of experience in reading support. She has previously worked in DEIS schools in Cork city supporting children's reading. She is Garda Vetted by Mary Immaculate College and has completed child protection training.

What are the benefits?
Dialogic Reading is supported by research and is used all over the world. Proven benefits include children's improved vocabulary and improved oral language skills. Previous studies have found that parents generally enjoy the programme and its structure and enjoy spending more time with their children.

What are the risks?
If there are any concerns about your child's language skills, you and your child's teacher will be contacted immediately. If your child does not want to take part in any assessment, they will not have to. There will be no consequences.
To moderate risk, a child safeguarding risk assessment has been written and approved for this research.

What if I do not want to take part?
Taking part in this programme is entirely voluntary. You can withdraw from the programme at any time, and all information you have given will be deleted. There are no consequences for not taking part, or for withdrawing.

What happens the information collected?
All information collected will be anonymised and stored on a password-protected USB. All paper information will be stored in a locked filing cabinet. Names of parents/guardians, students or schools will not appear on any collected information. All voice-recordings will be stored on a password-protected USB and deleted after analysis. In line with 'Mary Immaculate retention policy', anonymised data may be retained indefinitely as required by the researcher. Unfortunately, individual feedback from assessments will not be available. Anonymous information will be used for my thesis. The findings from my thesis may be communicated to a wider audience in the form of a journal article.

Who else is taking part?
All the parents/guardians in your child's class have been invited to participate.

Thank you for taking the time to read this. Please contact me if you have any questions. You can also contact my supervisor. You can find our contact information below.

_____
Sarah Jane O' Shea,
Trainee Educational Psychologist

Principal Investigator
Sarah Jane O' Shea
Trainee Educational Psychologist (TEP)
Mary Immaculate College
Email: 19092911@micstudent.mic.ul.ie
Phone: 0863219637

Research Supervisor
Dr. Laura Ambrose
Lecturer
Department of Educational Psychology,
Inclusive and Special Education
Mary Immaculate College
Email: laura.ambrose@mic.ul.ie
Phone: 061 774 745

This research study has received Ethics approval from the Mary Immaculate College Research Ethics Committee (MIREC: A20-060).
If you have any concerns about this study and wish to contact an independent authority, you may contact: Mary Collins, MIREC Administrator, Mary Immaculate College, Limerick
Telephone: 061-204980
E-mail: mirec@mic.ul.ie

Appendix F: Family Questionnaire

** Please note the family questionnaire was distributed online*

Child's Date of Birth:	**Class:**
Your Phone Number:	**Code (for researcher only):**

If you do not want to answer any question, leave the space blank.

1. Does your child have any diagnosed special educational needs or language difficulty?

   YES NO

2. If you answered 'yes', what diagnosis did your child receive?

3. Does your child have any hearing impairments?

4. Does your child have any vision impairments?

5. Does your child have any physical impairment?

6. Does your child have any specific language impairment?

7. Please indicate the occupation and highest level of education for each parent:

Mother	**Father**
1. ___ Primary School 2. ___ Post-Primary School 3. ___ Some college education 4. ___ College degree or diploma 5. ___ Graduate or professional degree **Occupation:**	1. ___ Primary School 2. ___ Post-Primary School 3. ___ Some college education 4. ___ College degree or diploma 5. ___ Graduate or professional degree **Occupation:**

8. Do you have children's story books in your home?

YES NO

9. If you answered '**yes**' to the above question, please indicate the amount of children's storybooks in your home:

   1. ___ 1 – 5
   2. ___ 6 – 10
   3. ___ 10 – 15
   4. ___ 15 – 20
   5. ___ 20+

10. Have you read to your child in the last 7 days?

    i. YES NO

11. If you answered '**yes**' to the above, please indicate how often you read to your child:

    1. ___ once a week
    2. ___ twice a week
    3. ___ three times a week
    4. ___ three to six times a week
    5. ___ daily

Appendix G: Intervention Logbook

LOGBOOK

Date	Book Read	Time Spent Reading	Any Challenges Encountered?

Appendix H: Information Letter for Principal and School Staff

'The effectiveness of a dialogic reading intervention on the oral language skills of students attending DEIS schools in Ireland.'

Dear Principal and staff members,

My name is Sarah Jane O' Shea, and I am currently completing a Professional Doctorate in Educational and Child Psychology in Mary Immaculate College, Limerick. I have experience working with children and adolescents, and within the area of delivering therapeutic interventions. As part of my doctoral thesis, I am conducting research into a programme called Dialogic Reading, with parents/guardians. Dialogic Reading occurs when an adult reader asks a child a question about the story, or pictures in a book. There are two sets of prompts to help parents remember different types of questions to ask. This style of reading has been shown to improve children's oral language skills, in particular their vocabulary. There is also some evidence that experience with Dialogic Reading is related to future literacy skills. It is connected to many learning outcomes of the Oral Language and Reading strands of the new Primary Language Curriculum (2019) for Junior and Senior Infant students.

What is the research about?
The purpose of the research is to see how effective a Dialogic Reading programme would be within an Irish context, and to see the effectiveness of such a programme when working with parents/guardians and children form disadvantaged communities, as research suggests that parents/guardians form these areas may require extra support implementing the programme. It aims to establish if implementing a Dialogic Reading programme within DEIS schools would result in improved language outcomes for participating children.

What will parents/guardians and students have to do?
The proposed Dialogic Reading programme will be largely home-based, with parent training sessions occurring within your school. Before beginning the programme, parents/guardians will be asked to fill a short family questionnaire relating the family demographics and current reading habits. Parents/guardians will be asked to attend six 30-minute training sessions online, where they will learn the Dialogic Reading technique. Sessions will involve researcher presentations, video tutorials and interactive role-plays. Parents/guardians will then be asked to read at home with their children, and log time spent reading with their child. For this, children will be asked to take home a book from the school library once a week, or parents will be sent a free eBook. During sessions parents/guardians will be encouraged to bring forward any challenges in implementing the programme in order to troubleshoot any issues.

To examine whether the programme increases participating children's language skills, individual assessment of each child will occur immediately before and after the programme runs, and again three months after the programme has finished. Assessment of children's language skills will be completed individually by the researcher and will involve the use of two standardised language measurements, and a short voice recording. Individual assessments will take approximately 20 minutes to complete and will take place in school.

Who will be running the programme with parents/guardians in my school?
The principal investigator, Sarah Jane O' Shea will run the programme. Sarah is a trainee educational psychologist, and formally an early years' educator. She has much experience in literacy, having completed two theses in the area and previously worked as a literacy support mentor in Ireland. She is Garda Vetted by Mary Immaculate College and has completed child protection training.

What are the benefits?
Dialogic Reading is a widely researched, widely implemented programme worldwide. Demonstrated benefits include improved vocabulary and general oral language skills. Previous studies completed with parents have found that parents generally enjoy the programme, its structure, and spending increased time with their children.

What are the risks?
Some parents/guardian may not want to share information in the short family questionnaire. They will be informed to skip any questions they do not want to answer. When running the individual assessments with children, it may occur that a participating child's language is within the 10th percentile or lower. Should this occur, it will be highlighted to parents/guardian, and an opportunity to sit with the researcher and class teacher to explain the results within the context of the child's overall ability will be offered. This is because the results of a single language assessment cannot indicate towards a language delay without information of the child's overall development. To moderate risk, a child safeguarding statement has been written and approved for this research.

What if participants not want to take part?
Participation is entirely voluntary, and individuals can choose not to take part or to stop participating any time. Informed consent will be sought from parents/guardians, and informed assent will be sought from children. Participants who chose to withdraw will be immediately removed from the study along with any data that they may have provided

What happens the information collected?
All information collected will be anonymised and stored on a password-protected USB. Paper records shall be stored in a locked filing cabinet. Names of parents/guardians, students or schools will not appear on any collected information, as all participants will be assigned a random number code. Collected audio information will also be stored on a password-protected USB, and will be deleted after analysis. In line with Mary Immaculate retention policy, anonymised data may be retained indefinitely as required by the researcher. Unfortunately, individual feedback will not be available, but all data collected will be anonymous and will be used to examine results in the overall research. All data that is anonymised and analysed will be used for my thesis. The findings from my thesis may be disseminated to a wider audience in the form of a journal article, or conference presentation

Thank you for taking the time to read this. Please do not hesitate to contact me or my supervisor if you have any further questions. You can find or contact information below.

Kind regards,

_____
Sarah Jane O' Shea
Trainee Educational Psychologist

Principal Investigator
Sarah Jane O' Shea
Trainee Educational Psychologist (TEP)
Mary Immaculate College
Email: 19092911@micstudent.mic.ul.ie
Phone: 0863219637

Research Supervisor
Dr. Laura Ambrose
Lecturer
Department of Educational Psychology,
Inclusive and Special Education
Mary Immaculate College
Email: laura.ambrose@mic.ul.ie
Phone: 061 774 745

This research study has received Ethics approval from the Mary Immaculate College Research Ethics Committee (MIREC: A20-060).
If you have any concerns about this study and wish to contact an independent authority, you may contact: Mary Collins, MIREC Administrator, Mary Immaculate College, Limerick
Telephone: 061-204980
E-mail: mirec@mic.ul.ie

Appendix I: Consent Letter for Parents

Consent Form

Dear Parents,

As outlined in the information sheet, this research aims to carry a Dialogic Reading programme with you and your child. The effectiveness of the programme will be assessed by your child's language skills. All the details of what you will be asked to do is written on the information sheet. Please read the information sheet carefully before deciding if you want to take part in the study.

Please read the following sentences. If you agree with the statement, tick the box beside it. If you are consenting to take part in the Dialogic Reading programme, please sign the bottom of the sheet, and return this form to your child's school. Thank you.

1. I have read and understood the information sheet ☐

2. I understand what the research is about, and what the results will be used for ☐

3. I am aware that I am being asked to fill a short questionnaire, attend 6 short training sessions, and note when I read with my child ☐

4. I am aware that my child's language skills will be assessed three times. I am aware that this involves voice-recording my child speak. ☐

5. I am aware of all the risks and benefits of the study ☐

6. I know that participation is voluntary, and I can withdraw any time, without giving any reason ☐

7. I know that all results will be anonymised and made confidential. I can access the results up to three years following the study ☐

8. I have discussed this information with my child and s/he is happy to participate ☐

I consent to me and my child taking part in the programme

Name (PRINT): _____

Name (signature): _____

Date: _____

Appendix J: Intervention Timeline

Table 19
Intervention Timeline

Phase	Date	Action
Pre-Intervention	31/08/21	In-person meeting with school principal, vice-principal and HSCL. Decisions made: • HSCL will recruit participants (parents) • HSCL will be the primary point of contact for parents during the intervention, to align with GDPR requirements of the school (i.e. principal researcher is not emailing / texting parents information, only HSCL. Principal researcher has permission to provide contact details to parents who can then contact principal researcher independently). • Vice-principal will create book-packs for parents, following the recommendations outlined by primary researcher • For online sessions, Zoom is recommended as parents used this platform during COVID home-schooling period • All parents and all children are to be included in the recruitment process, if parent have language difficulties the primary researcher will translate documents as necessary. • Pre-testing will begin 29/09/21 • Discussed family questionnaire – staff requested that question regarding parents' income be removed. Agreed that the form will be sent using google forms, and HSCL will provide support to parents if they indicate difficulty completing form.
	10/09/21	Phone call with HSCL; 11 parents have been recruited so far. Two parent information and consent forms need to be translated: one into Portuguese, and two into Urdu.
	17/09/21	Translated documents emailed to HSCL
	24/09/21	Phone call with HSCL; 22 parent-child dyads have been recruited. Consent forms to be provided to principal researcher on 29/09/22. HSCL asked to consult with parents regarding best time to conduct online sessions.
	29/09/21	Meeting with vice-principal and HSCL. • Parents have advised that morning time, after dropping children to school is best time. Principal researcher is only available mornings on Fridays. Agreed that online sessions will take place Friday mornings at 09:30AM. • Agreed that Google Form family questionnaire be sent today to all parents by HSCL, via email.
	29/09/21	Parents sent Google Form Family Questionnaire link, and asked to fill in by HSCL, via email. In same email, parents are asked to call HSCL should they experience any difficulty filling in form.
	29/09/21	Pre-testing children's language; day 1
	30/09/21	Pre-testing children's language; day 2
	01/10/21	Pre-testing children's language; day 3
	01/10/21	HSCL called two parents and completed Google Form Family

		Questionnaire with them over phone call.
	04/10/21	Pre-testing children's language; day 4
Intervention – Week 1	06/10/21	Email liaison with HSCL; parents have been pair-matched randomised into two groups. Parents in intervention group sent Zoom invite by HSCL today via email.
	07/10/21	HSCL contacted all intervention group parents via telephone call to ensure that they received Zoom link and able to sign in.
	06/10/21 – 08/10/21	Principal provided all intervention group parents with book-packs, with 6 books in a folder. For parents of twins, 12 books were sent home (i.e. two book-packs) Book-packs also contained paper logbooks to be filled in each week.
	08/10/21	09:30AM: First online session. 5 parents attended, as well as HSCL. Two parents sent apologies.
	08/10/21	Pre-recorded video "Session One" private YouTube link sent to parents by HSCL, via email. 11 views, 0 comments, 0 likes.
Intervention – Week 2	11/10/21	Nudge text sent to intervention group parents by HSCL *"What books have you read this week with your child?"*
	12/10/21	Zoom link sent to parents for session two by HSCL via email
	15/10/21	09:30AM: second online session. 4 parents attended.
	15/10/21	Phone call with HSCL, no logbooks returned. Brainstorm alternatives: can an online link be sent? HSCL advised that as two parents had trouble filling in Google Form, may not be best advised for current group. HSCL to consult with parents.
	17/10/21	Pre-recorded video "Session Two" private YouTube link sent to parents by HSCL, via email. 5 views, 0 comments, 1 like
Intervention – Week 3	18/10/21	Zoom link sent to parents for session three by HSCL, via email
	18/10/21	Nudge text sent to intervention group parents by HSCL *"Have you found time this week to read with your child?"*
	19/10/21	Email liaison with two parents by principal researcher – parents cannot attend live sessions due to work commitments but are watching pre-recorded videos. Both parents are reading every night as part of routine.
	19/10/21	Individual phone calls made by HSCL to intervention parent group: queried best options for logbooks. Would they complete online survey or answer texts? Parent consensus: they do not have time to complete and remember to return. Online option sounds complicated and difficult to remember.
	22/10/21	09:30AM: Third online parent session. 3 parents attended.
	22/10/21	Principal researcher email liaison with a parent seeking a link to pre-recorded video for session two
	22/10/21	Pre-recorded video "Session Three" on private YouTube link sent to parents by HSCL, via email. 6 views, 0 comments, 0 likes.
Intervention – Week 4	25/10/21 – 29/10/21	Mid-term – No school and no parent session.
Intervention – Week 5	02/11/21	Telephone contact with HSCL after midterm break.
	02/11/21	Nudge text sent to parents *"Hope you enjoyed reading over the midterm break, see you at our Dialogic Reading session on Friday!"*

	04/11/21	Zoom link sent to parents for session four by HSCL, via email
	05/11/21	09:30AM: Fourth online parent session, 0 parents attended
	05/11/21	Email liaison between principal researcher, HSCL and vice-principal. Querying whether time of intervention needs to be changed. It was agreed that morning is best, and to stick to 09:30AM. Agreed that the fourth session will run again next week, so that parents do not miss out on information. Agreed that all HSCL contact will be individualised (i.e. contain the name of parent at beginning of email or text).
Intervention – Week 6	08/11/21	Nudge text sent to intervention group parents by HSCL – *"Hi (name) what has been your favourite book you have read with your child so far?"*
	10/11/21	HSCL individually telephone called every parent in intervention group. HSCL sent email update with each parents' feedback to principal researcher.
	10/11/21	Zoom link sent to parents for session four (again) by HSCL, via email
	12/11/21	09:30AM: Fourth online parent session, 0 parents attended.
Intervention – Week 7	15/11/21	Pre-recorded video "Session Four" private YouTube link sent to parents by HSCL, via email. 7 views, 0 comments, 2 likes.
	15/11/21	Reminder text message sent to all intervention group parents on how to access pre-recorded videos (i.e. press on YouTube link, rather than try to view via Zoom).
	16/11/21	Individualised nudge text sent to all intervention group parents *"Hi (name), hope you are enjoying the Dialogic Reading project and see you at the online session on Friday!"*
	18/11/21	Zoom link sent to parents for session five by HSCL, via email
	19/11/21	09:30AM: Fifth online parent session, 0 parents attended
Intervention – Week 8	22/11/21	Pre-recorded video "Session Five" private YouTube link sent to parents by HSCL, via email. 2 views, 0 comments, 0 likes.
	24/11/21	Zoom link sent to parents for session six by HSCL, via email
	24/11/21	Individualised nudge text sent to parents *"Hello (name), don't forget the final Dialogic Reading session is this Friday! Hope to see you there".*
	24/11/21	One parent rang HSCL to note that she is enjoying the programme
	26/11/21	09:30AM: Sixth parent session, two parents attended
	30/11/21	Pre-recorded video "Session Six" private YouTube link sent to parents (individually with personalised message) by HSCL, via email. 4 views, 0 comments, 1 like. Parents asked to return book packs to the school.
Post-Intervention	30/11/21	Post-testing children's language, day 1
	02/12/21	Post-testing children's language, day 2
	03/12/21	Post-testing children's language, day 3
	09/12/21	Post-testing children's language, day 4 (to meet two students who had been out due to COVID)

Appendix K: Informed Assent Letter for Children

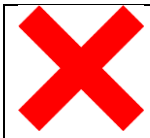
Hello!

My name is Sarah Jane. I am learning how to be a psychologist, which means I am interested in how people learn and think.

I am going to run a reading programme with your parent. They will learn a special way to read with you at home. I am interested in your language skills. This means the way that you talk and use words. That is why you are with me today. Before you decide to take part, I want to read these sentences to you. If you agree, tick the green box.

- I do not have to take part if I do not want to
- This is not a test. I am taking part to help understand if this is a good programme to help kids have fun reading with their parents.
- I know I will be with Sarah Jane three times, where I will be showing her my language skills. She will record me speaking.
- If I feel like stopping at any time, that's okay. I don't have to say why and I won't get in trouble
- I understand all the information I have been told today

Do you want to take part?

Name: _____ Date: _____