EFFECTIVENESS OF EARLY STORYBOOK READING FOR PROMOTING LANGUAGE AND SOCIAL COMMUNICATION SKILLS WITH BABIES AND YOUNG CHILDREN WITH AND WITHOUT A HEARING LOSS

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Abstract

Reading storybooks with children, often referred to as early storybook reading (ESR), is considered among the most important activities parents can undertake to strengthen their children’s language and literacy development. The evidence in favour of ESR for supporting language development with toddlers, preschool, and primary school children is well documented. Given the positive improvements that have been reported from ESR with preschool and primary school children, further examination is warranted to investigate whether these benefits can be observed with even younger children as well as children who are at risk of language and social communication difficulties, such as babies with a hearing loss (HL).

The research presented in this thesis examined the effectiveness of ESR with babies with and without a HL using a range of methodologies over four phases. Consistent with previous research with older children, it was hypothesised that ESR would be effective with babies with and without a HL for strengthening spoken language and social communication skills. In Phase 1, the home reading practices and values regarding ESR of parents with normal hearing (NH) babies and young children was examined using a questionnaire. Families ($n = 113$) from both a less advantaged socioeconomic area and more advantaged socioeconomic area participated. Analysis of the results revealed that parents appeared to value ESR and engaged in regular storybook reading with their children. Differences between the less advantaged area and more advantaged area were observed for frequency of ESR. Parents from both areas also indicated difficulties with selecting age appropriate books for babies and young children and creating a reading environment that promoted early language and social communication learning. The information from Phase 1 was used to develop an ESR intervention that was provided in the second phase of this thesis.
In Phase 2, an ESR intervention was delivered to parents with NH babies (3-to-12-months-of-age) to examine the effectiveness of a high and low intensity ESR intervention to support parent-child interactions to strengthen language and social communication development. A pre-test, post-test comparison group design was conducted. The parents were allocated into two intervention conditions: a high intensity intervention group \((n = 17)\) and a low intensity intervention group \((n = 15)\). The findings suggested that ESR was effective for promoting language and broader social communication development for both groups. However, the high intensity group presented with significantly higher language and broader social communication scores with a large effect size immediately following the intervention, and the scores continued to be significantly higher than the low intensity group when the children were tested at 2-years-of-age.

Following the findings from Phase 2, the high intensity ESR intervention was then trialled in Phase 3, with parents \((n = 4)\) of babies (aged 9- to 15-months-of-age) with a HL, who are vulnerable to spoken language and social communication difficulties. All of the babies had a permanent HL and used hearing aids or cochlear implants. Using a multiple baseline single case experimental design across behaviours, the effectiveness of the ESR intervention for strengthening parents’ book selection skills, parent-child eye-contact/joint attention, and parent-child turn taking was investigated. Examination of the results revealed that ESR was effective for strengthening parent-child eye-contact/joint attention and parent-child turn taking for all four parent-baby dyads with a large effect size. However, ceiling effects for parents’ book selection skills were observed. The results provided preliminary evidence in favour of the ESR intervention with parents of babies with a HL and highlighted the need for future research to investigate the home reading practices and values regarding ESR of parents with babies and young children with a HL.
Further examination of the home reading practices and values regarding ESR of parents with babies and young children with a HL was conducted in Phase 4 using a questionnaire. Following on from Phase 1, the same questionnaire that was provided to parents with NH babies and young children was trialled with parents ($n = 12$) with babies and young children with a HL (aged from less than 3-months-of-age to 3-years-of-age). The findings suggested that parents with babies and young children with a HL valued ESR and read with their children frequently. Parents reported limited attendance at libraries and bookstores and demonstrated difficulties with book selection and using a seating position that created opportunities for eye-contact/joint attention and turn taking.

Together, the four phases presented in this thesis advance our knowledge of ESR with babies and young children with and without a HL, facilitating a more holistic and comprehensive understanding of ESR. Consistent with our hypothesis, the studies presented in this thesis provide evidence for the effectiveness of ESR for strengthening spoken language and social communication skills for babies with and without a HL. The significance of these findings and clinical relevance is highlighted.
Statement of Originality and Ethical Clearance

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

This project was approved by The University of Canterbury Human Research Ethics Committee (2013/56/ERHEC), Griffith University Human Research Ethics Committee (RHS/51/13/HREC), and Children’s Health Services Queensland (HREC/14/QRCH/42).

(Signed)____________________________ (Date) 20/12/2017

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“The more that you read, the more things you will know. The more that you learn, the more places you’ll go.” - Dr Seuss

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Acknowledgement of Papers Included in this Thesis

Included in this thesis are papers in Chapters 3, 4, 5, and 6, which are co-authored with other researchers. My contribution to each co-authored paper is outlined at the front of the relevant chapters. The bibliographic details for these papers including all authors, are:

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Invited Presentations Resulting from this Research


Peer Reviewed Abstracts and Presentations Resulting from this Research


Chapter 1: Introduction

1.1 Background

Early storybook reading (ESR), also referred to as shared reading and joint book reading, involves a parent (or caregiver) sharing a storybook with their baby or young child. Parent-child interactions can be supported through ESR when parents provide babies and young children with books with bright and colourful pictures that are interesting to babies, sit at eye-level to facilitate eye-contact and joint attention, discuss pictures within the book, as well as follow the interest of the baby (Demir, Applebaum, Levine, Petty, & Goldin-Meadow, 2011; Dickinson, Griffith, Michnick Golinkoff, & Hirsh-Pasek, 2012; Farrant & Zubrick, 2013; Fletcher & Reese, 2005). The type of books that parents use, the seating environment (also known as seating position), home reading environment (including frequency of ESR and engagement in literacy activities), as well as the strategies and behaviours implemented by both parents and children while reading (often referred to as parent ESR behaviours and child ESR behaviours), can all influence the quality of parent-child interactions during ESR (Boudreau, 2005; DesJardin et al., 2017; Dickinson et al., 2012; Edwards, 2012; Fletcher & Reese, 2005; Sénéchal, LeFevre, Hudson, & Lawson, 1996).

The importance of parent-child interactions for strengthening language and social communication development is founded on models and theories of language and social communication learning. The social constructivist theory and bioecological model place emphasis on the importance of parent-child interactions and advocate that language and social communication learning is shaped by our interactions with others and the environmental and cultural setting in which these interactions occur (Bronfenbrenner, 1979; Vygotsky, 1987). Both the social constructivist theory and the bioecological model propose that babies learn language and social communication skills
through interactions with their parents (Bronfenbrenner, 1979; Vygotsky, 1987). Moreover, these two theories/models suggest that the interactions provided by parents have the potential to extend children’s learning. The two theories/models proffer that learning can be extended when parents scaffold interactions to build upon the child’s current knowledge with the support of their parent (Bronfenbrenner, 1979; Vygotsky, 1987). As books can be read to babies from birth, ESR offers a useful platform for supporting language and social communication development through parent-child interactions throughout infancy (less than 3-years-of-age) and as the child grows older (Bus, van IJzendoorn, & Pellegrini, 1995; Dickinson et al., 2012; Fletcher & Reese, 2005).

1.2 Prevalence of language difficulties in children with and without a hearing loss (HL)

Strengthening language and social communication development during infancy is essential, as early language skills are the foundation for later language and literacy development (Gillon, 2000; Harrison, McLeod, Berthelsen, & Walker, 2009; High, 2008; Law, Boyle, Harris, Harkness, & Nye, 2000). Studies on the prevalence of language difficulties reported that approximately 19% of 2-year-old normal hearing (NH) children have language difficulties (Law et al., 2000; Reilly et al., 2007; Zubrick, Taylor, Rice, & Slegers, 2007). Babies with a hearing loss (HL) are more vulnerable to language and social communication difficulties than NH babies (Ching et al., 2013; Netten et al., 2015). A HL is also one of the most commonly occurring congenital disorders (1.04/1000 in Australia; Ching, Oong, & van Wanrooy, 2006). Studies comparing NH children with children who have a HL consistently found that many children with a HL, even those who received early auditory intervention, presented with spoken language and social communication skills significantly below the skills of their NH peers of the same age (Ching et al., 2013; DesJardin et al., 2017; Netten et al.,...
Due to the high prevalence of HL in the early childhood population and the susceptibility to language and social communication difficulties, it is necessary to support language and social communication skills from a young age to help prevent these difficulties.

1.3 Early storybook reading (ESR) and later language skills

As ESR provides opportunities for parent-child interactions to occur in a context-specific, structured, and multimodal learning environment, it provides a promising scaffold for language and social communication learning (Bus et al., 1995; Sénéchal et al., 1996). Studies examining the relationship between ESR and later language development have provided evidence that ESR during infancy can support later language development. Karrass and Braungart-Rieker (2005) reported that ESR with 8-month-old babies predicted later language abilities at both 12- and 16-months-of-age. However, Karrass and Braungart-Rieker (2005) also reported that not all parents read with their babies and young children. Furthermore, while ESR predicted language skills at 8-months-of-age, ESR at 4-months-of-age was not related to later language skills. While it is known that some parents read with their babies and others do not, further examination is needed regarding the age that parents commence ESR, why some parents may postpone reading with their child, the type of books parents use, the seating and reading environment provided, as well as the parent and child ESR behaviors. Examination of how parents engage in ESR with young babies may also provide some insights into why ESR with 4-month-old-babies did not predict later language abilities, as found in the Karrass and Braungart-Rieker (2005) study. Moreover, an investigation into the parents’ values regarding ESR and home reading practices with babies and young children would provide a more complete picture of ESR and may direct future research to address the ESR needs identified by parents. As suggested by Farrant and
Zubrick (2013), some parents may require further education and support with ESR to maximise the opportunities it provides for language and social communication learning.

1.4 Dialogic reading

Studies that have examined ESR interventions aimed at strengthening language development through reading with children have reported positive outcomes (Justice, Meier, & Walpole, 2005; Lefebvre, Trudeau, & Sutton, 2011; Whitehurst et al., 1994; Whitehurst, 1988). Dialogic reading is an ESR intervention that has been provided to toddlers, preschool, and primary school children. Using principles in line with the social constructivist theory and the bioecological model, dialogic reading places emphasis on parent-child interactions to support language development (Whitehurst et al., 1994; Whitehurst, 1988). According to the social constructivist theory and bioecological model, language and social communication skills are strengthened when parents provide a scaffold that expands their children’s current knowledge (Bronfenbrenner, 1979; Vygotsky, 1987). Dialogic reading encourages parents to expand their children’s knowledge through conversation, seeking clarification, and asking open-ended questions while reading a storybook (Whitehurst et al., 1994; Whitehurst, 1988).

Toddlers, preschool, and primary school children from less advantaged backgrounds who have been provided with dialogic reading intervention have demonstrated significant improvements in their vocabulary skills following the intervention (Justice & Pullen, 2003; Lefebvre et al., 2011; Whitehurst et al., 1994; Whitehurst et al., 1988).

1.5 Early storybook reading (ESR) intervention with babies and young children

Given the favourable outcomes from dialogic reading with toddlers, preschool, and primary school children, studies have examined the benefits of providing even younger children with an ESR intervention using dialogic reading principles. The purpose for many ESR intervention programs with babies and young children is to
strengthen early language and social communication skills, as these skills predict later language and literacy development (Goldfeld et al., 2012; Moore & Wade, 2003; Shoghi, Willersdorf, Braganza, & McDonald, 2013; Zuckerman & Khandekar, 2010). Positive outcomes including high levels of parental satisfaction with the programs and increased frequency of ESR have been reported (Barratt-Pugh & Rohl, 2015; Moore & Wade, 2003; Zuckerman & Khandekar, 2010). There is also evidence that ESR intervention programs can improve vocabulary development at the toddler age (Moore & Wade, 2003; Zuckerman & Khandekar, 2010). These results provide evidence for the effectiveness of ESR intervention programs for strengthening language development.

However, as language skills have only been assessed in the toddler years or later, following multiple occasions of intervention (Moore & Wade, 2003; Zuckerman & Khandekar, 2010), it is not known if the programs were effective for supporting language and social communication development immediately following the intervention while the children were still babies.

Researchers examining ESR have also questioned whether parents may need more support to successfully implement ESR interventions with babies and young children to facilitate language and social communication development (Goldfeld et al., 2011; Goldfeld et al., 2012; Mendelsohn et al., 2001). Furthermore, it is possible that parents with babies may require more support with ESR as reading with babies is different to reading with older children (Bus & van IJzendoorn, 1997). Further research is needed to investigate the intensity of ESR intervention needed for significant improvements to be observed in very young children’s language and social communication skills.

1.6 Early storybook reading (ESR) with children with a hearing loss (HL)

While strengthening language and social communication development is important for all children, it is even more imperative for children with a HL who are
developmentally vulnerable (Ching et al., 2013; Netten et al., 2015). The benefits of ESR for supporting language development have been examined with children with a HL. Both DesJardin et al. (2014) and DesJardin et al. (2017) have reported that parents of children with a HL have similar perceptions of ESR and provide similar home reading practices to parents with NH children when comparing frequency of ESR, amount of time spent reading, and perceived child enjoyment of ESR. However, both studies found that the parent ESR behaviours (such as expanding on the child’s ideas and seeking eye-contact) provided by parents with NH children and parents with children with a HL were different. This difference is important as DesJardin et al. (2017) also found that the ESR behaviours provided by NH parents at 12-months-of-age that encouraged parent-child interactions such as turn taking and following their child’s lead were related to stronger language skills at 3-years-of-age. Furthermore, these ESR parent behaviours were in line with dialogic reading principles. Given that parents of children with a HL implemented different parent ESR behaviours, the authors concluded that parents of children with a HL may require education and support with ESR, with specific instructions on how to maximise parent-child interactions while reading to strengthen their children’s language and social communication skills. In order to provide parents with support and education on ESR, further information is needed on how parents engage in ESR with babies and young children with a HL, the home reading practices they use and their values regarding ESR. A more comprehensive understanding of how parents engage in ESR with their babies and young children with a HL will direct future research, and enable clinicians and early intervention services to support parents with ESR and address their current needs.

An ESR intervention using dialogic reading has been examined with primary school children with a HL. Fung, Chow, and McBride-Chang (2005) found that dialogic reading intervention was effective for improving spoken vocabulary skills for primary
school children with a HL. This is a favourable outcome and provides preliminary evidence that dialogic reading may support spoken language learning for primary school children with a HL. As the effectiveness of an ESR intervention with babies with a HL has not been examined and there is evidence to suggest that ESR can be effective with older children with a HL, further investigation is needed into whether these positive benefits from an ESR intervention can also be observed with even younger children.

1.7 Summary and research aims

Early language and social communication skills form the foundation for later language and literacy mastery (Harrison et al., 2009; High, 2008; Law et al., 2000). ESR offers a promising scaffold for strengthening early language and social communication development through parent-child interactions (Bus et al., 1995; Dickinson et al., 2012; Fletcher & Reese, 2005). Supporting spoken language and social communication skills is essential for children with a HL (Ching et al., 2013; Netten et al., 2015). Studies examining the relationship between ESR and later language abilities have reported positive outcomes for children with and without a HL (DesJardin et al., 2017; Farrant & Zubrick, 2013; Karass & Braungart-Rieker, 2005). There is also evidence that ESR programs using dialogic reading principles are effective for strengthening language skills for toddlers, preschool, and primary school children (Lefebvre et al., 2011; Moore & Wade, 2003; Whitehurst et al., 1994; Zuckerman & Khandekar, 2010). Moreover, dialogic reading has been found to be effective for supporting spoken language development for primary school children with a HL (Fung et al., 2005). Given these positive outcomes with toddlers, preschool, and primary school children, and the knowledge that stronger early language development supports later language development, further research is now needed to examine the effectiveness of an ESR intervention applying dialogic reading principles with babies with and without a HL.
The research presented in this thesis aims to advance our understanding of the home reading practices and values regarding ESR of parents with babies and young children with and without a HL. The effectiveness of an ESR intervention for strengthening spoken language and social communication development with babies with and without a HL immediately following an ESR intervention will be examined, as well as a preliminary investigation into the intensity of an ESR intervention. In line with previous research examining ESR with older children, it is hypothesised that ESR will be effective for strengthening language and social communication development for babies with and without a HL. Collectively, this research will help to address gaps identified in the literature on ESR with babies and young children with and without a HL and extend knowledge regarding the possible benefits of ESR intervention using dialogic reading principles. This information will have clinical implications for how to support parents with babies and young children with and without a HL with ESR and will direct future research to continuing refining our understanding of how ESR can strengthen language and social communication development.

The overarching aim of this thesis was to examine the effectiveness of ESR for promoting language and social communication skills in babies with and without a HL. The specific aims were to:

1. Examine the home reading practices as well as values and opinions of ESR for parents with NH babies and young children;
2. Examine the effectiveness of a high versus low intensity ESR intervention for parents with NH babies for improving: (a) language skills, (b) broader social communication skills, and (c) home reading practices;
3. Examine the effectiveness of an ESR intervention for babies with a HL for improving: (a) parents’ book selection skills, (b) parent-child eye-contact/joint attention, and (c) parent-child turn taking;
4. Examine the home reading practices as well as values and opinions of ESR for parents with babies and young children with a HL.

1.8 Thesis Organisation

This thesis is comprised of seven chapters representing four phases of research.

Chapter 1

The first chapter provides a general introduction to the thesis.

Chapter 2

A literature review is presented in Chapter 2. The literature review provides an overview of early language and social communication development and congenital HL. The literature review also provides a synthesis and critical appraisal of the relevant literature on ESR with babies and young children with and without a HL, in order to identify clinical and research gaps requiring further examination.

Chapter 3

Phase 1 of this project is described in Chapter 3 and addresses the first aim of this thesis to examine the home reading practices and values regarding ESR of parents with NH babies and young children. Parents \((n = 113)\) with NH babies and young children (aged less than three-months-old to three-years-old) from both an advantaged \((n = 56)\) and less advantaged area \((n = 55)\) were provided with a questionnaire. Including families from both an advantaged and less advantaged area enabled a generalised view of ESR with babies and young children in order to capture a range of parents’ opinions and home reading practices.

Chapter 4

Phase 2 of this project is presented in Chapter 4. This study addressed the second aim of this thesis to examine the effectiveness of a high intensity ESR intervention (4.5 hours) versus a low intensity ESR intervention (90 minutes) for parents with NH babies for improving: (a) language skills, (b) broader social
communication skills, and (c) home reading practices. Applying the findings from Phase 1, an ESR intervention was developed using dialogic reading principles and delivered to parents with NH babies. Two intervention conditions were provided: a high intensity ESR intervention \( (n = 17; \, M\, \text{age} = 6\text{-months}) \) and a low intensity ESR intervention \( (n = 15; \, M\, \text{age} = 6\text{-months}) \). For both groups, the babies ranged from 3- to 12-months-of-age. Parents were automatically allocated to the next available intervention group that was on offer. The findings from Phase 2, presented in this chapter, provided evidence on the effectiveness of a high and low intensity ESR intervention delivered to parents with NH babies for strengthening language and broader social communication skills.

Chapter 5

Phase 3 of this project is reported in Chapter 5 and addresses the third aim of this thesis, which was to examine the effectiveness of an ESR intervention for babies with a HL for improving: (a) parents’ book selection skills, (b) parent-child eye-contact/joint attention, and (c) parent-child turn taking. Extending the findings from Phase 2, the same high intensity ESR intervention that was delivered to parents with NH babies was trialled on parents with babies with a HL, who are known to be vulnerable to language and social communication difficulties. Four mother-baby dyads participated in a multiple baseline single case experimental design across behaviours with direct repetition. All of the babies had a diagnosed congenital HL ranging in severity from moderate to profound. Two of the babies (female: 10-months-of-age; female: 14-months-of-age) wore bilateral hearing aids, one baby (male: 15-months-of-age) had a unilateral cochlear implant and the other baby (male: 9-months-of-age) had bilateral cochlear implants. The results from this study provided preliminary evidence on the effectiveness of the ESR intervention for babies with a HL.

Chapter 6
Phase 4 of this project is presented in Chapter 6 and addresses the fourth aim of this thesis, to examine the home reading practices as well as values and opinions of ESR for parents with babies and young children with a HL. Parents ($n = 12$) from suburban Sydney completed a questionnaire on ESR. The children were aged from less than 3-months-of-age to 3-years-of-age. All of the children had a diagnosed HL and all of the children had received, or were awaiting, auditory intervention (such as hearing aids, cochlear implants, or a bone conductor). This study provided initial insights into the home reading practices and values regarding ESR of parents with babies and young children with a HL.

*Chapter 7*

Chapter 7 presents a general discussion that summarises the significance, clinical relevance, and innovation of the findings from the constituent chapters in relation to the existing literature on ESR with babies and young children with and without a HL. Methodological considerations arising from the studies presented are discussed and directions for future research are considered.
Chapter 2: Literature Review

2.1 The benefits of early storybook reading (ESR)

The simple act of reading a storybook with children, also known as ESR, has been argued to be the single most important activity that parents can engage in with their children to promote later language and literacy success (Anderson, Heibert, Scott, & Wilkinson, 1985; Bus et al., 1995; Shoghi et al., 2013). Books provide the framework for parent-child interactions and create opportunities for language and social communication development to be supported in a structured environment (Bus & van IJzendoorn, 1997; Sénéchal et al., 1996). Multimodal learning can be facilitated through ESR as children are provided with auditory information while their parents share the story (if the children can access sounds on the speech range), visual information through the pictures within the book, as well as kinaesthetic information that may be available through touch and feel components, lift the flap sections, or by simply turning the page (Bus & van IJzendoorn, 1997). The rich language that is often used in books enables parents to teach their children novel words within a contextual setting to support vocabulary development and comprehension (Sénéchal et al., 1996). Furthermore, books can expose children to words and concepts beyond their immediate environment (such as an expedition to search for dinosaur fossils), and facilitate their imagination (Dickinson et al., 2012; Fletcher & Reese, 2005; Sénéchal et al., 1996). As books can be re-read, the repeated exposure can help consolidate children’s learning of new words and concepts (Sénéchal et al., 1996).

While reading a storybook verbatim with children is considered beneficial, the more parents and children interact during ESR, the more opportunities children are provided with to learn language and to practise the language skills they already have (Dickinson et al., 2012; Fletcher & Reese, 2005). Several aspects of ESR have been
identified in the literature as being important for facilitating parent-child interactions while sharing a story. The type of books that parents use while reading is one aspect of ESR that is considered important for fostering parent-child interactions. The colourful and bold pictures often presented in children’s books are thought to help maintain children’s attention and interest. Gaining children’s interest is important, as there is evidence to suggest that children are more likely to learn information that they find interesting (Brookshire, Scharff, & Moses, 2002; Dickinson et al., 2012).

The reading and seating environment that parents provide while sharing the story with their children can also enhance or limit parent-child interactions (Dickinson et al., 2012; Edwards, 2012; Fletcher & Reese, 2005). Child participation can be facilitated through the reading environment, if the parent allows the child to hold the book and select which page to explore (Makin, 2006). The atmosphere provided by parents while reading through the use of smiles, cuddles, and laughter can also increase children’s participation (Kucirkova & Messer, 2012). Seating environment refers to the way that parents and children sit together while reading the story. This may be with the child sitting at eye-level facing the parent or it might be sitting on the parent’s lap, with the child’s back to the parent. Seating positions where the parent is able to see the child’s face will help the parent to see what she or he is looking at, which will enable the parent to talk about what the child is showing an interest in. This is important due to interest facilitating learning (Brookshire et al., 2002; Dickinson et al., 2012). Sitting at eye-level with children also creates more opportunities for eye-contact and joint attention that are foundational language and social communication skills (Brookes & Meltzoff, 2008; Farrant, Maybery, & Fletcher, 2011; Mathew & Rajanna, 2017; Okumura, Kanakogi, Kobayashi, & Itakura, 2017; Racine & Carpendale, 2007).

The interaction provided by parents while reading a storybook, often referred to as ESR parent strategies, can also facilitate or create barriers for children’s participation
Strategies that encourage children to participate, such as pausing to enable children to take a turn, imitating the sounds babies make, interpreting babbling, extending an utterance, and relating the story to children are well known language stimulation techniques that are thought to encourage children to particulate and to build upon and extend the skills they already have (Cleave, Becker, Curran, Owen Van Horne, & Fey, 2015; Locke, 1996). A common thread among all of these aspects of ESR is that they aim to encourage parent-child interactions to support language and social communication learning. The importance of parent-child interactions for strengthening language and social communication development is grounded in the social constructivist theory and bioecological model (Bronfenbrenner, 1979; Vygotsky, 1987).

2.2 Theories of language and social communication development

Parent-child interactions are considered the key component for language and social communication learning by both social constructivist theorists such as Vygotsky (1987) as well as Bronfenbrenner (1979) who posited the bioecological model.

2.2.1 Social constructivist theory

Vygotsky’s social constructivist theory proposed that children’s development is built upon social interaction and is influenced by the cultural setting in which it occurs (Carpendale & Lewis, 2004; Vygotsky, 1987). Vygotsky advocated that language is a fundamental tool that not only enables the learning of language through interactions, but also intellectual growth through inner speech, also known as self talk (Carpendale & Lewis, 2004; Sigelman & Rider, 2006; Vygotsky, 1987). The social constructivist theory emphasises the importance of parents and home learning experiences in which development may be constructed through parent-child interactions (Carpendale & Lewis, 2004; Sigelman & Rider, 2006; Vygotsky, 1987). Through guided participation,
the parent is thought to build upon the child’s knowledge through interacting with the child, and sharing their knowledge, thus extending the child’s zone of proximal development (Sigelman & Rider, 2006; Vygotsky, 1987). ESR provides a supportive scaffold for these parent-child interactions to occur with the added benefit of a multimodal learning environment, that can also expose children to novel words, and concepts, and provide repetition to facilitate learning (Bus & van IJzendoorn, 1997; Dickinson et al., 2012; Sénéchal et al., 1996).

2.2.2 Bioecological model

The influential role of parents, the home environment, as well as the cultural and historical context in which children are raised are embedded in the ecological systems model that was later revised as the bioecological model (Bronfenbrenner, 1979; Bronfenbrenner & Ceci, 1994). This model captures the intricate link between the different systems that shape a child’s life and the interplay between the natural abilities a baby is born with and the development that can occur through proximal processes (Bronfenbrenner, 1979; Bronfenbrenner & Ceci, 1994). These proximal processes are the interactions that shape a child’s development and include the immediate home environment, along with the significant others within this environment, and the relationship between different areas within the home environment, such as the influence of a parent’s work on the child (Bronfenbrenner, 1979; Bronfenbrenner & Ceci, 1994; Sigelman & Rider, 2006). The social setting for both the child and the significant others within the child’s life is considered to influence development, as well as the cultural, and historical context in which the child is raised (Bronfenbrenner, 1979; Bronfenbrenner & Ceci, 1994). The influence of time and intensity is also accentuated within this model where proximal processes are thought to be most effective when they are frequent, consistent, and ongoing (Bronfenbrenner, 1979; Sigelman & Rider, 2006). The use of ESR to strengthen language and social communication learning is consistent
with the bioecological model as proximal processes such as the interactions between parents and children can be enhanced through frequent ESR. Moreover, there is evidence to suggest that frequent ESR supports later language development (Bus et al., 1995; Farrant & Zubrick, 2013). Parents are also able to establish a consistent pattern of ESR from a very young age. Research has shown that when parents commence ESR with their children during infancy, they continue to engage in ESR, as their children grow older (Karrass & Braungart-Rieker, 2005).

2.3 Early language and social communication development

The process of learning language begins from birth and develops swiftly over the first year (Kuhl, 2004). Babies first learn to identify the phonemes of the language/s they are exposed to and categorise them into specific meaningful units (Kuhl, 2004). This process is called speech perception. Babies demonstrate remarkable speech perception skills that enable them to discriminate between non-language sounds and identify the sounds of their native language (Jusczyk, Luce, & Charles-Luce, 1994; Taso, Liu, & Kuhl, 2004). These speech perception skills are necessary for both speech and language development and have been found to correlate with later phonetic skills, language development, and literacy abilities (Tsao, Liu, & Kuhl, 2004).

Prior to 6 months-of-age, babies mostly produce open vowel-like sounds. This progresses to consonant-vowel babbling at around 6-months-of-age and is often referred to as canonical babbling as the same consonant and vowel is repeated, such as ‘bababa’ (Oller, Eilers, Neal, & Schwartz, 1999). Around 8-months-of-age, babies start to identify the prosodic patterns in speech, which enables them to start separating out segments and words from the continuous stream of sounds they hear during conversation (Kuhl, 2004). Learning the patterns for the phonemes and how they are grouped together typically occurs by 9-months-of-age when babies also begin to use variegated babbling and combine different vowels with different consonant
combinations such as “bigadobo” (Kuhl, 2004). First words are typically produced by 13-months-of-age and two word utterances by 24-months-of-age (Taso et al., 2004).

Eye-contact and joint attention are two essential social communication skills that children need to develop to be successful communicators (Racine & Carpendale, 2007). Eye-contact, which in its earliest form is referred to as eye-gaze, is the act of two people visually attending to each other’s eyes at the same time. Joint attention is an extension of eye-contact where two people engage in eye-contact and then share mutual attention to a third object/person before returning to eye-contact with the initial person with whom eye-contact was made (Farrant et al., 2011; Schertz & Odom; 2007). As early as 4-weeks-of-age, babies seek eye-contact with their parents, which increases by 9-weeks-of-age such that babies are able to fixate on their parents’ eye-gaze for longer amounts of time (Beier & Spelke, 2012). At 3-months-of-age, babies can produce a smile response following eye-contact and can look in the direction of their parents’ attention. Joint attention develops between 6- to 14-months-of-age and is well established by 18-months-of-age (Brooks & Meltzoff, 2005; 2008; McDevitt & Ormrod, 2004; Scaife & Bruner, 1975; Schertz & Odom; 2007). Therefore, long before first words are produced, babies seek interaction with their parents and engage in both verbal (such as babbling and vocalisations) and non-verbal (such as eye-contact and joint attention) interactions that stimulate neural development supporting language and social communication growth (Kuhl, 2004).

2.4 Importance of early language development

Within the social constructivist theory and bioecological model, language and social communication development are influenced by both factors that a child is naturally born with such as their genetic, biological, and neurobiological makeup as well as factors related to the way in which a child is raised such as the learning environment and the quality of parent-child interactions (Sigelman & Rider, 2006;
As such, language and social communication difficulties can be due to factors related to the genetic, biological, and neurobiological make-up of the child (such as a sensorineural HL), as well as factors related to the nurturing of the child such as the home environment, and quality of parent-child interactions (Reilly, McKean, Morgan, & Wake, 2015; Zubrick et al., 2007). The exact risk factors for developmental language disorder are debated within the literature. However, studies examining the nature of developmental language disorders have consistently identified a family history of communication difficulties, male gender, social disadvantage, low maternal education, low birth weight, and birth at less than 37 weeks of gestation, as risk factors (Law et al., 2000; Reilly et al., 2015; Zubrick et al., 2007). Language disorders can both co-exist as well as be a key diagnostic feature for some developmental disorders and syndromes (such as Autism Spectrum Disorder; Reilly et al., 2015).

Language difficulties are considered relatively common during infancy with as many as 19% of NH 24-month-old-children reported to present with language difficulties (Law et al., 2000; Reilly et al., 2007; Zubrick et al., 2007). There is also evidence to suggest that earlier language and social communication skills can predict later language development (Farrant & Zubrick, 2013; Reilly et al., 2015; Zubrick et al., 2007). Children with stronger language skills in the preschool years tend to be better equipped for commencing formal schooling and have stronger emergent literacy skills facilitating literacy acquisition, and higher academic achievement (Bus et al., 1995; Gillon, 2000; Harrison et al., 2009; High, 2008; Law et al., 2000). Given that stronger early language skills predict later language development, supporting early language and social communication development, especially for children at risk of language and social communication difficulties such as children with a HL as well as children from
less advantaged backgrounds, should be prioritised (Ching et al., 2013; Morini, Michnick Golinkoff, Morlet, & Houston, 2017; Netten et al., 2015).

2.5 Congenital hearing loss (HL) and language development

In a similar manner that early exposure to social interaction stimulates neural development for language and social communication maturation, so too does early exposure to auditory stimulation enable development of the auditory cortex facilitating linguistic development that is important for children who use oral/auditory communication (Cole & Flexer, 2007; Morini et al., 2017). Hearing has been referred to as the binding ingredient that supports attention, speech, oral language development, literacy, and academic success (Cole & Flexer, 2007). If babies are not provided with sufficient auditory stimulation due to a HL, it can negatively impact their auditory neural development, which can manifest as delayed linguistic development and specifically speech, spoken language, and social communication difficulties (Morini et al., 2017; Netten et al., 2015). Early identification of a HL through newborn hearing screening programs has enabled babies to have earlier access to sounds within the speech range to support stimulation of the auditory cortex (Ching et al., 2013; Netten et al., 2015). Evidence suggests that children who use oral/auditory communication, who receive early identification and early auditory intervention (such as hearing aids and cochlear implants) have improved speech and spoken language outcomes compared with children who receive late identification of a HL and receive later auditory intervention (Netten et al., 2015).

Even with earlier access to sounds within the speech range through auditory intervention, many children with a HL who use oral/auditory communication continue to present with speech and spoken language difficulties. Evidence from a population-based study in Australia ($n = 451$) found that 3-year-old children with a HL who predominantly used oral/auditory communication, typically performed at or below one
standard deviation from the mean, on standardised spoken language assessments
compared to their NH peers of the same age (Ching et al., 2013). Consistent with
findings with NH children, Ching et al. (2013) reported that low birth weight and social
disadvantage were associated with lower spoken language scores. Higher spoken
language scores were associated with a less severe HL, no additional disability, children
whose mothers had higher levels of education, and early access to auditory intervention
(Ching et al., 2013). Netten et al. (2015) has also reported a relationship between
spoken language difficulties, social functioning, and behavioural problems for children
with a HL \( n = 85; M \text{ age } = 46 \) months. Given the subtle nature of social
communication skills that are often learned implicitly through observation and
incidental hearing, children with a HL who use oral/auditory communication may
require more support and explicit teaching of social communication skills during parent-
child interactions to strengthen their spoken language and social communication
development (Netten et al., 2015). ESR may be a useful method to support children
with a HL with spoken language and social communication learning (DesJardin et al.,
2017; Zaidman-Zaid & Dromi, 2007).

2.6 Dialogic reading

While ESR provides a scaffold to support language and social communication
learning, not all parents may take advantage of the opportunity that ESR provides to
strengthen their children’s language and social communication skills (Demir et al.,
2011; Dickinson et al., 2012; Fletcher & Reese, 2005). Some parents may implement
ESR parent strategies that facilitate language and social communication learning
without any information, education, or intervention, while other parents may require
support and specific education (Abraham, Crais, & Vernon-Feagans, 2013; DesJardin et
al., 2014). Dialogic reading is an ESR intervention that can provide parents and
educators (such as preschool teachers and primary school teachers) with information
and education on how to support parent-child interactions while reading a storybook with their children. Moving away from parent-directed interactions, where parents solely read the book verbatim, dialogic reading teaches parents to describe the pictures within the book, ask inference and open-ended questions that expand children’s understanding as opposed to closed-questions such as pointing or labelling (Whitehurst et al., 1994; Whitehurst et al., 1988). Parents are encouraged to engage in dialogue/interactions during ESR with their children and to create opportunities for children to take an active role in these interactions (Whitehurst et al., 1994; Whitehurst et al., 1988). Following the child’s interest, and letting the child lead the activity, are essential components of dialogic reading. This is achieved by encouraging children to take conversation turns while reading, and for parents to listen to their children, and extend their understanding through clarification, and expanding information (Justice & Pullen, 2003; Whitehurst et al., 1994; Whitehurst et al., 1988).

Dialogic reading was first described by Whitehurst et al. (1988) in a study that examined the effectiveness of providing parents with instructions on how to facilitate language development, through ESR. Typically developing children, aged between 21-to 35-months-of-age from middle class families participated. The intervention group \( (n = 12) \) were provided with a four-week dialogic reading intervention program. The parents in the control group \( (n = 10) \) continued to read with their children, however they were not provided with an intervention. Language skills were assessed using the verbal expressive subscale of the Illinois Test of Psycholinguistic Abilities (ITPA; Kirk, McCarthy, & Kirk, 1968), the Expressive One Word Picture Vocabulary Test (EOWPVT; Gardner, 1981), as well as the Peabody Picture Vocabulary Test-Revised (PPVT; Dun & Dunn, 1981).

Immediately following the intervention, the children whose parents had received the dialogic reading intervention presented with significantly higher language scores for
the ITPA and the EOWPVT and higher, although not significant, PPVT scores compared with the children from the control group. Nine months following the intervention, the children whose parents received the intervention continued to present with higher, although not significant language scores on all three language assessments compared with the control group. This was one of the first studies to provide evidence to support the argument that parent-child interactions provided during ESR can facilitate language development.

Subsequent studies that have investigated the effectiveness of a dialogic reading intervention have continued to provide evidence in favour of dialogic reading for supporting language development, with preschool and primary school children (Hargrave & Sénéchal, 2000; Lefebvre, et al., 2011; Whitehurst et al., 1994). These dialogic reading intervention studies have also included children at risk of language difficulties from less advantaged areas (Hargrave & Sénéchal, 2000; Lefebvre, et al., 2011; Whitehurst et al., 1994). Given these positive outcomes for toddlers, preschool, and primary school children, and the knowledge that early language skills strengthen later language development, further examination of how dialogic reading can strengthen language learning for even younger children is now needed.

2.7 Early storybook reading (ESR) with babies and toddlers

The relationship between ESR with babies and young children, and later language development has been examined in correlational studies. Karrass and Braungart-Rieker (2005) examined whether the presence or absence of ESR with babies at 4- and 8-months-of-age could predict later language abilities at 12- and 16-months-of-age. Language skills were assessed using language items from the Bayley Mental Scale (Bayley, 1969) in addition to the Sequenced Inventory of Communicative Development-Revised, Expressive and Receptive Scales (Hendrick, Prather, & Tobin, 1984). All of the babies \( n = 87 \) had well educated parents and were considered middle
class families. The participants were placed into comparison groups based on parent report of presence or absence of ESR, with no intervention provided within the study.

The relationship between ESR and stronger later language skills was confirmed with babies who were read to at 8-months-of-age showing significantly better language scores at 12- and 16-months-of-age compared with babies whose parents were not reading with them. Parents who indicated that they read with their baby at 4-months-of-age continued reading with their baby throughout the study, however ESR with 4-month-old babies did not predict later language abilities. As suggested by the authors, it is possible that 4-month-old babies do not have sufficient receptive language skills, however by 8-months-of-age their receptive language skills may have advanced such that they are able to detect words in conversation to facilitate language learning. It is also possible that the language assessment was not sufficiently sensitive to detect very subtle changes in language skills with such young babies. Another possibility is that parents with young babies may require further education and support with ESR to maximise the opportunity that reading provides to strengthen language and social communication skills. This may be particularly important for parents with very young babies as it is reported in the literature on ESR that younger children may require more support from their parents than older children to actively participate while sharing the story (Bus et al., 1995; Dickinson et al., 2012)

Farrant & Zubrick (2013) have also examined the relationship between ESR and later language development, as well as the relationship between joint attention and later language skills. Data from 2369 families, who were participating in The Longitudinal Study of Australian Children, were used with the sample considered be a broad representation of all children from Australia. Similar to the Karrass and Braungart-Rieker (2005) study, no ESR intervention was provided. Parents reported via a questionnaire the frequency and number of minutes spent reading per day with their
child using a five-point scale. The points on the five-point scale were fewer than 5 minutes per day, 6-10 minutes per day, 11-20 minutes per day, 21-40 minutes per day, and more than 40 minutes per day. Families who reported 10 minutes or less of ESR per day were categorised as having low levels of ESR and families who reported more than 10 minutes of ESR per day were categorised as having high levels of ESR. Language and social communication skills, including joint attention, were assessed using an adapted PPVT (Dunn & Dunn, 1997) and an adapted Communication and Symbolic Behavior Scales (CSBS; Wetherby & Prizant, 2002). The results indicated that children whose parents reported fewer occasions of ESR at ~9-months-of-age were significantly more likely to have lower vocabulary scores when they reached ~5-years-of-age compared with children whose parents reported more occasions of ESR at ~9-months-of-age. Likewise, children who had lower scores for joint attention at ~9-months-of-age also had lower vocabulary scores at ~5-years-of-age, compared with children with higher scores for joint attention at ~9-months-of-age. The authors concluded that ESR provides an excellent opportunity for facilitating joint attention and stimulating language learning.

Adding to the already identified benefits for language and social communication development from ESR, a relationship has also been identified between ESR and later literacy development. Demir et al. (2011) examined the correlation between ESR and later literacy development with toddlers \( (n = 51) \). The majority of the families were Caucasian with parents who held a college degree. Two video sessions were conducted when the toddlers were aged 26-months-of-age and 30-months-of-age that included parent-child interactions in both play activities and occasions of ESR. The recordings were analysed and regression analyses used to examine the relationship between the parent-child interactions during ESR with later language and literacy development at the end of Kindergarten (first year of formal education). Language and literacy outcome
measures were the PPVT (Dunn & Dunn, 1997) and three subtests of the Woodcock-Johnson Tests of Achievement in Basic Reading (Woodcock, 1998).

Even though ESR consisted of a small part of the overall parent-child interactions that were video recorded, a relationship between ESR and later decoding abilities at the end of Kindergarten was identified. Two specific parent-child interactions that were related to dialogic reading principles further predicted stronger later language skills. These parent-child interactions were discussing the pictures within the book, and extending the topic of the book. These positive results provide further evidence for the effectiveness of ESR with toddlers for supporting both language and early literacy development. Furthermore, this study suggests that there are specific parent-child interactions that can support language and literacy learning to a greater extent than others. As not all parents may know to provide these parent-child interactions while reading, parents may benefit from an ESR intervention providing them with information on the importance of ESR and how to increase parent-child interactions as suggested by Farrant & Zubrick (2013).

2.8 Early storybook reading (ESR) intervention programs for babies and toddlers

In many countries across the globe, book distribution programs have been implemented to encourage parents with babies and young children to engage in ESR to promote language and social communication development (Dickinson et al., 2012). Four book distribution programs are discussed below.

2.8.1 Reach Out and Read (ROR)

One of the first book distribution programs, now known as Reach Out and Read (ROR), originated in 1989 at Boston City hospital (Zuckerman & Khandekar, 2010). The ROR program is usually provided by clinicians who receive a one hour training session focussed on language and literacy development, the importance of parent-child
interactions during ESR, and information regarding the types of books that are most beneficial for babies and young children (Mendelsohn et al., 2001). The ROR program provides families with advice on ESR by a clinician, a demonstration of ESR, educational materials, and a free children’s book that is provided as part of the child’s well-child clinic visit (Zuckerman & Khandekar, 2010). These discussions with the clinician are usually brief and take between 30 seconds to 2 minutes (Zuckerman & Khandekar, 2010). Additionally, some ROR locations have volunteers who read books with children while they wait for their appointment with the clinician. The volunteers can also provide a demonstration of ESR to parents, and offer advice to families about ESR (Zuckerman & Khandekar, 2010). The program is provided to children from 6-months-of-age to 5-years-of-age and children may receive multiple ROR occasions of intervention (including books, ESR advice, and educational materials) through multiple visits with their clinician (Zuckerman & Khandekar, 2010).

Studies examining the ROR program have reported positive outcomes. High, La Gasse, Becker, Ahlgren, and Gardener (2000) examined the effectiveness of the ROR program with group of children (who commenced the program between 5- to-11-months-of-age) from a less advantaged area with a high population of culturally and linguistically diverse (CALD) backgrounds. The families who received the ROR intervention \( n = 77 \) were compared with a control group \( n = 77 \) who received no intervention and also lived in a less advantaged area with a high CALD population. Group assignment was randomised with participants who were recruited on even days of the month allocated to the intervention group and participants recruited on odd days of the month allocated to the control group. Outcome measures included a modified version of the MacArthur Bates Communicative Development Inventories (Fenson et al., 1993) conducted via parent interview and questions related to the parents’ home reading practices that were also examined via parent interview. Following three well-
child visits or when the child turned 22-months-of-age, a follow-up was conducted to evaluate the effectiveness of the ROR intervention. As the children ranged in age from 13-months-of-age to 25-months-of-age for the final assessment, the children in both the intervention group and control group were further subdivided into two additional categories for analysis: younger toddlers who were aged between 13- to 17-months-of-age and older toddlers who were aged between 18- to 25-months-of-age.

Results from High et al.’s study (2000) indicated that the parents in the ROR intervention group reported a higher frequency of ESR and owning more children’s books compared with parents from the control group. The parents from the intervention group also reported attending libraries more frequently than the parents from the control group. Furthermore, more parents from the intervention group listed ESR as a favourite activity, compared to parents from the control group. The older toddlers from the intervention group presented with significantly higher receptive and expressive vocabulary scores compared to older toddlers from the control group. Younger toddlers from the intervention group also demonstrated higher receptive and expressive vocabulary scores compared with the control group, although this improvement was not significant. These findings are positive and indicate that the ROR program is effective for supporting vocabulary development with older toddlers.

Similar to the Karrass and Braungart-Rieker (2005) study it is possible that the language assessments used in the High et al. (2000) study were not sufficiently sensitive to detect language improvements at such a young age. Difficulties with assessing early language skills have also been reported in the literature (High 2008). Alternatively, it is also possible that the parents with younger children in the High et al. (2000) study required more intervention than parents with older children. The literature examining ESR has suggested that younger children can be more passive than older children in the reading interaction and may require more encouragement and guidance from their
parents to actively participate compared with older children (Bus et al., 1995; Dickinson et al., 2012). It is possible that with a higher intensity of ESR intervention, the younger toddlers in the intervention group from the High et al. (2000) study may have presented with significantly higher language scores.

Two other studies that have examined the effectiveness of the ROR intervention with older children aged 2- to 5.9-years-of-age have also reported positive outcomes similar to that of the High et al. (2000) study (Mendelsohn et al., 2001; Sharif, Reiber, & Ozuach, 2002). Both studies compared groups of children who had received the ROR intervention (Mendelsohn et al., 2011 study, n = 55; Sharif et al., 2002 study, n = 100) with a control group (Mendelsohn et al., 2011 study, n = 83; Sharif et al., 2002 study, n = 100) who had not received the ROR intervention. Participants from both the intervention group and control group for the two studies were assigned to groups based on the clinic they attended, such that the intervention group attended one clinic where ROR was provided and the control group attended a second clinic where ROR was not provided. However, the Mendelsohn et al. (2011) study reported that a program similar to ROR had been implemented in the second clinic where the control group was recruited three months prior to the study commencing. Both the Sharif et al. (2002) and Mendelsohn et al. (2011) studies were conducted in areas where both the intervention and control group were from less advantaged backgrounds with a high population of families from CALD backgrounds. Language outcomes for both studies were examined using the Expressive and Receptive One Word Picture Vocabulary Test (Gardner, 1985).

Positive outcomes for home reading practices were observed for both studies, with the intervention groups reported to engage in a higher frequency of ESR, and to own more children’s books, compared with the control groups. This finding was significant for the Sharif et al. (2002) study, but was not for the Mendelsohn et al.
(2001) study. Significantly higher receptive vocabulary scores and higher, although not significant, expressive vocabulary scores were also observed for the intervention groups for both studies, compared with the control groups. These favourable outcomes once again provide evidence for the effectiveness of the ROR program for improving home reading practices and receptive vocabulary skills with older toddlers. Given these positive results further investigation is now needed to examine whether the ESR intervention strengthened language and social communication skills while the child was still a baby or if the positive influence of the ESR intervention only occurred during the toddler years or possibly as a result of multiple occasions of ESR intervention. Teasing this information out will enable researchers to discover whether it is effective to provide an ESR intervention to very young babies. Furthermore, as suggested by Mendelsohn et al. (2001), the intensity of intervention provided to families also deserves examination. It is possible that parents with very young children may require more support to effectively implement the ESR intervention.

2.8.2 Bookstart

Bookstart is another book distribution program that has documented positive outcomes. The inaugural Bookstart program was provided to inner city families ($n = 300$) living in Birmingham, United Kingdom, in 1993 (Moore & Wade, 2003). Parents with babies aged 7- to 8-months-of-age were provided with a reading pack that included a free children’s book to keep, a letter on the importance of ESR, a poetry card, invitation to a local library, book poster, and book mark, as well as information on children’s books, and where to access children’s books (Wade & Moore, 1996b). Outcomes were initially assessed via a parent questionnaire. Encouraging findings were observed with parents reporting that they increased the amount of time spent reading with their children, the number of children’s books they bought, and membership at libraries/book clubs. These findings are important
given that frequency is considered an essential aspect of ESR and has been found to predict later language development (Bus et al., 1995; Farrant & Zubrick, 2013). However, other aspects of ESR that are also considered important, such as when parents commence ESR, the type of books they read with their children and the seating environment were not examined. As language skills were not assessed immediately following the intervention, it is also not known how the program supported language and social communication development during infancy.

Examination of the intervention for improving language, literacy, and numeracy skills was examined when the children commenced primary school and at ~7.5-years-of-age. Using a sample of the original Bookstart cohort \((n = 41)\) and a control group \((n = 41)\), language and literacy skills were examined using data from The Birmingham Baseline Assessment (Birmingham City Council, 1996), a school entry assessment. The results indicated that the Bookstart group of children had stronger literacy and numeracy skills compared to the control group (Wade & Moore, 1998). These findings were supported by a subsequent study with the same children at ~7.5-years-of-age when the children sat their first SATs (Statutory Assessment Tests) at school. Once again significantly higher literacy and numeracy scores were observed for the Bookstart group compared to the control group (Wade & Moore, 2000).

The outcomes from these two studies are positive and demonstrate the effectiveness of the Bookstart program for supporting literacy and numeracy skills. Furthermore, the benefits of the program were maintained when the children reached primary school. These findings suggest that an ESR intervention can have long term positive outcomes resulting in stronger language and literacy skills. As there was a long interval between when the study was conducted and when language, literacy, and numeracy outcomes were examined, further research is needed to examine the immediate effect of the intervention during infancy. This will enable parents, clinicians,
health promotion organisations, and researchers to know if the intervention was effective immediately post intervention or if it had a latency effect.

It is also not clear what mechanisms of the intervention were responsible for the improvements in language, literacy, and numeracy skills. It is possible that parents may only require the education and demonstrations of ESR and may not need a free children’s book. Alternatively, it may be possible that the free children’s book increased the frequency of ESR, as parents had access to a children’s book. Frequency of ESR is known to predict language development (Farrant & Zubrick, 2013). Therefore, increased frequency of ESR as a result of the free children’s book may have been the catalyst in strengthening the language skills for the children in the Bookstart program. Further examination of the aspects of the ESR intervention that resulted in the statistically significant improvements for language, literacy, and numeracy during primary school would enable refinement of future ESR intervention programs to ensure that they support parents with the aspects of ESR that are most effective for strengthening language and literacy development.

2.8.3  The Let’s Read trial

Implementing a similar approach to the ROR and Bookstart programs, the Let’s Read trial also provided a book distribution program to families from less advantaged areas, in Melbourne, Australia (Goldfeld et al., 2011; Goldfeld et al., 2012). Child health nurses, who had received a two-hour training session on ESR, provided the intervention. The families were randomly allocated into an intervention group ($n = 324$) and control group ($n = 228$). The majority of the families from both groups were born in Australia (71%) and 87% spoke English as their primary language. The families in the intervention group were provided with a reading pack during their regular well-child visit with a child health nurse as well as a ~5 minute discussion on ESR. The reading pack included a children’s book to keep, and educational materials on ESR including a
DVD. The control group received the usual well-child care provided by the child health nurses, but were not provided with an ESR intervention. Intervention was provided at 4- to 8-months-of-age, 12- to 18-months-of-age and a final intervention session at 3.5-years. Language, broader social communication skills, and phonological awareness skills were assessed at 2-years-of-age and at 4-years-of-age. Language outcome measures were the Sure Start adaption of the MacArthur Bates Communicative Inventory (Roy, Kersley, & Law, 2010, referenced in Goldfeld et al., 2011) and the CSBS (Wetherby & Prizant, 2002). Phonological awareness skills were also assessed at 4-years-of-age using The Sutherland Phonological Awareness Test Revised (Neilson, 2007).

The program was well received by both the child health nurses and parents, with 77% of parents reporting high levels of satisfaction. However, significant improvements for language, social communication, and phonological awareness skills were not observed at either 2- or 4-years-of-age. These findings differed to the results from a ROR study that did find significant improvements for receptive and expressive vocabulary skills with older toddlers (High et al., 2000). Possibly, this may have been due to the different outcome measures that were used, as the Let’s Read trial examined both vocabulary development as well as social communication skills at 2-years-of-age and the ROR study focused on receptive and expressive vocabulary. An alternative explanation is that the additional support provided by the volunteers from the ROR program in addition to the children’s book, discussion on ESR with the clinician, and ESR educational materials, may have contributed to the higher outcomes observed. It is also possible that parents with very young children may require a higher intensity of ESR intervention for significant changes in language and social communication skills to be observed, as has been suggested by Goldfeld et al. (2011), Goldfeld et al. (2012), and Mendelsohn et al. (2001). Very young babies have fewer language and social
communication skills than toddlers and older children; therefore, they can be more passive while engaging in ESR and may require additional support from their parents to actively participate (Bus et al., 1995; Dickinson et al., 2012; Fletcher & Reese, 2005).

2.8.4 Better Beginnings

Continuing in a similar manner to that of the ROR, Bookstart, and the Let’s Read trial, the Better Beginnings program reported by Barratt-Pugh and Rohl (2015) also examined the effectiveness of a book distribution program. The Better Beginnings program was development by the State Library in Western Australia and distributed via child health nurses to families from rural and urban areas with a mix of less advantaged and more advantaged communities (n = 300). Language/s other than English were regularly spoken at home to 17% of the babies from this study. Differing from the book distribution programs discussed above, there was no comparison/control group for the Better Beginnings program. The program provided mothers with babies aged 6- to 8-weeks-of-age with a reading pack that typically included an age appropriate board book, nursery rhymes, educational materials on ESR including a DVD, and information about local libraries, along with a library membership form. Outcomes were assessed using a questionnaire that was provided prior to receiving the reading pack as well as one, two, and three years post receiving the reading pack.

The reading packs were well received and positive outcomes were reported. Parents indicated higher levels of confidence with ESR after receiving the reading pack. A large increase in ESR was also observed with 14% of parents indicating that they read with their baby prior to receiving the reading pack and one year later 85% of parents reported reading with their baby. Frequency of ESR, perceived child interest in ESR, and library membership were also reported to increase post the provision of the reading pack, which was maintained over the three years. These outcomes are positive and suggest that ESR intervention may increase frequency of ESR as has been reported for
both the ROR and Bookstart programs and may increase perceived child interest. However, these outcomes need to be interpreted with caution, as there was no control group. Moreover, the babies were very young at the commencement of the study (6- to 8-weeks-old) and it is known that parent-child ESR activities do increase with age (Fletcher & Reese, 2005).

While the results from the Better Beginnings program contribute to the existing literature on ESR, further information is needed on parents’ values regarding ESR and home reading practices. As the children in this study were very young (6- to 8-weeks-old) it is possible that some parents may have not commenced ESR as they were adjusting to parenthood or possibly settling into being a larger family. Further examination regarding the age that parents commence ESR, potential barriers they may experience with reading with young children, the types of books that parents’ use, as well as the seating environment provided by parents, is needed. As the children’s language and social communication skills were not examined, it is also unknown whether this program supported language and social communication development for babies aged 6- to 8-weeks-of-age. Similar to the other book distribution programs, the Better Beginnings program included NH children from less advantaged areas, further examination of ESR with other cohorts of children who are also susceptible to language and social communication difficulties, such as children with a HL is needed.

2.9 Early storybook reading (ESR) with children with a hearing loss (HL)

While an ESR intervention has not been examined with babies with a HL, there is preliminary evidence in favour of a dialogic reading intervention with primary school children with a HL.

2.9.1 Dialogic reading intervention with children with a hearing loss (HL)

Fung et al. (2005) examined the effectiveness of an ESR intervention using dialogic reading principles with primary school children in Kindergarten, First Grade,
and Second Grade ($n = 28$) who lived in Hong Kong, and came from Chinese families. Information on the socio-economic status of the families was not provided. All of the children had a diagnosed moderate-to-severe HL and were aged from 5;2- to 9;1-years-old. The children were randomly allocated into the dialogic reading intervention group ($n = 9$), the typical reading group ($n = 9$), and the control group ($n = 10$) who received no reading intervention. Receptive vocabulary skills were assessed using the PPVT (Dunn & Dunn, 1997). The intervention for both the dialogic reading intervention group and typical reading group was provided over an 8-week period.

The results indicated that the dialogic reading intervention group presented with significantly higher receptive vocabulary scores compared with the typical reading group, and the control group. This study provided further evidence for the effectiveness of a dialogic reading intervention for children at risk of language and social communication difficulties. Given these positive and statistically significant findings from a dialogic reading intervention with primary school children with a HL, further examination is now needed to investigate if an ESR intervention using dialogic reading principles with younger children with a HL can strengthen language and social communication skills at an even earlier age.

### 2.9.2 Early storybook reading with young children with a hearing loss (HL)

The language and social communication skills as well as parent-child interactions during ESR of young children with a HL have been investigated and compared with young children with NH. Zaidman-Zait and Dromi (2007) investigated the prelinguistic behaviours (such as pointing, vocalisations, and gestures) of young children with and without a HL during ESR. Parents with young children aged 10- to 20-months-of age with a HL ($n = 28$, $M$ age = 16-months) who wore hearing aids, and parents with NH young children aged 13- to 15-months ($n = 92$, $M$ age = 13-months) participated. The parents were provided with a questionnaire on communication and
early language development. Part of the questionnaire asked parents about ESR with their child. This included questions on joint attention, interacting with the book, as well as verbal and non-verbal interactions. No intervention was provided.

The results from the questionnaire indicated that children with and without a HL had similar prelinguistic behaviours. However, analysis of the questions on ESR revealed that the parents with children with a HL reported fewer occasions of child interactions during ESR, specifically joint attention. One possible explanation for the fewer occasions of joint attention is that parents of children with a HL may focus on other child interactions during ESR rather than joint attention. Another alternative explanation is that parents of children with a HL may require further information on the importance of joint attention and how joint attention can facilitate later language development. The authors of the study suggested that parents of children with a HL may require further education on ESR and how to increase parent-child interactions and specifically joint attention while reading a storybook.

More recently, DesJardin et al. (2014) compared the home reading practices and parent-child interactions in a group of children with a bilateral mild-to-severe HL, who wore hearing aids \((n = 45; \text{M age} = 26 \text{ months})\), compared with a group of NH children \((n = 60; \text{M age} = 19 \text{ months})\). The NH children were significantly younger than the children with a HL. The majority of the participants were Caucasian mothers (four fathers in total), who had attended college and spoke English as their primary language. Home reading practices were examined using parent questionnaires. Additionally, ESR parent and child behaviours were measured using video footage of the parent and child reading a storybook together.

The results indicated that parents with children with and without a HL had similar home reading practices and perceptions of ESR that included: (a) amount of time spent reading, (b) ease of reading, and (c) perceived child enjoyment of ESR.
Significant differences did emerge between the two groups when examining parent ESR behaviours, such as pointing to pictures and letters within the book and expanding utterances provided by the child. There were no significant differences for child ESR behaviours, such as responding to verbal or non-verbal interaction and initiating interaction with their parent. This finding differed to the results from the Zaidman-Zait and Dromi (2007) study, where it was reported that there was a significant difference for child ESR behaviours between children with and without a HL. Possibly the differing results between the two studies were due to the NH children in the DesJardin et al. (2014) study being significantly younger than the children with a HL. An alternative possibility is that the types of child interactions examined in each of the studies were different. For example, the Zaidman-Zait and Dromi (2007) questionnaire examined questions specifically related to joint attention while the DesJardin et al. (2014) study used a rating scale to observe visually attentive behaviours but did not specify joint attention.

While the DesJardin et al. (2014) study provided initial insights into some of the home reading practices and perceptions of ESR of parents with young children with a HL, other aspects of ESR with babies and young children with a HL remain unknown. This includes the age at which parents with children with a HL commence ESR, the types of books they use, literacy activities (such as attendance at the library and/or bookstore), and the seating environment provided by parents. Further investigation into the home reading practices and values regarding ESR of parents with babies and young children with a HL will enable a more holistic view of ESR to be observed. Furthermore, it may identify potential barriers parents may be experiencing with ESR, which will then enable clinicians and early intervention services to support parents with ESR and direct future research to investigate methods to address the potential needs identified by parents.
Similar to correlational studies that have examined the relationship between ESR and later language development with NH children (e.g., Farrant & Zubrick, 2013; Karrass & Braungart-Rieker, 2005), the relationship between ESR and later language skills has also been examined with young children with a HL. DesJardin et al. (2017) conducted a longitudinal investigation into the relationship between ESR and later language development and also compared the ESR parent-child interactions between parents with NH children and parents with children with a HL. All of the families (n = 51) spoke English as their primary language and 11 families spoke language/s in addition to English at home (six from the HL group and five from the NH group). The majority of the parents reported attending college. Children in the HL group had a diagnosed bilateral mild-to-severe HL and wore hearing aids (n = 17; M age at intake = 14-months). There was no significant difference in age between the children from the HL group and children from the NH group (n = 34; M age at intake =13-months).

Spoken language and ESR outcomes were assessed at ~12-, 24-, and 36-months-of-age. Spoken language skills were assessed using the PLS-4 (Zimmerman et al., 2002), and ESR was examined using parent questionnaires, as well as video footage of the parent and child sharing a storybook together.

Observations of the video footage revealed that parents with NH children implemented different parent ESR behaviours compared to parents with children with a HL. This finding was consistent with a previous study by DesJardin et al. (2014) in which the authors also observed that parents with children with a HL implemented different parent ESR behaviours compared with parents with NH children. The parents with NH children in the DesJardin et al. (2017) study were reported to provide more parent-child interactions in line with dialogic reading principles such as following the child’s lead, expanding the topic, relating the story to the child, and implementing strategies that supported turn taking, compared with parents with children with a HL.
Moreover, a correlation was found between parent ESR behaviors that facilitated parent-child interactions and later spoken language scores at 36-months-of-age. As the parents with children with a HL used fewer of the parent behaviours that predicted stronger spoken language skills at 36-months-of-age, the authors suggested that parents with children with a HL might benefit from explicit education on how to increase parent-child interactions while engaging in ESR to strengthen spoken language and social communication development. Further examination is now needed to investigate whether providing parents with children with a HL with an ESR intervention can increase parent-child interactions while reading, with the overarching aim to strengthen language and social communication development.

2.10 Summary

ESR intervention using dialogic reading principles has resulted in positive outcomes for language development for toddlers, preschool, and primary school NH children from varying socio-economic backgrounds as well as primary school children with a HL (Fung et al., 2005; Lefebvre, et al., 2005; Whitehurst et al., 1994). Correlational studies report a positive relationship between the presence of ESR with older babies and toddlers and later language and social communication development for children with and without a HL (DesJardin et al., 2014; DesJardin et al., 2017; Farrant & Zubrick, 2013, Karrass and Braungart-Rieker; 2005). Furthermore, there is evidence that families with children with and without a HL report similar frequency, ease, and perceived child enjoyment of ESR (DesJardin et al., 2014; DesJardin et al., 2017). Parents with NH children also report high satisfaction with ESR intervention programs (Barratt-Pugh & Rohl, 2015; Goldfeld et al., 2011; Goldfeld et al., 2012).

Collectively the evidence reported above suggests that ESR can strengthen language and social communication development and that an ESR intervention can be effective for promoting spoken language development with NH toddlers, preschool, and
primary school children, as well as primary school children with a HL. It is well documented that early language development strengthens later language skills (Harrison et al., 2009; High, 2008; Law et al., 2000). With this knowledge and the promising results that have been found from ESR with children with and without a HL, further research is now needed to investigate the immediate benefits of an ESR intervention with babies with and without a HL and the intensity required for language and social communication skills to be strengthened. The hypothesis for the current study, which is based on the literature from ESR with older children, is that ESR will be effective for strengthening language and social communication skills for NH babies and babies with a HL.

Prior to examining the effectiveness of an ESR intervention with babies with and without a HL, further examination of the home reading practices and parent values regarding ESR is needed. The literature examining ESR with young children with and without a HL has provided initial information regarding parents’ perceptions towards ESR and some aspects of the home reading practices provided by parents, however several gaps remain. Further information is needed about the age that parents commence ESR with their children, the books parents use while reading, enjoyment of ESR for both the parent and child, as well as the reading and seating environment. This information is needed to gain a more comprehensive view of ESR with babies and young children and to identify potential difficulties parents may possibly have with reading with babies and young children with and without a HL. Additionally, this information will ensure that future ESR interventions address the current needs of parents and provide parents with education and specific instructions on how to maximise language and social communication development through ESR as recommended in the literature (Bus et al., 1995; DesJardin et al., 2017; Dickinson et al., 2012; Farrant & Zubrick, 2013; Fletcher & Reese, 2005).
Chapter 3: Early Storybook Reading with Babies and Young Children: Parents’ Opinions and Home Reading Practices

Statement of contribution to co-authored published paper

This chapter includes a co-authored paper. The bibliographic details of the co-authored paper, including all authors, are:

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My contribution to the paper involved: Completion of the ethics application, collection of the data, analysis of the data in collaboration with my PhD supervisors and a statistician from The University of Canterbury (Pat Coope), writing the first draft of the manuscript and the majority of the writing for subsequent drafts of the manuscript.

Elaboration Statement

The following points provide further elaboration for the published manuscript presented in Chapter 3:

• On page 44 within this published manuscript it is stated that Fletcher and Reese (2005) reported that 22 per cent of parents read with their children on a daily basis. To further elaborate on this statement, in the review by Fletcher and Reese (2005), a study by Britto, Fuligni, and Brooks-Gunn (2002) is discussed. Britto et al (2002) reported in their study that 22 per cent of parents with babies under
12-months-of-age read with their children daily, thus indicating that ESR with young children was infrequent.

Reference:


(Signed) _________________________________ (Date) 20/12/2017
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Introduction

Early storybook reading (ESR), also referred to as shared reading, is the process of parents (or primary caregivers, hereafter referred to as parents) sharing a storybook with their child. Engaging children in ESR can lead to beneficial outcomes for communication, social and emotional development, cognition and emergent literacy skills, which together assist in the child’s overall school readiness (Bus & van IJzendoorn, 1997; Shoghi, Willersdorf, Braganza & McDonald, 2013). Promoting language and social development through ESR may be an effective method to help bridge the gap for children who are at risk of speech and language difficulties (Shoghi et al., 2013). One such group consists of children from less advantaged socioeconomic areas. It is well documented that children from less advantaged socioeconomic areas can have poorer language and emergent literacy skills upon school entry, compared with their peers from more advantaged areas (Lefebvre, Trudeau & Sutton, 2011). Researchers have questioned whether this discrepancy in oral language and emergent literacy skills may be due to differences in the home environment (Lefebvre et al., 2011). Very few studies have examined ESR with babies and toddlers and indeed fewer with families from less advantaged socioeconomic areas. The current study explores parents’ values and beliefs on ESR and current home-reading practices. Families from both less advantaged socioeconomic areas and more advantaged socioeconomic areas were invited to participate to provide a more holistic understanding of the current values, beliefs and home reading practices of ESR in Australia.

Theories of language development

Understanding how language develops provides a theoretical framework for language facilitation techniques. Some researchers support a universal theory of grammar, which views language development as an innate process whereby children are ‘naturally geared’ to develop language through exposure to language (as opposed to explicit teaching of language and interactions with others) (Chomsky, 2000). In contrast, Vygotsky (1987) proposed that language develops as a result of interaction with others and from learning from others. In Vygotsky’s (1987) social constructivist theory, he proposed that language learning develops within social and cultural influences and interactions that shape how language is developed. Thus parents and caregivers play a pivotal role in early language development and facilitate its growth. This theory is consistent with Bronfenbrenner’s ecological systems theory (1979). This theory also emphasises the importance of language interactions for a child’s development, and in particular the mutual and repetitive nature of these interactions and the contextual factors that influence such interactions. Taking the benefits from all three theories, many researchers now view language learning as a unique composition of innate influences as well as learning through interactions and cultural influences (e.g. Kuhl, 2004). This consensus has been reached given the natural disposition that children demonstrate for language learning and the evidence of improved language learning through interaction with others. With the view that language development can be influenced by interactions...
with others, ESR may provide a language stimulating environment through which language and social skills may be fostered (Farrant & Zubrick, 2013).

Early storybook reading with infants

The effectiveness of ESR for language and social skill development has primarily focused on preschool-aged children (four-five-year-old children) and children from advantaged socioeconomic backgrounds (Edwards, 2014). Fletcher and Reese (2005) conducted a review into ESR to explore the effectiveness of reading to children from birth to three years of age. They found that only 50 per cent of parents were reading to their young children. Furthermore, only 22 per cent of these parents read to their child on a daily basis. These results suggest that perhaps not all parents value ESR. Alternatively, parents may experience other barriers to ESR with their young children, such as access to books or lack of awareness regarding the importance of ESR with very young children. The review also identified that the reading strategies implemented by parents of young children were different to those of parents with preschool-aged children. They discovered that parents who read with their young children tended to use reading as a labeling activity with a focus on testing the child, and for the activity to be led by the parent rather than the child. Fletcher and Reese (2005) concluded that further research into ESR targeting book selection, frequency and quality of ESR from families with varying socioeconomic backgrounds was warranted.

Socioeconomic status and early storybook reading

The Socio-Economic Indexes for Areas (SEIFA) has classified areas as advantaged or less advantaged, as determined by the socioeconomic status of the area (ABS, 2011). Previous research has indicated that kindergarten children (first year of school) from less advantaged areas can have poorer expressive language and emergent literacy skills in contrast to their peers from advantaged areas (Justice, Meier & Walpole, 2009). This has raised the question as to whether there are discrepancies in the home reading environment provided by parents from advantaged areas and less advantaged areas. A study by Abraham, Crais and Vernon-Feagans (2013) described the natural language use whilst reading of 82 mothers from a less advantaged area (as defined by income-to-needs ratio) in North Carolina and Pennsylvania in the United States of America (USA). The mothers’ language use was examined and compared during a parent–child reading observation when the child was six months of age, and a second parent–child reading observation when the child was 15 months of age. No intervention or materials were provided. The parent–child reading observation revealed that the mothers from this study used few language strategies that are known to help facilitate the development of early verbal communication and instead used a high proportion of concrete strategies such as asking ‘wh’ questions (e.g. Where is the …?), asking the child to look at the pictures and the parent answering their own questions for both the six and the 15-month-old readings. The findings indicated that, contrast to previous studies, their study indicated that there are differences within less advantaged communities. Some mothers provided a higher word count and a greater variety of words while reading compared to other mothers in the same socioeconomic area. Further investigation into parents’ home reading practices and beliefs on ESR from less advantaged communities is clearly needed to understand why some parents provide a rich reading environment and others experience barriers with ESR. This information is likely to be useful for clinicians, early intervention centres, health promotion organisations and libraries to better understand which areas of ESR parents show strengths in and which factors are creating barriers for parents and can be better supported.

Early storybook reading programs in Australia

Programs both within Australia and across the globe are seeking to encourage parents of very young children to engage in reading and reading-related activities despite much of the literature surrounding ESR and its benefits focusing on preschool-aged children (Shoghi et al., 2013). One of the more recent studies examining ESR is the ‘Let’s Read’ program (Goldfeld et al., 2011; Goldfeld et al., 2012). A total of 552 families from less advantaged communities (as defined by SEIFA) in Melbourne, Australia, participated. Child health nurses were provided with training and resources on ESR with children. This information was then provided to parents during a short discussion as part of their child’s regular appointment with the child health nurse. Parents were also provided with a DVD on ESR, a free children’s book to keep, as well as information sheets. The program was well received by both the parents and children with nurses. Surprisingly, no significant outcomes were observed in the children’s communication skills as measured by the Sure Start adaption of the MacArthur Bates Communicative Inventory (Roy, Kersley, & Law, 2010, cited in Goldfeld et al., 2011) and the Communication and Symbolic Behavior Infant Toddler Checklist (Wetherby & Prizant, 2002) at both two and four years of age. As suggested by the authors, a longer intervention time and additional support to help parents learn the ESR strategies may have resulted in better language outcomes. The authors also questioned whether providing this study through a different provider may have yielded better language outcomes. Understanding how parents currently read with their child and the value they place on reading with young children may have contributed to this study as it would have enabled the program to build on parents’ current strengths and support parents with aspects of ESR that may create barriers.
Another study using a similar approach to the ‘Let’s Read’ program is the ‘Better Beginnings’ program (Barratt-Pugh & Rohl, 2015). The ‘Better Beginnings’ program in Western Australia provided 300 parents of young babies (six to eight weeks old) with a reading pack through their child health nurse (Barratt-Pugh & Rohl, 2015). Parents from varying socioeconomic backgrounds participated. The reading packs were developed by the State Library and included an age appropriate book, nursery rhymes, library membership form, information sheets as well as a DVD on ESR. Parent satisfaction was high and parents reported that they felt more confident reading with their child after receiving the reading pack. Furthermore, prior to the provision of the reading pack, only 14 per cent of parents indicated that they read books with their child. One year after receiving the reading pack, 85 per cent of parents reported sharing books with their child. Not only did reading and reading-related activities increase, parents also reported that their children’s interest in books appeared to increase. These findings are very encouraging and indicate that parents respond positively to ESR intervention programs and can change their home reading practices. Limited information was provided about the reading strategies parents used prior to receiving the reading pack as well as the types of books parents chose to read to their young children. As noted by the authors, a better understanding of the values placed on ESR by parents is essential as 94 per cent of the parents indicated that ESR was an important activity prior to receiving the reading pack; however, only 14 per cent of these parents read with their child. This may have been due to the very young age of the children (six to eight-weeks-old). Some parents may have delayed the onset of reading as the parents were adjusting to parenthood or parents may have been acclimatising to a larger family. Understanding how parents of young children currently engage in ESR, the books they select and at which age they consider ESR to be an important activity is an essential contribution to the current literature as it will enable services to refine their programs to support and encourage parents’ strengths in ESR and better meet their needs with the barriers they are experiencing. Furthermore, understanding how parents from different socioeconomic backgrounds read with their children is essential to ensure that a holistic view of parents is provided and that needs of all parents can be met.

Current study

The current study contributes to previous research by gaining a better understanding of parents’ current home reading practices and values on ESR from both a less advantaged area and more advantaged area, through the use of a questionnaire. Additionally, the current study expands the limited and mostly out of date literature into ESR with very young children.

Methodology

Participants

One hundred and thirteen parents of young children participated in the current study. Age range of their child was the only selection criteria (birth to three-years-old). Parents who had children with medical complications and/or syndromes were welcome to participate. Participants were recruited from two locations, a more advantaged area (Brisbane North and surrounding area, n = 56) and a less advantaged area (Logan and the surrounding area, n = 55), as indexed by the SEIFA (ABS, 2011). Participants were asked to provide their postcode and this was used to assign participants to the more advantaged area or less advantaged area. Two participants did not provide their postcode. These participants were excluded from analysis comparing the more advantaged area with the less advantaged area.

Eighty two per cent of the parents identified themselves as the child’s mother, 8 per cent the father and the remaining 10 per cent consisted of grandparents, nanny/au pairs and guardians/temporary caregivers of the child. The parents ranged in age from 20-years-old to more than 40-years-old. Parents from the less advantaged area were younger than parents from the more advantaged area (c2 = 6.43, df = 1, p = 0.01). Parents from the more advantaged area reported higher educational achievements than parents from the less advantaged area (c2 = 10.7, df = 1, p = 0.01). Parents from the more advantaged area also reported a higher level of income (c2 = 6.07, df = 2, p = 0.05).

Seventy six per cent of the parents were monolingual English speakers. A higher proportion of parents from the more advantaged area spoke a language other than English as their primary language at home (c2 = 4.76, df = 1, p = 0.03). Eighty-three per cent of the participants identified their ancestry as Australian, 6 per cent Asian, 6 per cent New Zealand and 6 per cent European. The remaining participants listed their ancestry as other (9.7 per cent), Pacific Islander (1.8 per cent), Maori (1.8 per cent) and Aboriginal/Torres Strait Islander (0.9 per cent). The majority of parents had an only child (45 per cent), 39 per cent cared for one other child, 11 per cent cared for three children and 5 per cent cared for more than three children. As shown in Table 1, the children ranged in age from less than three-months-old to three years of age. Even numbers of female and male children were recruited from both areas. There were no significant differences between the more advantaged area and less advantaged area when examining age and gender of the children. Significant medical complications were reported for 8 per cent of the children. Six per cent of parents also indicated concerns regarding their child’s communication development. Fourteen per cent of parents reported a family history of communication difficulties, requiring therapy. There were no significant differences between the two groups when examining the presence of medical complications or family history of communication difficulties.
Materials
A questionnaire was designed to explore the parents’ current home reading practices as well as opinions on ESR. The questionnaire was adapted from the Early Literacy Parent Questionnaire by Boudreau (2005), a storybook exposure questionnaire developed by Sénéchal, LeFevre, Thomas and Daley (1998) and the Children’s Title Checklist created by Sénéchal, LeFevre, Hudson and Lavson (1996). These questionnaires were selected as they have been effectively administered in previous studies, which have also examined home literacy practices. The questionnaire was adapted to accommodate the younger age range of the children in this study. This included a greater focus on strategies that the parents provided while reading as opposed to a focus on the child’s current literacy abilities. Previous research has found parent reporting through questionnaires to be a valid, effective and efficient method for collecting reliable data on young children’s early reading environments (Boudreau, 2005). A checklist/booklist was included in the book selection section, as Sénéchal et al. (1996) found that booklists reduce social desirability in responses from parents and also minimise difficulties with question interpretation, therefore making them even more reliable than traditional self-reporting. A pilot study of the questionnaire was trialed with 11 parents (10 mothers and one father) who had children three years old and younger. The parents indicated that they were able to understand the questions presented in the questionnaire and that it took less than 15 minutes to complete.

The questionnaire consisted of 46 questions, which included a combination of check boxes, scale and open responses. Participants were able to skip questions as well as indicate that they would prefer not to answer. The questionnaire consisted of four main areas: parents’ current values and opinions of ESR; frequency of book reading activities; book selection; and reading environment and strategies. The booklist was included in the book selection section. The booklist consisted of nine recommended books for young children such as Dear Zoo (Campbell, 1982). The recommended books were selected from various Australian websites, newspaper and magazine articles for parents, as well as library and bookstore displays. The books were easily accessible to parents and could be found at their local library, bookstore and department store.

Four primary school aged children’s chapter books such as Charlotte’s Web (White, 1952) were also included in the booklist as were seven foils (books that the primary investigator made-up). Parents were asked to indicate which books from the list they had read to their child and were also informed that some of the books were foils.

Procedure
Full ethical approval was obtained from the University Human Ethics Committees prior to recruitment of participants. The parents were recruited from child health nurses, preschools, childcare centres, libraries and playgroups, including playgroups for families whose children were in full time, out of home care. Flyers were provided to potential participants as well as brief presentations about the study to enable face-to-face opportunities to ask questions about the study. Participants were able to complete the questionnaire at their recruitment location following the presentation. Reply paid envelopes were provided to participants who wished to complete a paper copy of the questionnaire at home. Each recruitment location was also provided with flyers. The flyers contained information about the questionnaire as well as how to access the questionnaire electronically through Survey Monkey, an online survey tool. Parents were asked to base their answers on their youngest child and to only complete the questionnaire once.

Results

Data analysis
Frequency distributions were used to describe the results. Additionally, correlational analyses were used to examine the strength of relationships between results from the four different question areas as well as demographics. The Chi-Square Test was used to analyse these relationships (Portney & Watkins, 2009). If the Chi-Square rule was violated due to the frequencies in the table being too sparse, then categories within an item were combined, if appropriate. If the Chi-Square rule continued to be violated and a two-by-two table could be generated, then the Fisher’s Exact Test was used (Portney & Watkins, 2009).

Table 1. Descriptive statistics for infants (in percentage)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>More advantaged area (n = 56)</th>
<th>Less advantaged area (n = 55)</th>
<th>Total % for both areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Younger than 3 months old</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>3 to 6 months old</td>
<td>9</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>7 to 12 months old</td>
<td>17</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>1 to 2 years old</td>
<td>13</td>
<td>20</td>
<td>33</td>
</tr>
<tr>
<td>2 to 3 years old</td>
<td>12</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>3 years old</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Male</td>
<td>21</td>
<td>29</td>
<td>46</td>
</tr>
</tbody>
</table>

Australasian Journal of Early Childhood Volume 42 Number 2 June 2017
The Chi-Square rule of thumb for 20 per cent of the cells to have an expected count of five or more was implemented, unless otherwise specified. A representative sample of questionnaires (over 25 per cent) was checked for data entry by an external examiner who was blind to the study objectives. Interrater consistency was high (98 per cent). The results for this study are displayed in four sections to correspond with the four main areas this questionnaire aimed to address: (1) parents’ current values and opinions of ESR; (2) frequency of ESR activities; (3) book selection; (4) reading environment and strategies.

Parents’ current values and opinions of early storybook reading

Descriptive statistics for parents’ current values and opinions of ESR are detailed in Table 2. A significant relationship was found between the parents’ own reported enjoyment of ESR and the parents’ opinions on whether their child appeared to enjoy reading ($\chi^2 = 4.98$, df = 1, $p = 0.03$). No other significant results were found when analysing parents’ values and opinions of ESR with any other variable within this questionnaire.

Frequency of early storybook reading activities

Table 3 outlines the participant characteristics related to frequency of ESR activities. Parents from the more advantaged area were significantly more likely to read to their child more often than parents from the less advantaged area ($\chi^2 = 8.1$, df = 3, $p = 0.04$). Two cells (25 per cent) had an expected count of less than five. Parents who reported that their child enjoyed ESR were significantly more likely to have children that engaged in independent play with books more often than parents who indicated that their child felt neutral towards reading or did not enjoy it ($\chi^2 = 11.59$, df = 1, $p = 0.001$). Parents from the more advantaged area were also significantly more likely to own more children’s books than parents from the less advantaged area ($\chi^2 = 6.10$, df = 2, $p = 0.05$).

Book selection

Table 4 outlines the participants’ descriptive statistics for book selection. The physical type of books (e.g. board books, thin-paged books) that parents selected for their child was not significantly related to any other variable examined within this questionnaire. Consistent with this finding, no significant relationships were found when investigating the type of book structure (e.g. number of pictures and sentences on each page) that parents selected for their child and any other variable that this questionnaire explored.

<table>
<thead>
<tr>
<th>Table 2. Descriptive statistics on parents’ current values and opinions of ESR (in percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>More advantaged area</strong> ($n = 56$)</td>
</tr>
<tr>
<td>ESR important activity from birth</td>
</tr>
<tr>
<td>Commenced ESR from birth</td>
</tr>
<tr>
<td>Not reading to their child</td>
</tr>
<tr>
<td>Plan to commence ESR before 12 months of age</td>
</tr>
<tr>
<td>Plan to commence ESR before 3–4 years of age</td>
</tr>
<tr>
<td>ESR favourite or enjoyed activity for parent</td>
</tr>
<tr>
<td>ESR neutral or least favourite activity for parent</td>
</tr>
<tr>
<td>ESR favourite or enjoyed activity for child</td>
</tr>
<tr>
<td>ESR neutral of least favourite activity for child</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 3. Descriptive statistics on frequency of early storybook reading activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>More advantaged area</strong> ($n = 56$)</td>
</tr>
<tr>
<td>Read to their child every day</td>
</tr>
<tr>
<td>Children over 12-months-old initiated ESR daily</td>
</tr>
<tr>
<td>Daily independent play with books</td>
</tr>
<tr>
<td>Attended library and/or bookstores often/very often</td>
</tr>
<tr>
<td>Over 30 children’s books in the family home</td>
</tr>
<tr>
<td>Less than 10 children’s books in the family home</td>
</tr>
</tbody>
</table>
Parents from the less advantaged area selected significantly more of the older children’s books than parents from the more advantaged area ($c^2 = 5.67$, $df = 1$, $p = 0.02$). Significantly more foils (books ‘made up’ by the primary investigator) were also selected by parents from the less advantaged area compared to parents from the more advantaged area ($c^2 = 5.70$, $df = 1$, $p = 0.02$).

### Reading environment and strategies

Participant characteristics related to reading environment and strategies are outlined in Table 5. The relationship between the reading strategies that parents provided and the demographic variables as well as other ESR variables were unable to be examined due to this question being a multiple response item.

### Discussion

The aim of this study was to explore the ESR practices and opinions of parents with young children (birth to three years of age) from an advantaged area and a less advantaged area. Four key domains of ESR with young children were examined: (1) parents’ current values and opinions of ESR; (2) frequency of reading activities; (3) book selection; and (4) reading environment and strategies.

#### Parents’ current values and opinions of ESR

Parents from both areas indicated that ESR was an important activity to engage in with children from birth to three years of age. The majority of parents from both areas commenced ESR from birth (76 per cent) and thought it was important to start reading with children from birth as well (78 per cent). Only 4 per cent of parents did not read books with their child as they felt their child was ‘too young’. These findings are encouraging given that, just over a decade ago, research indicated that only 50 per cent of parents read with their young children (Fletcher & Reese, 2005). This shift in perspective on ESR with young children was further demonstrated by the majority of parents (62 per cent) reporting that ESR was an enjoyed or favourite activity. This was reciprocal for the child.

#### Table 4. Descriptive statistics on book selection

<table>
<thead>
<tr>
<th></th>
<th>More advantaged area ($n = 56$)</th>
<th>Less advantaged area ($n = 55$)</th>
<th>Total % from both areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board books</td>
<td>25</td>
<td>26</td>
<td>51</td>
</tr>
<tr>
<td>Thin-paged books</td>
<td>24</td>
<td>23</td>
<td>46</td>
</tr>
<tr>
<td>One to two sentences per page and a picture</td>
<td>29</td>
<td>23</td>
<td>50</td>
</tr>
<tr>
<td>Lots of sentences and a picture on each page</td>
<td>8</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>Lots of words and lots of pictures on each page</td>
<td>8</td>
<td>14</td>
<td>22</td>
</tr>
<tr>
<td>Chapter books with no pictures</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Selected 9/9 age appropriate books</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Selected 6/9 age appropriate books</td>
<td>8</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>Selected no older children’s books</td>
<td>48</td>
<td>42</td>
<td>88</td>
</tr>
<tr>
<td>Selected no foils (made up books)</td>
<td>50</td>
<td>41</td>
<td>89</td>
</tr>
</tbody>
</table>

#### Table 5. Descriptive statistics on reading environment and strategies

<table>
<thead>
<tr>
<th></th>
<th>More advantaged area ($n = 56$)</th>
<th>Less advantaged area ($n = 55$)</th>
<th>Total % from both areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>On parent’s lap, back to parent, facing the book</td>
<td>20</td>
<td>28</td>
<td>46</td>
</tr>
<tr>
<td>Sideways on parent’s lap, facing the book</td>
<td>11</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Child playing on the floor</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Child and parent lying in bed with the book between them</td>
<td>6</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Book read word for word</td>
<td>-</td>
<td>-</td>
<td>81</td>
</tr>
<tr>
<td>Asked child to find pictures</td>
<td>-</td>
<td>-</td>
<td>41</td>
</tr>
<tr>
<td>‘Wh’ questions</td>
<td>-</td>
<td>-</td>
<td>31</td>
</tr>
<tr>
<td>Strategies recommended for older children</td>
<td>-</td>
<td>-</td>
<td>68</td>
</tr>
<tr>
<td>Strategies recommended for infants</td>
<td>-</td>
<td>-</td>
<td>32</td>
</tr>
</tbody>
</table>
Parents who enjoyed reading with their child were significantly more likely to report that their child enjoyed ESR with them. Parents’ enjoyment and value of ESR is important given the pivotal role parents play in fostering their child’s language development. According to both the social constructivist theory posited by Vygotsky (1987) and the ecological systems theory advocated by Bronfenbrenner (1979), parents’ interactions with their child nurture the child’s language development. Therefore, if parents value and enjoy ESR it may provide a helpful platform for facilitating their child’s language development and social skills.

Frequency of reading activities
Not only are more parents reading with their young children, the data from this study indicates they are also attending libraries and/or bookstores more often. The parents in the current study reported a higher frequency of library and/or bookstore attendance than parents of preschool-aged children from the Sénéchal et al. (1996) study. Consistent with parents’ reports on their child’s enjoyment of ESR, 62 per cent of the children (12-months-old and older) initiated reading with their parents on a daily basis and partook in daily independent play with books (56 per cent). As would be expected, children who were reported to enjoy reading books with their parents were also reported to engage in significantly more occasions of independent play with books. The majority of children (64 per cent) also had access to more than 30 children’s books at home. Significant differences between parents from the more advantaged area and less advantaged area did emerge when examining the frequency of ESR activities. Parents from the less advantaged area read to their child significantly less frequently and owned significantly fewer children’s books than parents from the more advantaged area. This finding may possibly explain some of the differences in language abilities between children from less advantaged areas and more advantaged areas when they commence school. Given the importance placed on parent–child interactions for language development to prosper, as advocated by both the social constructivist theory and ecological systems theory of language development, if parents are not frequently interacting with their child through ESR, nor providing sufficient access to children’s books, it may possibly create a barrier for the child’s language and social skill development. However, parents from less advantaged areas may use other forms of interaction, instead of ESR, to foster their child’s language and social skill development and this should be examined further in future studies.

Book selection
It is encouraging that 51 per cent of parents reported reading board books to their young children. Board books are helpful for young children as they encourage the child to interact and engage with the book (Dickinson, Griffith, Michnick Golinkoff & Hirsh-Pasek, 2012). Board books typically have one big, bright, colourful picture on each page and interactive components (e.g. lift the flaps, touch and feel items). Pictures within the book can help to capture the child’s attention and facilitate exploration of the book (Brookshire, Scharff & Moses, 2002). Board books are also easier for children to hold and turn the page. A high proportion of parents also reported reading thin-paged books with their child (46 per cent). Many thin-paged books also have one big, bright picture on each page; however, they can contain many sentences, which may require more advanced language skills to understand (Fletcher & Reese, 2008). Thin-paged books can be more difficult for young children to hold and turn the pages without tearing them. The majority of thin-paged books also do not have interactive components that allow the child to take tactile turns while reading. This is particularly important for preverbal children who can only indicate their interest through visual or tactile responses (Dickinson et al., 2012). A small proportion of parents (2 per cent) reported reading chapter books with no pictures to their child.

The structure of the books that parents reported reading with their child was not consistent with the type of books (e.g. board books, thin-paged books) that parents reported reading. While 46 per cent of parents reported reading thin-paged books with their children, only 18 per cent indicated that they read books with lots of sentences and a picture on each page. This contradictory finding may be the result of difficulties with question interpretation, where more specific questioning examining the exact number of sentences per page may have revealed more information. The booklist included in this questionnaire provided a better insight into the types of books that parents read with their young children. One parent (from the less advantaged area) was able to correctly select all nine of the recommended books for young children. Fifteen per cent of parents were able to select six or more of the recommended books for young children. This finding suggests that parents may not be familiar with recommended books for young children, even books that are well established and have been available to parents for more than a decade and are readily available at libraries, bookstores and department stores. These findings indicate that parents from both areas may benefit from further education on book selection. The majority of parents (88 per cent) did not select any foils (books ‘made up’ by the primary investigator) from the book list. More parents from the less advantaged area displayed difficulties with book selection compared with parents from the more advantaged area. These parents selected a significantly greater number of chapter books aimed at older children and selected significantly more foils (books ‘made up’ by the primary investigator).

Reading environment and strategies
Reading environment plays a significant role in fostering early communication development. ESR provides an opportunity for parents to demonstrate and teach their child eye contact and joint attention (Farrant & Zubrick, 2013), both of which are important for encouraging parent–child interactions (Bronfenbrenner, 1979; Vygotsky, 1987).
Most parents reported using seating positions that do not enable eye contact or encourage joint attention (e.g., the child sitting with their back to the parent). Future studies should explore how to increase parents’ awareness of the importance of teaching and modeling eye contact and joint attention to their young children to build foundational early communication skills (Farrant & Zubrick, 2013).

Reading strategies were explored to discover whether parents were using strategies that facilitate early communication development during ESR. Previous research has highlighted how different strategies parents employ while reading with their children can facilitate or create barriers for interaction and language learning (Abraham et al., 2013). Parents from the current study mostly selected strategies (68 per cent) that are recommended for older preschool-aged children with a focus on testing the child’s language abilities rather than teaching foundational early communication skills, which can help to build the child’s vocabulary, consolidate their semantics and encourage social skill development. These findings are consistent with the results from Abraham et al. (2013) who examined language use of mothers from low-income environments. Unfortunately, as our findings were part of a multiple response item, it cannot be determined whether parents from the more advantaged area or less advantaged area selected a higher proportion of language facilitating strategies. However, given that such a large proportion of the parents (68 per cent) reported using strategies recommended for older children, we can assume that parents from both groups are using strategies that are most effective for preschool-aged children rather than preverbal children or children with emerging language skills.

ESR and families from less advantaged areas

The findings from the current study are consistent with previous research investigating ESR with young children from less advantaged areas (Abraham et al., 2013; Bus & van IJzendoorn, 1997). Many studies have suggested that the discrepancy in expressive language and emergent literacy skills experienced by some children from less advantaged areas when they commence school may be related to their home environment (Lefebvre et al., 2011). In the current study, the only significant differences that emerged between the two groups of parents surrounded frequency of ESR, number of children’s books within the family home and book selection. While other home environment factors may influence language and emergent literacy development of children from less advantaged areas, much of the home literacy practices and beliefs surrounding ESR between both groups in this study were the same.

Future directions

Limited differences were observed in the values and beliefs on ESR and current home reading practices between the parents from the more advantaged area and less advantaged area. Further examination of both the frequency and quality of ESR provided by parents from both areas may shed light on why some children from less advantaged areas commence school with poorer expressive language and emergent literacy skills compared with children from more advantaged areas. This will also enable researchers to further understand language theories and the complex relationship between natural/innate development and what can be nurtured/facilitated through the interactions with others. Research investigating the effectiveness of providing all parents with accessible education on book selection, how to create a language-enhancing home reading environment as well as reading strategies aimed at building children’s early communication and social skills is also warranted.

Limitations of the current study

Limitations of using questionnaires, as documented by Sénéchal et al. (1996), is that parents may shape their responses to align with what is considered desirable by society rather than provide a true reflection of their own opinion. A booklist was included in this questionnaire as recommended by Sénéchal et al. (1996) to reduce social desirability; however, not all questions can be answered through booklists (for example, parents’ own enjoyment of ESR). A video recording of the parent and child reading may have provided additional information about the family’s home reading environment. An additional limitation of this study is that some of the participants were recruited at library activities and this could have influenced the outcomes of the study. However, a large proportion of families were also recruited from playgroups and mothers’ groups.

Conclusion

The insight into parents’ values and opinions on ESR and current home reading practices from birth to three years of age investigated in this study may be useful for an array of early intervention services, health promotion and future research. Providing parents with ongoing encouragement to engage in regular reading and education on how to facilitate early language development through ESR may be beneficial for all parents to help promote language and social skill development.

Acknowledgements

We would like to acknowledge and sincerely thank Pat Coope for her generous contribution with providing statistic expertise. Many thanks, also, to the families who participated in this study for their time and contribution.
References


Chapter 4: Promoting Language and Social Communication Development in Babies Through an Early Storybook Reading Intervention

Statement of contribution to co-authored published paper

This chapter includes a co-authored paper. The bibliographic details of the co-authored paper, including all authors, are:


My contribution to the paper involved: Completion of the ethics application, collection of the data, analysis of the data in collaboration with my PhD supervisors, writing the first draft of the manuscript, and the majority of the writing for subsequent drafts of the manuscript.

Elaboration Statement

The following points provide further elaboration for the published manuscript presented in Chapter 4:

- On page 63 the results from this published manuscript are discussed and it is reported that an early storybook reading intervention delivered to parents with babies aged 3- to 12-months-of-age can strengthen the babies’ language and social communication skills. The early storybook reading intervention discussed
in this manuscript encouraged parents to reduce testing/labeling questions and to rather focus on teaching their babies/providing language models. Further research is needed to compare the effectiveness of different early storybook reading techniques to examine which specific techniques support language and social communication development. This is further discussed in the Future Directions section of the General Discussion on page 136 of this thesis. It is recommended that future research examine which components of ESR are essential for strengthening language and social communication development.

- As noted on page 57, there were no significant gender differences between the high intensity group and the low intensity group. While there were no significant gender differences between the two groups, there were more female participants in the high intensity group compared to the low intensity group. It is possible that this may have influenced the results, given that males are more susceptible to language difficulties than females (Zubrick, Taylor, Rice, & Slegers, 2007).

(Signed) _______________________________ (Date) __20/12/2017__
Michelle I. Brown

(Countersigned) __________________________ (Date) __Dec 2017__________

Supervisor: Marleen F. Westerveld
Promoting language and social communication development in babies through an early storybook reading intervention

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Abstract
Purpose: This study examined the effectiveness of low- and high-intensity early storybook reading (ESR) intervention workshops delivered to parents for promoting their babies language and social communication development. These workshops educated parents on how to provide a stimulating home reading environment and engage in parent–child interactions during ESR.
Method: Parent–child dyads (n = 32); child age: 3–12 months, were assigned into two intervention conditions: low and high intensity (LI versus HI) groups. Both groups received the same ESR strategies; however, the HI group received additional intervention time, demonstrations and support. Outcome measures were assessed pre-intervention, one and three months post-intervention and when the child turned 2 years of age.
Result: A significant time–group interaction with increased performance in the HI group was observed for language scores immediately post-intervention (p = 0.007) and at 2-years-of-age (p = 0.022). Significantly higher broader social communication scores were associated with the HI group at each of the time points (p = 0.018, p = 0.001 and p = 0.021, respectively). Simple main effect revealed that both groups demonstrated a significant improvement in language, broader social communication and home reading practices scores.
Conclusions: ESR intervention workshops may promote language and broader social communication skills. The HI ESR intervention workshop was associated with significantly higher language and broader social communication scores.
Keywords: early storybook reading; language development; social communication; babies and young children; parent training workshops

Introduction
Early storybook reading (ESR) with babies has the potential to promote language development, social communication and parent–child bonding (Farrant, 2012). Strengthening language development during the first years of life and building strong parent–child relationships can enhance language and social communication skills in the pre-school years. This in turn can support emergent literacy development and school readiness, which facilitates literacy skills during primary school leading to higher academic achievements (Bus, van Ijzendoorn, & Pellegrini, 1995; Farrant & Zubrick, 2013; Sénéchal, LeFevre, Hudson, & Lawson, 1996). A report by Reilly et al. (2007) indicated that as many as 30% of 8- to 10-month-old children in Australia have delays in reaching early communication milestones. Emerging evidence suggests that regular ESR and teaching parents how to maximise language and social communication learning through reading books with their baby could promote early communication skills, which may reduce the impact of these early communication delays and potentially help to prevent them (see Shoghi, Willersdorf, Braganza, & McDonald, 2013). As the research into ESR is still emerging, further research needs to examine the method and intensity of such interventions. This study examined the comparative effectiveness of low intensity (LI) and high intensity (HI) ESR intervention workshops for parents with typically developing babies 3- to 12-months-of-age. The goal of the ESR intervention workshops is to promote language and broader social communication development through a stimulating home reading environment as well as parent–child interactions during ESR.
The benefits of early storybook reading (ESR)

ESR can foster language development and broader social communication as the baby is provided with the individual attention of the parent, enabling opportunities to teach and model eye-contact and joint attention, as well as parent-child bonding (such as cuddles, smiles and quality one-on-one time together; Parrant & Zubrick, 2013). Books provide a structured scaffold for language learning to occur (Fletcher & Reese, 2005). Visual, kinaesthetic (e.g., lift the flap, touch and feel components), and auditory information assist the child in making the link between the pictured object and the sounds which make up the word, also referred to as word mapping (Bus & van IJzendoorn, 1997). Children of all ages and stages are able to participate in ESR by looking at the book, engaging in non-verbal interaction with the book (such as eye-contact, joint attention, and tactile turns including turning the page, lifting the flap, and interacting with the touch and feel components), and providing verbal responses (Fletcher & Reese, 2005). Novel vocabulary items that a baby may not encounter in their everyday life or immediate environment can also be experienced through reading books (Seneschal et al., 1996). Communication interactions during shared reading have been found to be richer and more complex than interactions during play and television programmes (Seneschal et al., 1996).

Language and literacy

Literacy development begins with reading to preverbal babies as it enables exposure to print and book orientation, setting the stage for emergent literacy development in the pre-school years (Bus & van IJzendoorn 1997; Edwards, 2014). The relationship between language and, in particular oral language, and literacy development is well established (Snow et al., 2014). Communication interactions during shared reading have been found to be richer and more complex than interactions during play and television programmes (Seneschal et al., 1996).

Early storybook reading with babies

Preliminary evidence suggests that ESR may also support language development for younger children and babies (Bus et al., 1995). Karras and Braungart-Rieker (2005) investigated the benefits for language development from reading to babies at 4- and 8-months-of-age. Parents who reported that they were reading to their baby as well as parents who indicated that they were not reading to their baby were recruited. Their study sought to investigate whether children whose parents were reading to them at 4- and 8-months-of-age presented with higher language skills at 12- and 16-months-of-age. The babies (n = 87) were typically developing babies from middle-class families with well-educated parents. No intervention, instructions or books were provided, only the presence or absence of shared reading as reported by the parent. Results indicated that babies who were read from 8-months-old presented with significantly higher language scores at 12- and 16-months-of-age as measured on the language components from the Bayley Mental Scale (Bayley, 1969) as well as the parent-report from the Sequenced Inventory of Communicative Development-Revised, Expressive and Receptive Scales (SICD-R; Hendrick, Praher, & Tobin, 1984). The findings also indicated that parents who commenced reading to their baby at 4-months-of-age continued reading to their baby as the study progressed. However, ESR with 4-month-old babies did not predict language outcomes at 12 and 16-months-of-age. The authors questioned whether this may be due to advances in receptive language development only occurring at approximately 8-months-of-age when babies begin to identify words in the stream of sounds that they hear. Another possible explanation is that the assessment tool that was used was not sensitive enough to detect...
some of the subtle language improvements at this very young age. The “Let’s Read” Programme (Goldfeld et al., 2011; Goldfeld et al., 2012), expanded on the findings from Karrass and Braungart-Rieker (2005), by examining whether providing parents with instructions on how to read with their baby may result in even higher outcomes for language development than providing no instructions and no intervention. Families (n = 552) from less advantaged communities in Melbourne, Australia participated with 365 families randomly selected to receive the intervention and 283 randomly selected for the control group. The intervention was conducted as part of the baby’s regular health check with their child health nurse, which is a free public service in Australia. The control group received the usual child health nurse care, but were not provided with any intervention or instructions on ESR. Prior to providing the ESR intervention to the intervention group, the child health nurses were provided with a two-hour training session on ESR by the authors of the study. The intervention consisted of the child health nurses having a short discussion on ESR with each baby’s parent and providing the parent with a DVD on ESR and a free children’s book to keep. Language outcomes were assessed using the Sure Start adaption of the MacArthur Bates Communicative Inventory (Roy, Kersley, & Law, 2010) and the Communication and Symbolic Behavior Infant Toddler Checklist (Wetherby & Prizant, 2002) at 2 and 4-years-of-age. No significant differences between the intervention and control group were observed at either 2 or 4-years-of-age. Nevertheless, the participants and child health nurses from the intervention group provided positive feedback on the programme. As suggested by the authors, the families may require a more intensive intervention over a longer period with ongoing support. It was however not specified within the article, how much intensity or support may be required.

More recently, the “Better Beginnings” programme in Western Australia provided an ESR intervention through both the State library and child health nurses (Barratt-Pugh & Rohl, 2015). Parents (n = 300) of babies (6- to 8-weeks-old) were provided with a reading pack through their child health nurse, which was developed by the State Library. All of the participants were provided with the intervention and there was no control or comparison group. A board book, nursery rhymes, membership form for the library as well as a DVD and information sheets on ESR were included in the reading pack. Reading and reading-related activities increased as a result of the distribution of the reading packs. Prior to receiving the reading pack, 14% of the parents reporting reading with their baby. The following year after receiving the reading pack, 85% of parents indicated that they read with their baby.

Whilst not discussed in the Barratt-Pugh and Rohl (2015) study, it is possible that the rise in percentage of parents reportedly reading to their child may have been influenced by the very young age of the babies at the commencement of the study (6- to 8-weeks-old). The study was received positively and parents reported higher levels of confidence in reading with their baby post receiving the reading pack. These findings are encouraging and indicate that parents can respond favourably to ESR interventions. However, it is unknown whether the reading pack promoted language and social communication skills to support later language and literacy development.

Understanding how parents read with their baby, the type of books they use, the importance and enjoyment they place on reading, as well as the frequency of reading activities parents engage in with their baby may shed light on factors that help facilitate ESR for parents as well as barriers they may encounter. A recent study examined the current home reading practices as well as values and opinions on ESR of parents with newborn to 3-year-old children in Australia through the use of a questionnaire (Brown, Westerveld, & Gillon, 2017). The parents came from a less advanced area (n = 55) and a more advanced area (n = 56) as indexed by the Socio-Economic Indexes for Areas (SEIFA, Australian Bureau of Statistics, 2011). The findings indicated that 76% of parents start reading to their baby from birth, with 60% of parents attending the library and/or bookstore frequently and 64% having over 30 children’s books within their family home. Furthermore, many parents (62%) enjoyed ESR with their baby and rated it as one of their favourite activities to engage in. It is encouraging that many parents appear to value ESR; however, the results from the study also indicated that parents experienced barriers with book selection, creating a language-stimulating reading environment and implementing reading strategies that build early communication skills of pre-verbal babies and babies with emerging language skills. Whilst emerging evidence from ESR with babies appears encouraging, inconclusive findings for improved language and social communication skills from ESR with babies to date, indicate that further research is warranted. Specifically, future research should examine whether language and social communication skills can be enhanced from ESR with babies and the intensity of instruction/intervention needed for significant improvements in language and social communication to be observed.

The current study

This study sought to investigate the comparative effectiveness for language, broader social communication development and parents’ home reading practices from LI and HI ESR intervention workshops for parents with typically developing babies.
The study built upon previous research by first examining whether ESR, in the first year of life, is associated with increases in language and broader social communication development as suggested by Karrass and Braungart-Rieker (2005). Second, it examined the intensity of the ESR intervention workshops as recommended by Goldfeld et al. (2011). Furthermore, this study addressed barriers reported by parents in the Brown et al. (2017) study by educating parents on how to create a stimulating home reading environment and how to support language and social communication development through parent-child interactions during ESR. Participants were allocated to one of two intervention conditions: HI intervention group and LI intervention group. The LI group was provided with three hours less intervention time, less support, fewer demonstrations and no practice opportunities. This study questioned whether the HI ESR intervention workshops were comparatively more effective than LI ESR workshops for improving: (1) language skills; (2) broader social communication skills; and (3) parents’ home reading practices. For each of the above questions we examined the comparative effectiveness immediately post intervention, three months post intervention and at 2-years-of-age. An additional aim was to examine whether parents enjoyed attending the ESR intervention workshops. In line with Karrass and Braungart-Rieker (2005) findings, it was hypothesised that babies from both the HI group and LI group would demonstrate improvements in language and broader social communication skills post the intervention and that these improvements would be maintained at 2-years-of-age. Improved home reading practices were also hypothesised to be associated with the ESR intervention for both the HI group and LI group. Due to the increased intensity, support and demonstrations provided to the HI group, it was hypothesised that the HI group would present with higher language and broader social communication skills compared to the LI group.

Method

Study design

An experimental pre-test, post-test comparison group design was utilised. Thirty-two parent-child dyads participated and were assigned to two intervention conditions: HI group (n = 17) and LI group (n = 15). Recruitment was conducted over a seven month rolling period with intervention workshops run simultaneously to recruitment. Once seven or more participants were recruited a workshop was conducted. This was to ensure that the babies did not outgrow the selection criteria age range and secondly to ensure that the groups were small enough for the workshop to be interactive and inclusive. Two intervention waves were offered for each intervention condition, such that a HI intervention was conducted in February 2014, followed by a LI intervention in May 2014. A second HI intervention was provided in June 2014 with a second LI intervention conducted in July 2014. Participants were automatically allocated to the intervention group that was next on offer. Full ethical clearance was provided through the human research ethics committees at The University of Canterbury and Griffith University as well as the Children’s Health Services Queensland, Human Research Ethics Committee.

Participants

Participants were recruited through child health nurses, playgroups, childcare centres and libraries. This study followed on from a questionnaire conducted in the Brown et al. (2017) study: Participants indicated their interest in participating in this study through ticking a box on the questionnaire. Brief, in-person presentations by the primary investigator, flyers and posters were also provided. All participants were from an advantaged area in Brisbane, Australia, as indexed by the Socio-Economic Indexes for Areas (Australian Bureau of Statistics, 2011). Descriptive statistics for the participants are shown in Table 1. Three of the families spoke a language in addition to English at home with their baby, from birth (French, Mandarin and Persian Arabic). All assessments and intervention sessions were conducted at a local Australian public library in Brisbane. Parents were provided with an information sheet and completed a consent form for themselves and their baby. None of the child participants were reported by their parents to have serious medical conditions and/or known or suspected syndromes. All parents had sufficient understanding of the English language to participate in conversations during the workshops and to read materials, including the information sheet and consent form. There were no significant gender differences between the babies in the HI group and LI group. There were also no significant age differences between the babies in the two groups (HI group $M$ age = 6 months; LI group $M$ age = 6 months). One participant attended the LI workshop, but did not complete the review assessments. Two participants attended the initial assessment but did not attend the workshop’s. None of the data from these participants were included in the study.

Intervention

The intervention consisted of parent training workshop/s. The HI group received six, 45 min sessions (4.5 h of intervention), which included a practice and consolidation session. Each session included videos and demonstrations of each reading strategy as well as consolidation of the previous session’s strategies. Reading records were
completed by the HI group, for a total of 12 weeks, following the intervention. The reading records outlined which reading strategies the participant used each week and which books they read with their baby. Participants were also able to indicate any difficulties they were experiencing with the strategies as well as report on improvements they observed and strategies they felt they were successfully implementing.

Personalised feedback was provided to the HI group throughout the study. This included online feedback during the practice session that was part of the final workshop in addition to replying to participant’s emails if they reported difficulties with a particular strategy and/or encouragement when parents reported success with implementing strategies. A weekly email with a spotlight on one-to-two strategies each week was provided for a 12-week period.

The LI group received a 90 min workshop containing the same ESR strategies that the HI group received. The LI group was not provided with videos and demonstrations for each of the strategies. A practice session was also not provided. The LI group did not complete any reading records or receive emails to consolidate learning of the strategies. Furthermore, the LI group did not receive ongoing personalised feedback. Please see the Appendix for further description of the intervention strategies/target behaviours.

**Measures**

Language skills and broader social communication were measured using the Preschool Language Scales – Fifth Edition (PLS-5; Zimmerman, Steiner, & Pond, 2012) and Communication and Symbolic Behavior Scales Developmental Profile Infant-Toddler Checklist (CSBS; Wetherby & Prizant, 2002). All of the assessments were conducted by a certified practising speech-language pathologist.

These assessments were selected because they are well established, have undergone validity testing and have been used in previous research (Betancourt, Brodsky & Hurt, 2015; Goldfeld et al., 2012; Wetherby & Prizant, 2002; Zimmerman et al., 2012). Raw scores were used for all assessment measures due to the subtle language and social communication changes that may occur in such young children during a short time frame. The CSBS also does not provide standardised scores for children younger than 6-months-of-age nor does it provide norms for Australian children. The PLS-5 does provide standardised scores for Australian children in increments of two months (such as 3- to 5-months-of-age, 6- to 8-months-of-age). Given the short time frame between assessments, raw scores were considered to possibly show increased sensitivity to these subtle changes. Furthermore, raw scores have been reported in previous research studies with children where standardised scores were available (Westerveld, Gillon & Boyd, 2012). Standardised scores for the PLS-5 for intake and final assessments have been provided for descriptive purposes on Table I.

In addition to the language assessments a video of the parent and baby reading was taken at each time point. Parents were asked to read a storybook with their baby in the same manner and seating arrangement that they used to read with their baby at home. A selection of children’s books was provided. This included board books, which are recommended for babies from birth, such as *That’s Not My Lamb* (Watt & Wells, 2013); thin-paged books, which are recommended for pre-school children, such as *Oh, The Places You’ll Go!* (Dr Seuss, 1957); as well as thin-paged chapter books, with no pictures, recommended for primary school children, such as *The Magic Faraway Tree* (Blyton, 1943).

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**Table I. Descriptive statistics for participants in the high (HI) and low intensity (LI) groups.**

<table>
<thead>
<tr>
<th></th>
<th>HI group (n = 17)</th>
<th>LI group (n = 15)</th>
<th>Total (n = 32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mothers</td>
<td>15</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Fathers</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Female children</td>
<td>11</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Male children</td>
<td>6</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Language other than English spoken at home</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Parent has more than one child</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Child age 3-months</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>4-months</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>5-months</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>6-months</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>7-months</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8-months</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>9-months</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10-months</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>11-months</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12-months</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Mean child age in months (SD)</td>
<td>6 (3)</td>
<td>6 (3)</td>
<td>6 (3)</td>
</tr>
<tr>
<td>Mean for intake PLS (SD)</td>
<td>104 (13)</td>
<td>103 (11)</td>
<td>103 (12)</td>
</tr>
<tr>
<td>Range for intake PLS (Minimum)</td>
<td>38 (92)</td>
<td>38 (81)</td>
<td>39 (81)</td>
</tr>
<tr>
<td>Mean for final PLS (SD)</td>
<td>120 (13)</td>
<td>113 (15)</td>
<td>117 (13)</td>
</tr>
<tr>
<td>Range for final PLS (Minimum)</td>
<td>48 (97)</td>
<td>51 (89)</td>
<td>56 (89)</td>
</tr>
</tbody>
</table>

A home reading checklist (HRC; contact author for a copy) was developed to assess each of the 32 intervention strategies/behaviours. Using the video footage of the parent-child reading, the HRC evaluated the reading environment, parent reading behaviours and child reading behaviours. A maximum of one point could be achieved per strategy/behaviour. Six of the strategies/behaviours required three or more occasions of the strategy/behaviour to be observed to attain a point for the behaviour (e.g., the parent needed to provide five occasions of eye-contact to be given the point for the eye-contact strategy/behaviour). The total score for each of the sections were; reading environment 11, parent reading behaviours 13 and child reading behaviours 8.

A video of the parent–child reading along with the language assessments were conducted within one month prior to the intervention, one month post intervention (T1) and three months post-intervention (T2). To determine whether potential gains from the intervention were maintained over time, a final assessment was completed when the participants were between 22- to 24-months-of-age (T3). One participant did not complete the CSBS for T3.

Reliability coding
A representative sample (over 10%) of the parent–child ESR video sessions were assessed, using the same HRC by a qualified speech-language pathologist, who was blind to study objectives. Training was provided using examples from participants who were not included in the random sample. Reliability was calculated by dividing the total number of responses both the primary investigator and blind assessor agreed upon, by the number of total responses (both agreed and disagreed) and multiplying by 100 to obtain a percentage. Inter-rater consistency was high (91%). This method of reliability coding was recommended by Kazdin (2011) with percentages at or above 80% considered adequate.

Statistical methods
The comparative effects of the ESR interventions were assessed using a two-way (group and time) mixed ANOVA that compared children’s intake scores with outcome scores at T1 and T2. Independent t-tests were used to assess differences in the children’s scores at T3 when the participants turned 22- to 24-months-of-age. The primary outcome measures were the PLS-5 total scores, the CSBS total scores and the HRC scores. Effect sizes are reported as (1) partial eta squared ($\eta^2_p$) for ANOVAs and (2) Cohen’s $d$ for improvement scores.

Result
Data for each comparison were normally distributed, as assessed by either boxplot, studentised residuals, Q-plots or Shapiro-Wilk’s test. Assumptions of homogeneity of variances and covariances were also met as assessed by Levene’s test of homogeneity and Box’s M test, respectively. Due to consistent violations of the assumption of sphericity (Mauchly’s test), the Greenhouse-Geisser correction was utilised. An outline of the mean scores and standard deviations for the HI group and LI group can be observed in Table II below. Table III outlines mean improvement scores, which were calculated by subtracting the outcomes scores at each of the time points (T1–T3) from the initial intake score. There was no statistically significant difference between the HI group and LI group at intake for the PLS-5 ($p = 0.635$), CSBS ($p = 0.302$) and HRC ($p = 0.741$).

Outcomes at time 1

Language outcomes.
Immediately following the intervention, there was a statistically significant interaction between group and time for PLS-5 total scores with a large effect size $F(1,30) = 8.256$, $p = 0.007$, $\eta^2_p = 0.216$. The simple main effect for time was significant for both the HI group $F(1,16) = 39.222$, $p < 0.0005$, $\eta^2_p = 0.710$ and LI group $F(1,14) = 14.644$, $p = 0.002$, $\eta^2_p = 0.511$. The simple main effect for group was not significant both at intake $F(1,30) = 0.230$, $p = 0.635$, $\eta^2_p = 0.008$ and T1 $F(1,30) = 1.549$, $p = 0.223$, $\eta^2_p = 0.049$. These results indicate that whilst both groups improved significantly, the HI group showed statistically higher PLS scores at T1 compared to the LI group. The mean improvement score for the HI group was 7.82 ($M = 32.24$, $SE = 1.58$, $CI = 28.89–35.58$) compared to the LI group’s mean improvement score of 3.33 ($M = 29.00$, $SE = 2.11$, $CI = 24.47–33.53$) with a large effect ($d = 1.03$).

Social communication outcomes.
A significant interaction was observed between group and time for CSBS total scores immediately post intervention at T1 with a large effect size $F(1,30) = 6.257$, $p = 0.018$, $\eta^2_p = 0.173$. The simple main effect for group indicated that there was not a statistically significant difference in CSBS scores at intake $F(1,30) = 1.104$, $p = 0.302$, $\eta^2_p = 0.035$ nor T1 $F(1,30) = 0.067$, $p = 0.797$, $\eta^2_p = 0.002$. The simple main effect of time showed a statistically significant difference in mean CSBS scores at the different time points (HI group: $F(1,16) = 46.970$, $p < 0.005$, $\eta^2_p = 0.746$; LI group: $F(1,14) = 29.849$, $p < 0.005$, $\eta^2_p = 0.681$). Mean improvement CSBS scores for the HI group were 11.12 ($M = 28.88$, $SE=2.56$, $CI = 18.090–28.56$) compared to the LI group’s 6.07 ($M = 27.87$, $SE = 2.73$, $CI = 19.26–30.41$). Therefore, both groups demonstrated a significant improvement, however, the HI group
Promoting language development through ESR

Table II. Summary of mean outcome measures for the high (HI) and low intensity (LI) groups at intake and each of the time points (T1, T2, T3).

<table>
<thead>
<tr>
<th>Time</th>
<th>Assessment</th>
<th>HI group</th>
<th>LI group</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td>Min</td>
</tr>
<tr>
<td>Intake</td>
<td>PLS total</td>
<td>24.41</td>
<td>7.107</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>CSBS total</td>
<td>17.76</td>
<td>9.935</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>HRC total</td>
<td>13.11</td>
<td>4.391</td>
<td>4</td>
</tr>
<tr>
<td>T1</td>
<td>PLS total</td>
<td>32.24</td>
<td>6.515</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>CSBS total</td>
<td>28.88</td>
<td>9.820</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>HRC total</td>
<td>23.82</td>
<td>3.627</td>
<td>16</td>
</tr>
<tr>
<td>T2</td>
<td>PLS total</td>
<td>35.06</td>
<td>6.189</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>CSBS total</td>
<td>34.53</td>
<td>9.670</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>HRC total</td>
<td>24.47</td>
<td>3.165</td>
<td>17</td>
</tr>
<tr>
<td>T3</td>
<td>PLS total</td>
<td>64.53</td>
<td>5.051</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>CSBS total</td>
<td>52.76</td>
<td>2.884</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>HRC total</td>
<td>26.12</td>
<td>4.211</td>
<td>13</td>
</tr>
</tbody>
</table>

PLS, Preschool Language Scale 5th edition (Zimmerman et al., 2012); CSBS, Communication and Symbolic Behavior Scales Developmental Profile Infant-Toddler Checklist (Wetherby & Prizant, 2002); HRC, Home Reading Checklist.

Outcomes at time 2

Language outcomes.

Three months post the intervention, there was no statistically significant interaction between group and time on PLS-5 total scores $F(1,30) = 2.747, p = 0.108$, $\eta^2_p = 0.084$. The main effect of time showed a statistically significant difference in PLS-5 total scores at intake and T2 $F(1,30) = 93.664, p < 0.0005$, $\eta^2_p = 0.757$. The main effect of group showed that there was not a statistically significant difference in PLS-5 total scores between the HI group and LI group $F(1,30) = 0.015, p = 0.904$, $\eta^2_p = 0.000$. The mean improvement score for the HI group between intake and T2 was 10.65 ($M = 35.06, SE = 1.701, CI = 26.260–33.210$). The LI group’s mean improvement score between intake and T2 was 7.53 ($M = 33.20, SE = 1.811, CI = 25.734–33.133$) with a medium effect ($d = 0.60$). Whilst there was no statistically significant difference in improvement between the groups, both groups demonstrated a statistically significant improvement in their PLS-5 total scores between intake and T2.

Social communication outcomes.

A significant interaction was observed between group and time for CSBS total scores three months post intervention at T2 with a large effect size $F(1,30) = 19.090, p < 0.001, \eta^2_p = 0.389$. Assessment of the simple main effect for group indicated that there was not a statistically significant difference between the groups at intake $F(1,30) = 1.104, p = 0.302, \eta^2_p = 0.035$ and at T2 $F(1,30) = 2.356, p = 0.136, \eta^2_p = 0.073$. A significant interaction was observed for time for both the HI group $F(1,16) = 76.673, p < 0.001, \eta^2_p = 0.827$ and LI group $F(1,14) = 39.409, p < 0.001, \eta^2_p = 0.738$. The HI group showed a mean improvement score of 16.76 ($M = 34.53, SE = 2.521, CI = 20.999–31.295$) compared with the LI group’s mean improvement score of 6.80 ($M = 28.60, SE = 2.684$, $d = 0.90$).
improvement score was 35.00 compared with the present with higher mean CSBS scores at T3.

The HI group improved to a greater extent and groups mean CSBS total scores improved, however, CI [0.665, 7.721], p = 0.083, \( \eta^2_p = 0.097 \). There was no statistically significant interaction for main effect of group \( (F(1,30) = 0.948, \ p = 0.338, \ \eta^2_p = 0.31) \); however, the main effect of time showed a statistically significant difference in mean HRC scores at the different time points with a medium effect size \( (F(1,30) = 141.498, \ p < 0.001, \ \eta^2_p = 0.825) \). The HRC mean improvement score for the HI group was 11.29 (M = 24.47, SE = 0.696, CI = 17.401–20.246) compared with the LI group’s 8.33 (M = 22.00, SE = 0.741, CI = 16.319–19.347) with a medium effect \( (d = 0.64) \). Hence, both groups demonstrated a significant improvement in HRC scores between intake and T2 with the HI group presenting with higher HRC scores than the LI group; however, the difference between the groups was not significant.

Outcomes at time 3

Language outcomes.

At 2-years-of-age a statistically significant difference was observed between the HI group and LI group on PLS-5 total scores (M = 5.4, CI [0.83, 9.96], t(30) = 2.415, \( p = 0.022 \)). Higher PLS-5 scores were observed for the HI group (M = 64.53, SD = 5.01) at T3 compared with the LI group (M = 59.13, SD = 7.492). Mean improvement scores from intake to T3 for the HI group was 40.12 compared with 33.47 for the LI group with a medium effect size \( (d = 0.68) \). Thus indicating that whilst both groups improved in their PLS-5 total scores, the HI group demonstrated a greater improvement than the LI group.

Social communication outcomes.

Results for the CSBS total scores at 2-years-of-age also demonstrated a statistically significant difference between the HI group and LI group (M = 4.19, CI [0.665, 7.721], t(26) = 2.431, \( p = 0.023 \)). Both groups mean CSBS total scores improved, however, the HI group improved to a greater extent and presented with higher mean CSBS scores at T3 (M = 52.76, SD = 2.88) compared with the LI group (M = 48.57, SD = 6.38). The HI group’s mean improvement score was 35.00 compared with the LI group’s 27.29, with a medium effect size \( (d = 0.70) \).

Home reading practices outcomes.

The difference in mean HRC scores when comparing the HI group and LI group at 2-years-of-age at T3 was not significant \( (p = 0.221) \). The HI group did present with a higher CSBS mean scores at T3 (M = 26.12, SD = 4.21) compared with the LI group (M = 24.27, SD = 4.15); however, this difference did not reach statistical significance. The HI group’s mean improvement score (12.94) was higher than the LI group’s improvement score (10.60), with a small effect size \( (d = 0.39) \).

Parent satisfaction

All of the participants, from both the HI group and LI group rated strongly agreed (70%) or agreed (30%) to enjoying the workshops. Furthermore, 97% of the participants indicated that they would recommend these workshops to their friends. Only one participant (HI group) felt neutral towards recommending these workshops to a friend.

Discussion

The effects of ESR parent intervention workshops for improving language and broader social communication skills of typically developing babies (3- to 12-months-of-age) were explored in this study. Parents attended ESR intervention workshops that provided education on how to promote language and social communication development whilst reading with their baby through creating a stimulating home reading environment and providing opportunities for parent-child interactions during ESR.

Language development improvements from early storybook reading

To answer our first question, we examined whether ESR workshops were associated with higher language scores for the HI group compared to the LI group immediately post intervention, three months post intervention and at 2-years-of-age. An association between language skills and intensity of ESR workshops was observed immediately following the intervention where the HI group had significantly higher language scores compared with the LI group \( (p = 0.007) \), as hypothesised. A difference was observed between the HI group and LI group at three months post the intervention, however, this did not reach statistical significance. As hypothesised, at 2-years-of-age the HI group continued to present with significantly higher language scores compared to the LI group \( (p = 0.022) \). Despite the HI group demonstrating higher language scores (significant or otherwise) at each of the time points, both groups did show a significant improvement in their language scores compared with their intake results. These findings suggest that ESR parent intervention workshops may be a useful platform for supporting language development.
given the improved language scores demonstrated by both groups. Furthermore, these results suggest that when parents are provided with more support, demonstrations and feedback significantly higher language scores are observed immediately following the intervention and are maintained at 2-years-of-age.

Social communication improvements from early storybook reading

Our second question explored the effects of ESR intervention workshops for broader social communication skills. As was hypothesised, significantly higher broader social communication scores were observed for the HI group immediately following the intervention compared with the LI group ($p = 0.018$). The HI group continued to demonstrate significantly higher broader social communication scores three months post intervention compared with the LI group ($p = 0.001$). This was maintained at 2-years-of-age with the HI group continuing to present with significantly higher broader social communication scores compared to the LI group ($p = 0.021$), consistent with our hypothesis. Whilst significantly higher scores were achieved by the HI group, both groups did demonstrate a significant improvement in broader social communication scores at each of the time points. In line with the language development findings, the broader social communication results also suggest that ESR intervention workshops may support broader social communication development and that when parents are provided with more demonstrations, support and feedback, higher broader social communication scores can be achieved. Moreover, improvements in broader social communication scores were rapid with higher scores observed immediately post intervention and sustained at 2-years-of-age.

Home reading practice improvements from early storybook reading

The final question this study examined was whether ESR intervention workshops promoted home reading practices. Differing from our hypothesis, at all three time points there was not a statistically significant difference between the HI and LI group ($p = 0.220; p = 0.083; p = 0.221$, respectively), however, higher (but not significant) HRC scores were observed for the HI group at each of the time points. Both groups did demonstrate a significant improvement in their HRC scores following the ESR intervention workshops, which was maintained at 2-years-of-age. These results suggest that parents from both the HI group and LI group improved their home reading practices following the ESR intervention workshops. Changes included using more age appropriate books, sitting at eye-level with their baby whilst reading to encourage eye-contact and joint attention as well as implementing strategies to support parent–child interactions (such as turn taking). Although it was not hypothesised, it is not altogether surprising that there was not a significant difference in home reading practices between the two groups as the LI group was provided with the same ESR strategies as the HI group. However, the additional intervention time, support, demonstrations, practice opportunity and personalised feedback provided to the HI group was associated with significantly higher language and broader social communication scores immediately following the intervention which were maintained at 2-years-of-age, when compared to the LI group. It is possible that the HRC was not sensitive enough to effectively identify the changes in home reading practices between parents from the HI group and LI group.

Parent satisfaction with the intervention workshops

An additional aim of this study was to examine whether the participants enjoyed attending the intervention workshops on ESR. Participants from both the HI group and LI group reported that they enjoyed attending the workshops and 97% reported that they would recommend these workshops to a friend. These findings are consistent with other ESR studies and suggest that parents enjoy participating in ESR intervention programmes (Barratt-Pugh & Rohl, 2015; Goldfeld et al., 2011).

Implications

This is one of the first studies to demonstrate improved language and broader social communication scores from ESR intervention workshops for parents with babies as young as 3-months-of-age. Moreover, the improved language and broader social communication skills were immediate and were maintained at 2-years-of-age. It could be argued that HI ESR intervention workshops may not be worth the additional time and potential cost given that both groups demonstrated a significant improvement and that parents from both groups reported that they enjoyed attending the ESR intervention workshops. Given the relatively short time commitment for both groups (HI group = 4.5 h; LI group = 90 min) and the significant advantages for language and broader social communication skills associated with the HI intervention condition, the findings do suggest that the additional three hours of intervention along with e-mail support provided to the HI group were valuable.
The results from this study expand on the findings from Karrass and Braungart-Rieker (2005) who investigated the benefits for language development from ESR at 4-months-of-age and at 8-months-of-age. The families in the Karrass and Braungart-Rieker (2005) study were not provided with any instructions on how to facilitate language development through reading with their child. Their findings indicated that language scores at 12 and 18-months-of-age were not predicted from ESR at 4-months-of-age; however, were at 8-months-of-age. The authors hypothesised that this may be due to receptive language milestones only occurring at around 8-months-of-age. It is also possible that the measurement tool was not sufficiently sensitive to the subtle language changes at such a young age. This study suggests that providing parents with instructions and demonstrations on how to increase parent-child interactions during ESR, and how to provide a stimulating home reading environment with preverbal babies and babies with emerging language skills, may support language and broader social communication development, as has been found in dialogic reading studies with pre-school children (Justice & Pullen, 2003; Whitehurst et al., 1994).

The “Let’s Read” programme (Goldfeld et al., 2011; Goldfeld et al., 2012) did provide families with instructions on how to facilitate language through reading with their baby. Families were provided with a brief discussion on ESR with their child health nurse and were given a free children’s book to keep as well as a DVD and information sheets on ESR. Despite a strong methodology and large sample size, no significant differences between the intervention and control groups’ language scores were observed at both 2 and 4-years-of-age. The findings from this study suggest that when families are provided with a HI intervention (4.5 h), demonstrations, ongoing support, practice opportunity and personalised feedback significantly higher language and broader social communication scores are observed compared to a LI intervention (90 min) with fewer demonstrations, no ongoing support, no personalised feedback, nor practice opportunity. Parents may require a higher intensity of intervention than brief discussions and support materials in order to effectively learn the ESR strategies and thus for improvements to be observed in their child’s language and broader social communication skills. It is also possible that the findings in this study differed to the findings in the Goldfeld et al. (2011) study due to the differing socio-economic backgrounds of the participants in each of the studies.

Another recent study examined parents’ values towards ESR and home reading practices (Brown et al., 2017). The findings indicated that parents value ESR, however, experienced barriers with book selection, creating a language enhancing reading environment and providing strategies whilst reading aimed at building pre-verbal and emerging language skills through parent-child interactions. The parents reported using reading strategies that are known to be effective for older pre-school children such as “Wh” questions. This study indicates that when parents are provided with ESR intervention workshops on how to choose age appropriate books for babies and information on how to create a positive home reading environment that encourages parent-child interactions for babies with preverbal and emerging language skills that higher language and broader social communication scores are observed. Furthermore, the findings from the current study suggest that ESR with babies who are preverbal or have emerging language skills should focus on teaching and modelling language as opposed to testing and asking frequent questions.

**Limitations**

This study had a small sample size and all of the participants lived in an advantaged area reducing the generalisability of the results. As these children were from an advantaged area, they were less likely to be at risk of language delays as children from a less advantaged area (see Justice et al., 2005). Recruitment was attempted at a less advantaged area, however, was not successful. Whilst many fathers attended the workshops only two participated in the study; a higher representation of fathers may have allowed for generalisation of the results to both parents. Participants with no serious medical conditions participated in this study, which also reduced the generalisability.

A time limit whilst reading was not used thus, some parents only read for 1–2 min and others for 5 min or longer. The longer the reading time, the more opportunities parents have to implement the reading strategies and for their baby to interact with them. This study also did not take into account the frequency and amount of time spent reading each day at home. Parents were encouraged to read at least once a day and to make it part of an everyday routine, such as bedtime. The parents from the HI group did complete reading records where they indicated which books they had read with their baby for 12-weeks post the ESR intervention workshops, although this did not include the frequency of reading, or the amount of time spent reading each day.

Language skills are not fully developed at 2-years-of-age and whilst they are a good indicator of later language development, following the participants until 4-years-of-age might have allowed for a more complete picture of the child’s communication skills. The HRC also did not appear to be sensitive enough to identify changes in the parents’ behaviour. Another possibility is that the Hawthorne effect occurred where parents demonstrated a change in home reading practices whilst being observed by the
primary investigator, although these changes were not implemented at home.

A control group that did not receive any intervention may have provided a clearer comparison of the benefits from the ESR intervention workshops for language and broader social communication skills. This was ruled out due to ethical reasons, as there was preliminary evidence in favour of ESR supporting language and social communication development. Therefore, it was considered unfair for a control group to not receive any intervention. For this reason, this study decided to use a comparison group, who received three hours less intervention, fewer demonstrations, no ongoing support, and no personalised feedback.

Recruitment was conducted simultaneously to the intervention workshops where an intervention workshop commenced once a group of seven or more participants were recruited. Wait times were not recorded therefore, it is unknown how long any particular participant waited for an intervention workshop to commence, although given that all intervention workshops were conducted within one-to-three months of each other and participants were automatically assigned to the next available workshop, the wait time would not have exceeded three months. Attending an intervention at a younger age could have provided a potentially unfair advantage to some participants. Babies who attended the intervention at 3-months-of-age may have had higher language and social communication scores at 2-year-of-age compared to babies who attended the intervention at 12-months-of-age due to the additional length of time (9-months) that they may have been provided with the ESR intervention strategies following the intervention. This may have influenced the results.

Future directions

There are still many questions that remain unknown about ESR with babies. This study focused on teaching parents' book selection skills and how to create a positive home reading environment that promotes parent-child interactions. Understanding how other factors may possibly influence language and social communication development whilst reading, such as frequency and time spent reading each day may provide useful information. Understanding how families from culturally and linguistically diverse backgrounds engage in ESR may be useful to support these families with ESR. Investigating how babies engage in ESR at different ages (such as younger than 3-months-of-age, 3- to 6-months-of-age and 7- to 12-months-of-age) may impart useful information on how to support parent-child interactions during ESR for younger and older babies. Future research should also explore the potential benefits of providing ESR intervention workshops to parents whose children are at risk of communication delays.

Conclusions

ESR intervention workshops may be an effective method for promoting language development and broader social communication skills. The findings from this study suggest that HI ESR intervention workshops are associated with higher language and broader social communication scores compared to a LI ESR intervention workshop. Furthermore, improvements for language and broader social communication skills were immediate and were maintained at 2-years-of-age. All of the participants (from both the HI group and LI group) reported that they enjoyed attending the ESR intervention workshops and participants from both groups demonstrated a significant improvement in their language and broader social communication scores as well as home reading practices. This included using more age appropriate books, creating a language stimulating reading environment, and implementing strategies to support parent-child interactions. These findings may be useful for clinicians, health promotion organisations and early intervention services seeking to provide group workshops that are evidence based to improve language and broader social communication skills for babies.

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Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Ethical approval

University of Canterbury Human Research Ethics: 2013/56/ERHEC, Griffith University [RHS/51/13/ HREC] and Children’s Health Services Queensland: HREC/14/QRCH/42.

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References

Appendix. Intervention summary

The intervention for both groups was designed to address five key areas of early storybook reading (ESR): (1) its importance, (2) book selection, (3) reading environment, (4) strategies aimed at building social communication development, parent–child bonding and child participation, and (5) strategies aimed at facilitating receptive and expressive language development. All of the strategies have the main goal of creating a stimulating home reading environment and supporting parent–child interactions consistent with dialogic reading principles. The table below outlines each of the workshops provided to the high intensity (HI) group with aims and strategies/target behaviours.

<table>
<thead>
<tr>
<th>Workshops</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workshop 1. Benefits of books</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Aims</strong></td>
<td>Parents will understand the benefits from ESR for language development, social communication and long-term developmental progress (academic achievement). Short term and long term goals for intervention were set. Short-term goals included more occasions of child interactions (both verbal and non-verbal) during ESR and enjoyment of ESR for the parent and the child. Long-term goals from the intervention were for the children to have strong language and social communication skills at 2-years-of-age. Establishing a strong motivator by setting goals for the parents was considered essential as parents are unlikely to change behaviour unless they are invested in the outcome.</td>
</tr>
<tr>
<td><strong>Strategies/target behaviour</strong></td>
<td>Nil.</td>
</tr>
<tr>
<td><strong>Workshop 2. Best books for baby and reading regularly to reap the rewards</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Aims</strong></td>
<td>Aim 1: Parents will know the importance of reading to their child frequently and will aim to set up an everyday reading routine. Aim 2: Parents will know which books are age appropriate and recommended for their child with preverbal/emerging language skills.</td>
</tr>
<tr>
<td><strong>Strategies/target behaviour</strong></td>
<td>Book selection</td>
</tr>
<tr>
<td>Parent will select</td>
<td>Board/cloth or plastic books. Picture books with 1–2 pictures per page. Books with 1–2 short, simple, sentences per page. Interactive books with lift the flap and/or textured components.</td>
</tr>
<tr>
<td><strong>Workshop 3. Setting up for a successful story time</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Aims</strong></td>
<td>Parents will know how to create a home reading environment that facilitates language and social communication development.</td>
</tr>
<tr>
<td><strong>Strategies/target behaviour</strong></td>
<td>Reading environment</td>
</tr>
<tr>
<td>Parent will face child towards them so that the child does not have to move/turn to see the parent’s face. Parent is at eye-level with child. Parent allows child to select the book. Parent offers child a choice of two age appropriate books. Parent cuddles/touches/smiles at child while reading. Parent uses frequent and varied intonation while reading. Parent allows child to hold the book/ helps the child to hold the book. Child provides three or more occasions of eye-contact and/or initiated joint attention. Child provides three or more occasions of eye-contact and/or joint attention (initiated or response). Child provides non-verbal interaction with book (turns the pages, touches the book, lift the flap). Child initiates non-verbal communication (smiles at parent, laughs, cuddles parent and gestures).</td>
<td></td>
</tr>
<tr>
<td><strong>Workshop 4. Time, turns and teaching</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Aims</strong></td>
<td>The parents will know how to help their child join in while reading by giving their child time to take a turn and teaching their child how to take turns while reading together.</td>
</tr>
<tr>
<td><strong>Strategies/target behaviour</strong></td>
<td>Strategies aimed at building social communication, parent–child bonding and child participation</td>
</tr>
<tr>
<td>Parent makes up their own story using the pictures. Parent imitates child. Parent pauses after most utterances for turn taking. Parent responds to child’s non-verbal interactions (pointing, smiling, touching, lifting the flap and gestures). Parent responds to child’s verbal interactions (vocalisations, babbling, words). Child produces three responses using non-verbal communication (smiles at parent, laughs, cuddles parent and gestures). Child points to pictures/move hand over pictures. Child turns the pages (with or without a prompt/ hand over hand help). Child initiates conversation using vocalisations (vocalisations, babbling, words). Child produces three responses using vocalisation (vocalisations, babbling, words).</td>
<td></td>
</tr>
<tr>
<td><strong>Workshop 5. Sounds, actions and words</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Aims</strong></td>
<td>The parents will know how to provide a good language model for their child while reading employing strategies to facilitate receptive and expressive language skills.</td>
</tr>
<tr>
<td><strong>Strategies/target behaviour</strong></td>
<td>Strategies aimed at facilitating receptive and expressive language development</td>
</tr>
<tr>
<td>Parent will relate story to child’s everyday activities. Parent will point to pictures. Parent will comment on most pages while reading. Parent will use short, simple sentences on each page. Parent will ask inference questions (as opposed to normal “WH” questions). Parent will expand their child’s verbal response/vocalisation.</td>
<td></td>
</tr>
<tr>
<td><strong>Workshop 6. Consolidation and practice session</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Aims</strong></td>
<td>Parents will consolidate the strategies they have learned in the previous workshops with interactive activities and practice the intervention strategies with their child.</td>
</tr>
<tr>
<td><strong>Strategies/target behaviour</strong></td>
<td>All strategies listed above.</td>
</tr>
</tbody>
</table>
Chapter 5: A Pilot Study of Early Storybook Reading with Babies with a Hearing Loss

Statement of contribution to co-authored published paper

This chapter includes a co-authored paper. The bibliographic details of the co-authored paper, including all authors, are:


My contribution to the paper involved: Completion of the ethics application, collection of the data, analysis of the data in collaboration with my PhD supervisors, writing the first draft of the manuscript, and the majority of the writing for subsequent drafts of the manuscript.

(Signed) _________________________________ (Date) __20/12/2017____
Michelle I. Brown

(Countersigned) __________________________ (Date) ____Dec 2017____
Supervisor: Marleen F. Westerveld
A PILOT STUDY OF EARLY STORYBOOK READING WITH BABIES WITH A HEARING LOSS

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Griffith University, Australia

Gail T. Gillon
University of Canterbury, New Zealand

Abstract

Purpose: This pilot study explored the effectiveness of an early storybook reading (ESR) intervention for parents with babies with a hearing loss (HL) for improving: (a) parents’ book selection skills, (b) parent-child eye-contact/joint attention, and (c) parent-child turn taking. Advancing research into ESR, this study examined whether benefits from an ESR intervention reported for babies without a HL were also observed in babies with a HL.

Method: Four mother-baby dyads participated in a multiple baseline single case experimental design across behaviors. Treatment effects for parents’ book selection skills, parent-child eye-contact/joint attention and parent-child turn taking were examined using visual analysis and Tau-U analysis.

Results: Statistically significant increases, with large-to-very large effect sizes, were observed for all four participants for parent-child eye-contact/joint attention, and parent-child turn taking. Limited improvements, with ceiling effects were observed for parents’ book selection skills.

Conclusion: The findings provide preliminary evidence for the effectiveness of an ESR intervention for babies with a HL for promoting parent-child interactions through eye-contact/joint attention and turn taking.
5.1 Introduction

Early storybook reading (ESR), also known as shared reading/joint book reading, has advantages over other play-based parent-child activities which aim to promote language and social communication skills for children as it provides a structured, language-rich, and multimodal (visual, kinaesthetic, and tactile) learning environment (Dickinson, Griffith, Michnick Golinkoff & Hirsh-Pasek, 2012; Farrant & Zubrick, 2013; Sénéchal, LeFevre, Hudson, & Lawson, 1996). Parent-child bonding can also be fostered as the parent and child share the storybook together (Farrant & Zubrick, 2013). ESR is an inclusive activity given that children with pre-verbal language skills as well as children with advanced language skills are able to participate through verbal and non-verbal interactions (Fletcher & Reese, 2005). ESR enables learning of the world beyond the immediate environment and of novel words that children may not otherwise encounter in their everyday activities (Sénéchal et al., 1996). Much of the research into ESR has targeted typically developing preschool children (3- to 5-year-olds), however, emerging evidence indicates that ESR can also foster language and social communication skills in typically developing babies (15-months-old and younger; Farrant & Zubrick, 2013; Karrass & Braungart-Rieker, 2005). However, one study (Goldeld et al., 2011; Goldfeld et al., 2012) has found no significant outcomes for language and social communication skills following an ESR intervention for parents with typically developing babies. As suggested by Goldfeld et al. (2012) it is possible that parents may require a greater intensity of ESR intervention. It is also not yet established whether an ESR intervention can strengthen language and social communication development for babies with a hearing loss (HL) who are at risk of communication difficulties (DesJardin et al, 2014).

HL is common in the newborn population both within Australia and overseas (1.04/1000 babies in Australia and 1.3/1000 in United States; Ching, Oong, van Wanrooy,
2006; Morini, Michnick Golinkoff, Morlet & Houston, 2017). Even with the introduction of universal newborn hearing screening programs, enabling earlier diagnoses of a HL and early access to auditory intervention (such as hearing aids and cochlear implants), many children with a HL who use oral/auditory communication continue to present with spoken language difficulties (Netten et al., 2015). To illustrate, Ching et al. (2013) found that at 3-years-of-age, children with a HL who predominantly used oral/auditory communication performed at or below one standard deviation on standardised spoken language tests compared to normal hearing (NH) peers of the same age without a HL. Given the advantages ESR may have for facilitating language and social communication development further research is warranted to investigate the effectiveness of ESR for promoting spoken language and social communication skills for babies with a HL who use oral/auditory communication who are at increased risk of spoken language and social communication difficulties (DesJardins et al., 2017).

5.1.2 *Children with a hearing loss (HL)*

Hearing has been described as the Velcro that binds spoken language development, attention, literacy skills, and academic achievement (Cole & Flexer, 2007). Early exposure to speech input is thought to stimulate the auditory cortex enabling auditory neural development, which is crucial for linguistic development for babies who use oral/auditory communication (Morini et al., 2017). Many of the linguistic rules for spoken language (such as word-order patterns) are learned well before babies produce their first utterances (Morini et al., 2017). If babies born with a HL receive reduced or no speech input during infancy, it may impede on their auditory neural development and thus influence their linguistic development that is essential for spoken language growth (Morini et al., 2017). Given that hearing is an essential component for attention, spoken language development,
reading, and academic achievement, if the auditory cortex is insufficiently stimulated during infancy, difficulties in these domains may arise (Morini et al., 2017).

Much of the subtle language and social communication skills needed for successful interactions are learned implicitly through conversation, observation, and overhearing others (Netten et al., 2015). Babies with a HL can miss out on incidental hearing, which is particularly important for learning social communication skills (Netten et al., 2015). Children with a HL may need more opportunities to engage in interactions with others to learn the more tacit aspects of spoken language and social communication skills (Netten et al., 2015). This ties in with the social constructivist theory advocated by Vygotsky (1987) and the bioecological model proposed by Bronfenbrenner (1979), which posit that language is learned through interactions and that these interactions are shaped by environmental and cultural influences. ESR may help to reinforce these interactions by providing an interactive, structured, language rich, multimodal, learning environment to support language and social communication development.

5.1.3 Parent-child interactions

Parent-child interactions are considered essential for language learning by the social constructivist theory and bioecological model as they enable parents to extend the child’s knowledge through sharing of the parent’s knowledge in an interactive setting (Bronfenbrenner, 1979; Bronfenbrenner & Ceci, 1994; Sigelman & Rider, 2006; Vygotsky 1987). Whilst taking into consideration the natural abilities a child is born with, both theories advocate that language and social communication development can be facilitated through parent-child interactions (Bronfenbrenner, 1979; Vygotsky 1987). The zone of proximal development, described by Vygotsky (1987), further emphasised the role of parent-child interactions by identifying that the support parents provide during parent-child interactions can enable tasks that are unachievable by the child without the support of the
parent to be achieved. Viewing development in a similar light, the bioecological model placed emphasis on proximal processes that are reported to be the interactions that influence a child’s life including her or his relationship with her or his parents, the cultural and historical setting in which she or he lives, as well as the relationship between these different areas (Bronfenbrenner, 1979; Bronfenbrenner & Ceci, 1994; Sigelman & Rider, 2006). The bioecological model also highlighted the need for these interactions to be frequent, consistent, and continuous (Bronfenbrenner, 1979; Bronfenbrenner & Ceci, 1994).

Babies engage in parent-child interactions from an early age, with children as young as 4-weeks-of-age reported to engage in eye-contact, also referred to as mutual eye-gaze, with their parent (Beier & Spelke, 2012). As the baby develops, the length of time that they are able to engage in eye-contact increases and their skills develop such that they are able to provide a smile response following parent-child eye-contact at 3-months-of-age (Beier & Spelke, 2012). Eye-contact is thought to help maintain children’s attention, support parent-child attachment, regulate child learning, in addition to being an essential social communication skill (Brooks & Meltzoff, 2005; 2008; Mathew & Rajanna, 2017; Tomasello, Carpenter, Call, Behne & Moll, 2005).

Between 6- to 14-months-of-age, babies expand their eye-contact skills and learn to follow their parents’ eye-gaze to engage in joint attention (McDevitt & Ormorod, 2004; Scaife & Bruner, 1975). Joint attention is an extension of eye-contact that is later developing, where one person either initiates or responds to eye-contact followed by the inclusion of an object and alternating looks between the person and the object (Schertz & Odom, 2007). Brooks and Meltzoff (2005; 2008) emphasize the importance of eye-contact for joint attention to occur. Joint attention is considered an important skill not only for social communication, but also for language development with evidence indicating that
joint attention abilities during infancy can predict later language development (Brooks and Meltzoff, 2008; Farrant, Maybery, & Fletcher, 2011; Racine & Carpendale, 2007).

5.1.4 **Early storybook reading (ESR) with normal hearing (NH) babies**

If the aim for ESR is to improve language and social communication skills and we know from the social constructivist theory and the bioecological model that the key for learning language and social communication skills is interaction with others, then the focus during ESR with babies should be on interaction and creating opportunities for babies to actively participate whilst reading. Increasing opportunities for babies to interact can be achieved through multiple methods. Three methods that this study will focus on are: (a) book selection, (b) parent-child eye-contact/joint attention, and (c) parent-child turn taking.

The influence of using age-appropriate books to support parent-child interaction through ESR is highlighted in both the Dickinson et al. (2012) review and Fletcher and Reese (2005) meta-analysis. Books that engage babies through big, bold pictures of objects, and animals that are interesting to babies and have interactive components (such as lift the flap and touch and feel sections) have the potential to facilitate more parent-child interactions during ESR (Demir, Applebaum, Levine, Petty, & Goldin-Meadow, 2011; Dickinson et al., 2012). Preverbal babies and babies with emerging language skills can interact with age appropriate books by looking at the pictures, moving their hand over the pictures and/or the touch and feel components as well as lifting the flaps. If board, cloth, or plastic books are used, babies can also help with turning the pages.

Eye-contact and joint attention are central skills for successful interaction and social communication development. Eye-contact and joint attention have been combined in this study given that eye-contact is a key component of joint attention and due to the finding that joint attention is not fully developed by 9-months of age (Brooks & Meltzoff, 2008; Mathew & Rajaana, 2017). Eye-contact/joint attention are considered important active
ingredients to support parent-child interactions during ESR (Demir et al., 2011; Dickinson et al., 2012; Fletcher & Reese, 2005). A correlative study by Farrant and Zubrick (2013) examined the relationship between ESR and joint attention during infancy with later language development. A large sample of normal hearing children (n = 2369) who were part of the Longitudinal Study of Australian Children and considered to be a representative sample of Australian children, participated. Joint attention skills were measured using an adapted version of the Communication and Symbolic Behavior Scales (CSBS; Wetherby & Prizant, 2002) and vocabulary skills were assessed using an adapted Peabody Picture Vocabulary Test (Dunn & Dunn, 1997). Frequency of ESR was examined using a parent questionnaire. No ESR intervention was provided. Both joint attention and frequency of ESR were assessed at ~9-months-of-age and vocabulary skills were examined at ~5-years-of-age. The findings provided evidence that higher scores for ESR and joint attention during infancy predicted later vocabulary scores. Recommended clinical implications were for parents to be educated on the importance of parent-child interactions specifically joint attention and that these can be promoted through ESR. This finding provides an important starting point for further investigations on ESR and joint attention. However, it is not yet established how ESR with babies with a HL may support eye-contact/joint attention. Other social communication skills such as turn taking have also received limited investigation.

Interaction is only successful if both people are active in the interaction. Both the parent and the baby need to actively participate and take turns during ESR to optimise language and social communication learning (Demir et al., 2011; Dickinson et al., 2012; Fletcher & Reese, 2005; Gratier et al., 2015). Turn taking occurs when a parent/baby initiates an interaction and the other person responds, followed by the person who initiated the interaction taking a second turn (Stanton-Chapman & Snell, 2011). Babies with preverbal or emerging language skills may take non-verbal turns (such as touching the
pictures, turning the page, or using gestures) or verbal turns (such as vocalisations or babbling). When parents follow their babies’ interest and talk about the pictures/objects that their babies find interesting, more interaction and turn taking occurs, thus creating more opportunities for babies to learn language and social communication skills (Dickinson et al., 2012; Fletcher & Reese, 2005).

A recent study with NH babies \((n = 32)\) aged between 3- to 12-months-of-age has indicated that an ESR intervention can promote language and social communication learning with young babies (Published manuscript by author, 2017). Language and social communication outcomes were assessed using the Preschool Language Scales - Fifth Edition (PLS-5; Zimmerman, Steiner, & Pond, 2012) and the CSBS (Wetherby & Prizant, 2002). Home reading practices were also assessed at each assessment point using a home reading checklist examining a video recording of the parent and baby sharing a storybook (selected by the parent/baby) together. All outcome measures were assessed one month prior to the intervention, one and three months following the intervention, and a final assessment at 24-months-of-age. The participants were allocated into two intervention groups, the high intensity (HI) group \((n = 17)\) and the low intensity (LI) group \((n = 15)\). Both groups received an ESR intervention that provided the parents with education on book selection, parent-child eye-contact/joint attention, as well as strategies to increase parent-child interactions. The HI group received an additional three hours of intervention (4.5 hours in total), e-mail support for 12-weeks after the intervention, and personalised feedback.

Following the ESR intervention both groups demonstrated a significant improvement in their language and broader social communication scores with the HI group showing significantly higher language and social communication scores than the LI group. These improvements were maintained at 24-months-of-age. The home reading practice
scores also significantly improved for both of the groups and were sustained at 24-months-of-age. These findings provided preliminary support for an ESR intervention for parents with babies with NH and suggest that an ESR can promote language and broader social communication skills for NH babies as young as 3-months-of-age. As broader language skills were assessed the findings do not reveal how the study specifically improved parents’ book selection skills, eye-contact/joint attention and turn taking. Furthermore, as the study examined babies with NH, the findings cannot be extended to babies with a HL who are more susceptible to language and social communication difficulties (Netten et al., 2015).

5.1.5 Early storybook reading (ESR) with babies with a hearing loss (HL)

To our knowledge, the benefits from an ESR intervention for improving spoken language and social communication skills found with NH babies has not been examined with babies with a HL. Much of the limited research into ESR with young children with a HL has focused on: (a) toddlers (12- to 36-months-of-age) who wore hearing aids, (b) the correlation between ESR and later spoken language abilities, and (c) comparisons between toddlers with a HL and their NH peers (DesJardin et al., 2014; DesJardin et al., 2017). It has been reported that by 2-years-of-age toddlers with NH can demonstrate significantly better spoken language skills compared to their peers with a HL who use oral/auditory communication (DesJardin et al., 2017). There is evidence that this gap in language skills may widen, as children grow older, with NH children demonstrating significantly better spoken language skills compared to children with a HL at 3-years-of-age who use oral/auditory communication (DesJardin et al., 2017).

Coinciding with the differences in spoken language skills between the NH toddlers and their peers with a HL who use oral/auditory communication are differences in parents’ use of ESR strategies. There is evidence that parents of toddlers with and without a HL have similar home reading practices (frequency of ESR, time spent reading each day, and
parent’s perceptions of their child’s enjoyment of ESR), however the ESR strategies that parents use are reported to be different (DesJardin et al., 2014; DesJardin et al., 2017). A study by DesJardin et al. (2017) found that parents of NH children provided significantly more ESR strategies that encourage interaction. This included aspects of turn taking, such as responding to the child’s non-verbal and verbal interactions, relating the book to the child, and commenting on the story. Moreover, DesJardin et al. (2017) also found a relationship between ESR strategies that support parent-child interactions whilst reading and significantly better spoken language skills.

Given that children with a HL who use oral/auditory communication may demonstrate a widening gap in spoken language skills over time compared to their NH peers as well as the evidence suggesting differences in the ESR behaviors provided by parents of NH children and parents of children with a HL, parents of children with a HL may benefit from an ESR intervention on how to promote language and social communication skills through parent-child interactions whilst reading. Furthermore, as the reported divergence in spoken language skills between children with a HL who use oral/auditory communication and their NH peers is present at 2-years-of-age, parents may need to be taught how to support parent-child interactions before 2-years-of-age to potentially help minimize the gap in spoken language and social communication skills between children with and without a HL.

The current study builds upon previous research from babies with NH as well as advances preliminary correlational studies into ESR with young children with a HL by conducting a pilot investigation into an ESR intervention for babies with a HL who use oral/auditory communication. To our knowledge, this is the first study to include babies with a HL in an ESR intervention. Our aim was to examine the effectiveness of an ESR intervention for improving: (a) parents’ book selection skills, (b) parent-child eye-
contact/joint attention, and (c) parent-child turn taking. It was hypothesized that parents’ book selection skills, parent-child eye-contact/joint attention, and parent-child turn taking would improve as a result of the intervention. While book selection, eye-contact/joint attention, and turn taking have not been individually examined in previous ESR research studies with babies with a HL, improved language and broader social communication skills have been reported from a study with NH babies who received the same intervention (Manuscript by author).

5.2 Method

5.2.1 Ethics approval

The study was approved by (Human Research Ethics Committees details withheld for blind review).

5.2.2 Design

A multiple baseline single case experimental design across behaviours with direct repetition across four participants was conducted. The ESR intervention was the independent variable and was delivered in a similar format and used the same materials as described in a previous study (Manuscript by author). The dependent variables were: (a) parents’ book selection skills, (b) parent-child eye-contact/joint attention, and (c) parent-child turn taking. Age appropriate books were defined as books that were cloth, board, or plastic books, with interactive components (e.g., touch and feel, lift the flap). Additionally, it was recommended that the books focussed on one big picture per page (more than 60% of the page) and for the pages to only contain one-to-two sentences as recommended by Dickinson et al. (2012) and Fletcher and Reese (2005).

The definition for joint attention proposed by Schertz and Odom (2007) was used for this study, whereby the baby either responded to the parent’s eye gaze by alternating
looks between the parent’s eyes and the object the parent drew the baby’s attention to or the baby initiated joint attention and the parent responded by alternating looks between the baby and the object the baby drew the parent’s attention to. Eye-contact was defined as both the mother and baby looking into each other’s eyes at the same time. Eye-contact was seen as a precursor for joint attention to occur as indicated in the literature therefore, eye-contact and joint attention were coded dependently (Brooks & Meltzoff, 2005; Mathew & Rajaana, 2017; Racine & Carpendale, 2007).

Turn taking was defined as a complete and/or full turn where one person (mother/baby) initiated a turn, the other person (mother/baby) responded appropriately, followed by the person who initiated the turn, taking a second turn, as recommended by Stanton-Chapman and Snell (2011). This definition of turn taking whereby the mother/baby needed to complete a full turn was utilized as it had been used successfully in previous research and clearly demonstrated that a turn had occurred (Stanton-Chapman & Snell, 2011). All of the dependant variables were analyzed using ESR video sessions of the parent and baby reading together.

5.2.3 Participants

Four mother-child dyads participated in this study. All of the children (two male; two female) had a diagnosed HL and were fitted with hearing aid/s and/or cochlear implant/s. Inclusion criteria included: (a) baby was younger than 15-months-of-age, (b) baby had a diagnosed permanent HL, (c) baby was able to hear sounds on the speech range when wearing their hearing aid/cochlear implant based on parent report and/or written documentation, (c) parent reported that baby used oral/auditory mode of communication, and (d) English was the baby’s primary language. Exclusion criteria included: (a) serious medical diagnoses and/or suspected or diagnosed syndromes, (b) non oral/auditory mode of communication. Additionally, the parent needed to be able to commit to attending one
baseline assessment and three intervention workshops. The parent also needed to be able to participate in the study without the assistance of an interpreter. Descriptive statistics for the participants can be found in Table 1.

The mothers, who were aged from 20-years-old to older than 40-years-old, either held or were attaining a Diploma/certificate from Technical and Further Education (TAFE) or had completed a university degree. Two of the mothers conducted household tasks full time, one mother participated in paid work part-time, and the other mother was studying part-time. All of the participants resided in suburban Sydney, Australia. Three of the participants lived in postcodes that were indexed as relatively less advantaged areas and one participant lived in a postcode considered a relatively advantaged area as indexed by the Socio-Economic Indexes for Areas (Australian Bureau of Statistics, 2011). The participants were recruited through The Sydney Cochlear Implant Centre/Royal Institute of Deaf and Blind Children (SCIC/RIDBC; an amalgamated HL organization) and were all receiving speech-language pathology and audiology services through this organization. Advertisements/flyers with information about the study were distributed to potential participants. An information sheet was also provided to potential participants in addition to a discussion about the study with the primary investigator. The mothers completed a combined participant consent form for themselves and their baby. All participants provided consent for information to be shared between the primary investigator and the HL organization. The participants also provided verbal and/or written documentation that their baby’s most recent hearing assessment confirmed access to sounds within the speech range.

One week prior to the intervention a baseline assessment was conducted. This included a language assessment to identify the child’s current spoken language abilities for the purpose of descriptive analysis and the first baseline data collection point for the ESR video sessions. The language assessment consisted of the PLS-5 (Zimmerman et al., 2012)
and the CSBS (Wetherby & Prizant, 2002). Both of these assessments have been used in previous research with children with a HL (Ching et al., 2013; O’Leary Kane, Schopmeyer, Mellon, Wang & Niparko, 2004). For the PLS-5, standard score confidence intervals (95% level) for auditory comprehension ($M = 78.5$, $SD = 5.2$), expressive communication ($M = 82.5$, $SD = 13$), and for the total language score ($M = 79$, $SD = 8.2$) are presented in Table 1. Raw scores have been used for the CSBS, as this assessment has not been normed on Australian children. The primary investigator who is a certified practicing speech-language pathologist administered the assessments. Pseudonyms have been used for participant names.

Sarah (female) was 10-months-old at the commencement of this study and had a diagnosed bilateral moderate-to-profound sensorineural HL. She commenced wearing bilateral hearing aids between 4- to 6-weeks-of-age. The results from Sarah’s language assessment indicated that she had a moderate receptive language delay with expressive language skills that were within the average range expected for a child her age. Sarah’s family spoke English as their primary language at home and occasionally used some keyword signs to assist verbal communication.

Fae (female; 14-months-of-age) had a diagnosed bilateral moderate sensorineural HL and began wearing bilateral hearing aids at approximately 2-months-of-age. Results from Fae’s language assessment indicated that she had a mild/borderline receptive language delay and expressive language skills that were within normal limits. English was the primary language spoken at home for Fae’s family.

Eli (male) was 15-months-old when the study began. Eli had a diagnosed unilateral profound HL in his left ear and wore a cochlear implant that was switched on two months prior to the commencement of the intervention. Eli was considered to be in a sensitive period following his cochlear implant switch-on, where he was expected to show some
improvements in speech and language development given his recent access to sounds in his left ear. Additionally Eli had a history of otitis media and had undergone surgery for grommets in both ears. Eli presented with a borderline/mild receptive and expressive language delay. Eli’s family spoke English as their primary language and Bengali as their second language.

Mark (male; 9-months-old) had a diagnosed bilateral profound sensorineural HL. He had recently undergone surgery for a cochlear implant (three weeks prior to the commencement of this study). Mark was reported to have adjusted positively to the novel access to sounds from his cochlear implant switch on. He was still in a sensitive stage, where he was likely to make speech and language improvements due to his recent exposure to sounds on the speech range. Results from Mark’s language assessment indicated that he had a moderate receptive language delay and a severe expressive language delay. These results should be interpreted with caution, as Mark had not experienced any access to sounds on the speech range prior to his cochlear implant being switched on. English was the primary language spoken by Mark’s family.

Table 1

Descriptive Statistics for Participants

<table>
<thead>
<tr>
<th></th>
<th>Sarah</th>
<th>Fae</th>
<th>Eli</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (months)</td>
<td>10</td>
<td>14</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>Diagnosed hearing loss (HL)</td>
<td>Bilateral moderate-profound HL</td>
<td>Bilateral moderate-HL</td>
<td>Unilateral profound-HL</td>
<td>Bilateral profound-HL</td>
</tr>
<tr>
<td>Hearing intervention</td>
<td>Bilateral hearing aids</td>
<td>Bilateral hearing aids</td>
<td>Unilateral cochlear implant</td>
<td>Bilateral cochlear implant</td>
</tr>
<tr>
<td>PLS-5*</td>
<td>68-89</td>
<td>76-94</td>
<td>76-94</td>
<td>68-89</td>
</tr>
<tr>
<td>Auditory comprehension</td>
<td>88-103</td>
<td>82-99</td>
<td>74-92</td>
<td>60-75</td>
</tr>
<tr>
<td>Expressive communication</td>
<td>78-90</td>
<td>80-92</td>
<td>76-88</td>
<td>62-75</td>
</tr>
<tr>
<td>Total language score CSBS**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.2.4 Setting and materials

5.2.4.1 Assessment and intervention.

The baseline assessment and intervention was conducted in a therapy room at a SCIC/RIDBC clinic. Baseline assessments were conducted individually with each mother and baby. Intervention workshops were conducted as a group. Parents sat in a circle with the primary investigator who provided PowerPoint slides and videos on a computer. Handouts were given for each session and live demonstrations using storybooks were provided throughout the intervention. The intervention was interactive and the mothers were encouraged to ask questions. At each session an array of children’s books were displayed.

5.2.4.2 ESR video sessions.

To measure treatment effect, ESR video sessions of the mother and baby reading a storybook together were conducted. The mothers were asked to share a storybook of their/their baby’s choice with their baby. There was no minimum time limit, however the ESR video sessions were capped at five minutes each and only one storybook per ESR video session, as was the procedure for the study with NH babies (Manuscript by author).

*PLS-5, Preschool Language Scale 5th edition (Zimmerman et al., 2012), expressed as a standard score confidence intervals (95% level); **CSBS, Communication and Symbolic Behavior Scales Developmental Profile Infant-Toddler Checklist (Wetherby & Prizant, 2002), expressed as a raw score; ^ CSBS raw score below the average range expected for a child of that age.
The mothers were provided with a mobile phone tripod for filming their ESR video sessions at home. A one page ESR video session guideline was provided to each of the mothers and included: (a) requested days for ESR video sessions (Wednesday, Friday, and Sunday), (b) information on how to attach their mobile phone to the tripod, (c) request for camera to be positioned so that both the parent’s and baby’s face could be observed (pictures were provided for several common ESR seating positions to illustrate how the camera could be placed in various seating arrangements), (d) request to start video before reading commenced so that the entire session was recorded, (e) request to show the book to the camera, (f) request for the videos to be by the same parent who attended the workshops, (g) request to check that the video had been recorded, and (h) details on how to e-mail, text or download the ESR video session for the primary investigator. If the mothers had limited internet access, they were able to send a text message containing a small part of the ESR video session to the primary investigator (to confirm it had been collected) and for the remaining part of the ESR video session to be downloaded using internet access provided by the primary investigator before the next workshop commenced. The mothers were not provided with feedback on the ESR video sessions.

The first baseline data collection point for the ESR video sessions was conducted at the clinic during the baseline assessment. Subsequent recordings were made at the participants’ homes. Prior to each workshop, the primary investigator ensured that all ESR video sessions were completed and did not commence the workshop until all ESR video sessions were collected. If the participants had not completed all of the required ESR video sessions for that week, they were able to conduct the remaining ESR video sessions at the clinic before the next workshop began. The mothers were able to select any children’s book to read with their child. If the ESR video sessions were conducted at the clinic, an array of
recommended and older children’s books (not recommended) were made available to reduce selection bias.

5.2.5 Session structure

This study ran for a total of four weeks. In week one, a baseline assessment was conducted and the first data collection point for the ESR video sessions was obtained. Four additional data collection points for the ESR video sessions were conducted during week one. From week two onwards, three ESR video sessions were conducted per week, thus in total there were 14 data collection points. The book selection intervention was introduced in week two, with baseline continuing for eye-contact/joint attention, and turn taking. In week three, the intervention for eye-contact/joint attention was provided and baseline for turn taking remained ongoing until week four. Finally, in week four the intervention for turn taking was conducted. It was requested that the mothers bring their baby to the baseline assessment as well as the final workshop, where parents were provided with a practice opportunity and were provided with live feedback. Attendance of babies at the remaining sessions was optional. There was one occasion where two of the mothers were unable to attend one workshop. To ensure that this did not influence data collection nor the introduction of a new intervention, a workshop was offered the following day for the two mothers. Thus all of the mothers received the intervention on the same week and the provision of the intervention would not have disrupted data collection points. Each of the three intervention workshops ran for 1.5 hours (4.5 hours of intervention). One main intervention component was targeted each week along with several other ESR strategies relevant to that intervention topic. No information was provided on each of the main intervention components (book selection, parent-child eye-contact/joint attention, and parent-child turn taking) prior to the workshop on that intervention component.
5.2.6 Intervention

The same intervention workshops that were conducted for a previous study for babies without a HL were used for the current study (Manuscript by author). The only adaptation was to combine the six 45 minute intervention workshops into three 1.5 hour intervention workshops in order to reduce the time commitment for families. The intervention workshops were run by a certified practising speech-language pathologist (primary investigator).

5.2.6.1 Book selection (Workshop 1).

The mothers were provided with information on developmentally age appropriate books such as cloth, board, or plastic books with one-to two sentences, and one big picture per page. Interactive books with lift the flap or touch and feel components were also recommended. Video examples of how children responded when their parents read books that were not age appropriate, were viewed and discussed. Additionally, an interactive discussion with a book display took place whereby the mothers discussed why they would select particular children’s books over other children’s books using the above recommendations.

5.2.6.2 Parent-child eye-contact/joint attention (Workshop 2).

The intervention provided education on the importance of eye-contact/joint attention. The mothers were encouraged to engage in frequent eye-contact and joint attention with their baby while reading. To model and create opportunities for frequent eye-contact/joint attention it was recommended that the mothers sit facing their baby and at eye-level (such as baby sitting on the parent’s lap, facing the parent and the book as opposed to sitting on their parent’s lap with their back to the parent). Demonstrations and video examples were provided.
5.2.6.3  **Parent-child turn taking (Workshop 3).**

Turn taking videos and demonstrations were also provided to the mothers. Two techniques were used to facilitate turn taking: (a) the mothers were asked to pause after an utterance to give their baby an opportunity to respond, and (b) the mothers were encouraged to observe what their baby looked at, pointed to/touched, or made vocalisations about and respond by following their child’s interest. During workshop 3, the mothers were also provided with an opportunity to practice ESR with their baby and receive live feedback from the primary investigator.

5.2.7  **Video coding**

Treatment effect was examined using the ESR video sessions, which were coded using a scoring sheet. The scoring sheet consisted of a score out of 2.5 for book selection. Half a point was awarded when mothers selected: (a) board, cloth, or plastic books, (b) interactive books with a lift the flap component, (c) interactive books with touch and feel components, (d) books with one big picture per page (more than 60% of the page focussed on one picture), and (e) books with a maximum of two sentences per page. Coding commenced as soon as the parent spoke about the book and/or if the baby started interacting with the book. Coding ceased once the book was closed and/or conversation regarding the book came to an end. Eye-contact/joint attention was coded in 15 second intervals using the ESR video session footage. Only one point could be achieved per 15 seconds for eye-contact/joint attention to a maximum of five minutes (no minimum provided). If the occasion of eye-contact/joint attention occurred over two intervals, only one point was provided. The same interval coding procedure was utilised for measuring occasions of turn taking, with only one point attainable per 15 seconds. To correct for the amount of time mothers engaged in ESR, proportional scores for eye-contact/joint attention were obtained. This proportional value was calculated by dividing the number of eye-
contact/joint attention occasions, by the total number of intervals that ESR occurred for each ESR video session, and multiplying by 100. The same procedure was used to derive a proportional value for turn taking occasions.

5.2.8  **Reliability coding**

A random selection of 20% of the ESR video sessions were coded using the same scoring sheet by a speech-language pathologist who was blind to the study aims, hypotheses, and order of the ESR video sessions. The random selection consisted of baseline and intervention sessions, and included all four participants. Training and practice opportunities were provided to the speech-language pathologist using videos that were not part of the random selection to be scored for reliability. The calculation of reliability was conducted by dividing the total number of intervals that both the primary investigator and blind assessor agreed upon, by the number of intervals in total (both agreed and disagreed) and multiplying by 100 to obtain a percentage, as suggested by Kazdin (2011). Guidelines typically recommend percentages at or above 80% (Kazdin, 2011). Additionally, Cohen’s kappa was calculated to reduce the risk of chance with scores above 0.7 considered adequate (Kazdin, 2011). There was good agreement between the primary investigator and inter-rater speech-language pathologist for book selection (98.33%), $\kappa = 0.963, p < 0.01$. Good agreement was also observed for eye-contact/joint attention (88%), $\kappa = 0.741, p < 0.01$. Agreement for turn taking was below the recommended guidelines for both the percentage of agreed and disagreed occasions of turn taking (69%) and for Cohen’s kappa ($\kappa = 0.174, p = 0.015$). Examination of the disagreed upon occasions revealed that the primary investigator had taken a conservative approach to scoring with fewer occasions of turn taking scored compared to the inter-rater speech-language pathologist who provided higher scores for turn taking.
5.2.9 Data analysis

Treatment effect was analyzed using visual analysis and Tau-U analysis as recommended by Vannest and Ninci (2015). Using results from the scoring sheet, which analyzed book selection skills, eye-contact/joint attention, and turn taking from the ESR video sessions, graphs were created for visual analysis for each of the participants. This enabled treatment effect between baseline and intervention to be visually observed for each of the intervention components. Visual analysis has a history of being a valid and reliable assessment tool for single case experimental designs, especially when used in combination with statistical analyses (Kazdin, 2011). Tau-U analysis (a non-parametric analysis that provides a measure of data non-overlap) was also conducted to examine statistical significance of any differences and to determine effect sizes. An effect size of 0.20 was considered small, 0.20 to 0.60 moderate and 0.80 and above large/very large (Vannest & Ninci, 2015). Tau-U has advantages over other non-parametric analyses for single case experimental designs as it can accommodate baseline trends (by comparing the baseline with itself) and uses all of the data pairs unlike other non-parametric analysis (Vannest & Ninci, 2015). Tau-U analysis was conducted using an online calculator (Parker, Vannest, Davis, & Sauber, 2011).

5.3 Results

Data collection occurred over a period of four weeks and in the same manner for each of the four participants. Consistent with the single case experimental design across behaviors, the staggered introduction of each intervention component allowed for the examination of experimental control.
5.3.1 *Sarah*

Visual analysis for Sarah’s mother’s book selection skills are illustrated in Figure 1 and are characterized by a trend of strong book selection scores during baseline ($M = 1.90$). This trend continued following the introduction of the book selection intervention ($M = 1.89$) where there was no immediate change. A delayed decelerating slope was observed for two data collection points following the introduction of the intervention, which returned to the baseline trend scores before accelerating. Consistent with visual analysis, Sarah’s mother’s book selection results indicated non-significant findings with a small effect size ($\text{Tau-U} = 0.04, p = 0.89$).

Visual analysis of Sarah’s eye-contact/joint attention scores during baseline show fluctuating results with a highest score of 73% and lowest score of 10% ($M = 39\%$). Immediately after the eye-contact/joint attention intervention was introduced an accelerating slope was observed. This intervention trend was maintained for three data collection points ($M = 91\%$). A delayed decelerating slope was observed on one occasion during the intervention phase, which returned to baseline scores, however this gradually accelerated back to the initial intervention trend results. Statistical analysis indicated that this improvement was significant with a very large effect size ($\text{Tau-U} = 0.938, p = 0.004$).

The most pronounced treatment effect for Sarah was for turn taking. During baseline there were limited occasions of turn taking ($M = 6\%$). A rapid accelerating slope was observed once the turn taking intervention was introduced with intervention scores remaining consistent ($M = 63\%$). This improvement was statistically significant with a very large effect size ($\text{Tau-U} = 1, p = 0.01$).
Figure 1.

Changes in target behavior for Sarah

![Graph showing changes in target behavior for Sarah with three subplots: Score for book selection, Proportion of intervals for eye-contact/joint attention, and Proportion of intervals for turns.](image-url)
Figure 2.

Changes in target behavior for Fae

![Graph showing changes in target behavior for Fae.](image-url)
5.3.2 *Fae*

Visual analysis of Fae’s mother’s book selection skills, depicted on Figure 2 indicated a gradual decelerating slope trend during baseline that started to accelerate at the end of the baseline phase \((M = 1.6)\). No immediate changes were observed for Fae’s mother’s book selection skills during the intervention phase \((M = 1.6)\). One occasion of an accelerated slope was observed during the intervention phase although this returned back to the intervention trend but did accelerate once more for the final data collection point. A non-significant result with a small effect size was found for Fae’s mother’s book selection skills consistent with her visual analysis \((\text{Tau-U} = 0.11, p = 0.74)\).

An initial baseline trend with no occasions of eye-contact/joint attention was observed in Fae’s visual analysis for three data collection points, which was followed by a delayed accelerating slope during baseline \((M = 2\%)\). Fae’s baseline trend for eye-contact/joint attention was corrected for statistical analysis. An immediate accelerating slope was illustrated once the eye-contact/joint attention intervention was introduced for two data collections points, however the slope did decelerate and then remain consistent for the remaining data collection points. The remaining intervention trend continued to display an increase in scores compared with the baseline phase \((M = 54\%)\). This improvement was significant with a large effect size \((\text{Tau-U} = 0.625, p = 0.05)\).

Visual analysis for turn taking was characterized by a gradual decelerating slope that was followed by a trend for no occasions of turn taking for three data collections points. Baseline continued with an acceleration that was maintained for three data collection points before returning briefly to the previous baseline trend and then returning to the accelerated scores \((M = 18\%)\). A rapid accelerating slope was observed once the turn taking intervention had been introduced that saw an increase
back to the initial baseline score prior to the decelerating slope, the rapid increase was maintained for all intervention phase scores with the final score exceeding all baseline scores ($M = 69\%$). This improvement was significant with a very large effect size (Tau-U = 0.909, $p = 0.02$).

### 5.3.3 Eli

Figure 3 illustrates Eli’s mother’s book selection skills. Baseline is characterised by a trend of consistently high book selection scores ($M = 2$). This remained unchanged immediately following the intervention, however there was a delayed deceleration slope for one data collection point that returned to the original baseline trend for the remaining data collection points ($M = 1.89$). Consistent with visual analysis, non-significant results with a small effect size were obtained (Tau-U = 0.11, $p = 0.74$).

A trend for no occasions of eye-contact/joint attention was illustrated in Eli’s baseline phase ($M = 0\%$). An immediate accelerating slope was observed following the introduction of the eye-contact/joint attention intervention that gradually decreased back to the baseline trend before accelerating again and maintaining the improved scores ($M = 21\%$). This improvement was significant with a very large effect size (Tau-U = 0.833, $p = 0.01$).

The baseline phase for turn taking was characterised by a decelerating slope that began to accelerate prior to the intervention phase ($M = 12\%$). A rapid accelerating slope was depicted after the intervention for turn taking was introduced ($M = 65\%$). This improvement was significant with a very large effect size (Tau-U = 0.97, $p = 0.0127$).
Figure 3.

Changes in target behavior for Eli
Figure 4

Changes in target behavior for Mark

5.3.4 Mark

As illustrated in Figure 4, Mark’s mother’s baseline phase for book selection
was characterized by a gradual accelerating slope ($M = 1.4$). There was an initial
deceleration in the slope at the commencement of the intervention phase, that then resumed the highest score obtained during baseline that was maintained for the remaining data collection points ($M = 1.94$). The improvement between baseline and intervention for book selection was not significant, although it did have a moderate effect size ($\text{Tau-U} = 0.56, p = 0.08$).

A baseline trend of no occurrences for eye-contact/joint attention was depicted in Mark’s visual analysis ($M = 0\%$). A delayed accelerating slope was observed following the introduction of the eye-contact/joint attention intervention for one data collection point, that gradually decreased back to the baseline trend before accelerating for the final data collection point ($M = 13\%$). This improvement was significant with a very large effect size ($\text{Tau-U} = 0.667, p = 0.039$).

A clear demonstration of treatment effect, based on visual analysis was demonstrated for turn taking, with a trend of no occurrences of turn taking during the baseline phase ($M = 0\%$). A rapid acceleration was illustrated following the introduction of the intervention ($M = 60\%$). This improvement was significant with a very large effect size ($\text{Tau-U} = 1, p = 0.01$).

### 5.3.5 Parent satisfaction

An anonymous evaluation form was completed at the end of the final workshop. All mothers indicated that they enjoyed attending the workshops and all four strongly agreed that they would recommend these workshops to their friends. The mothers all reported that they strongly agreed that the content of the workshops was interesting and strongly agreed that they learned new information from attending these workshops. On the evaluation form was space for the mothers to write comments to indicate what they enjoyed about the workshops and recommendations for future workshops. Below are comments taken from each of the four evaluation forms: (Comment 1) “Thank you so much for all the tools to help make my child’s story time better but also tools to help
develop language skills. I have seen a massive change in a small time frame”;
(Comment 2) “Thank you for providing this workshop. It’s the most useful and informative I have attended”; (Comment 3) “Highly recommend these become more popular for all parents” and; (Comment 4) What I most enjoyed? “The strategies I learned to use with my child”. There was one recommendation “Would have loved more as I enjoyed attending them all and enjoyed learning so much to help with my child’s development”.

5.4 Discussion

To our knowledge, this is the first study to examine the effectiveness of an ESR intervention for babies with a HL. Parent-child interactions are considered within both the social constructivist theory and the bioecological model to be essential for learning language and social communication skills (Bronfenbrenner, 1979; Vygotsky, 1987). In previous reviews, parents’ book selection skills, parent-child eye-contact/joint attention, and parent-child turn taking have been considered active ingredients for successful parent-child interactions during ESR with young children (Dickinson et al., 2012; Fletcher & Reese, 2005). The impact of this ESR intervention for improving each of these active ingredients is described below.

5.4.1 Parents’ book selection skills

Ceiling effects were observed for book selection skills with three of the four participants demonstrating strong book selection skills during baseline resulting in non-significant treatment effects. It is encouraging that the mothers in the current study demonstrated strong book selection skills as previous research has indicated that parents with NH babies may have difficulties with book selection (Manuscript by author). Conceivably, the parents in the current study had better book selection skills as they were more in tune with their babies’ abilities from monitoring their children’s progress more closely due to their HL diagnoses and therefore provided books that
were age appropriate. The parents may also have received speech-language pathology/educational intervention on book selection through the HL organization they attended.

One participant (Mark’s mother) demonstrated a non-significant gradual improvement in book selection skills, but with a moderate effect size. Possibly, the regular reading required during baseline supported the mother’s book selection skills, which were further reinforced by the intervention. Even though book selection skills were a strength for three of the four participants it is an essential starting point for an ESR intervention as it provides the scaffold for parent-child interactions, especially non-verbal interactions (such as touching the pictures and lifting the flap) that support participation for babies with preverbal and emerging language skills (Demir et al., 2011; Dickinson et al., 2012). Given the strength in book selection skills observed for three of the four mothers in this study, possibly less intervention time should be allocated to book selection.

5.4.2 Parent-child eye-contact/joint attention

Significant improvements for eye-contact/joint attention were observed in all four participants with a large/very large effect size. Parent-child eye-contact is considered an essential skill for social communication as well as developing social-emotional engagement, and regulating learning (Mathew & Rajanna, 2017; Tomasello et al., 2005). Eye-contact is an earlier developing skill from which joint attention is learned where eye-contact is considered the necessary link for joint attention occur (Brooks & Meltzoff, 2005). The relationship between ESR, joint attention, and language skills has been demonstrated in previous research with NH babies (Farrant & Zubrick, 2013). NH babies who engage in ESR and have higher levels of joint attention during their first year of life have better language skills upon school entry compared to babies with low levels of joint attention and ESR during infancy (Farrant & Zubrick,
2013). The preliminary findings from this study suggest that parent-child eye-contact/joint attention can rapidly improve when parents are educated on the importance of eye-contact/joint attention, and taught how to create more opportunities for eye-contact/joint attention during ESR by sitting at eye-level, facing their baby.

5.4.3 Parent-child turn taking

The most pronounced treatment effect was for turn taking, with all participants demonstrating a significant improvement with a very large effect size. Consistent with the recommendations from the literature on ESR these preliminary findings suggest that when babies are encouraged to be active participants during ESR more turn taking occasions occur (Demir et al., 2011; Dickinson et al., 2012; Fletcher & Reese, 2005). Turn taking is considered an important part of learning language as it enables children to both practice the current skills that they have as well as learn new skills (Demir et al., 2011; Dickinson et al., 2012; Fletcher & Reese, 2005). Furthermore, turn taking is an essential social communication skill needed for successful interactions and conversations with others (Gratier et al., 2015).

5.4.4 Limitations

Single case experimental designs are ideally suited to establishing preliminary evidence for an intervention. However, due to the small sample size \((n = 4)\) they do not enable generalization to the broader population (Kazdin, 2011). Therefore, the findings from the current study should be interpreted in light of the design and indicate preliminary evidence for the effectiveness of the ESR intervention workshops. However, further research is warranted.

Babies with a HL are a heterogeneous group, as reflected in this study with the variability observed between the participants such as hearing diagnoses (e.g., unilateral or bilateral HL), auditory intervention (hearing aids and/or cochlear implants), and length of exposure to sounds within the speech range. One participant (Mark) had only
recently had his cochlear implant switched on and was considered to be in a sensitive stage where he was expected to make language improvements given his recent access to sounds. Another participant (Eli) was also in a sensitive stage following a recent unilateral cochlear implant switch on. Additionally Eli had a history of bilateral otitis media requiring grommets. Multiple factors can influence the prognosis for children with a HL including, but not limited to the hearing diagnoses (such as unilateral or bilateral), hearing severity, age at which auditory intervention was provided, and educational intervention (see Ching et al., 2013; Morini et al., 2017). While variability can be a limitation, it can also be viewed as a strength of the robustness of the intervention as the findings were replicated across four participants despite the variability. The babies in this study also received speech-language pathology/educational intervention through the HL organization they attended making it possible for them to have received ESR intervention as part of their regular therapy. This was controlled for by conducting a baseline and the observation that specific behaviors were only observed once the relevant intervention component was introduced.

As the babies in this study ranged from 9- to 15-months-of-age, eye-contact and joint attention were scored together as there is evidence to suggest that 9-month-old babies have not mastered joint attention and that joint attention skills are variable even in typically developing infants without a HL (Brooks & Meltzoff, 2005; Mathew & Rajanna, 2017). Even though eye-contact is a crucial component of joint attention and is an earlier developing skill, once mastered they are considered separate skills. Separating eye-contact and joint attention in future studies may provide more accurate information for predicting later language abilities as joint attention has been found to predict vocabulary development and eye-contact is considered to promote social communication skills (Mathew & Rajanna, 2017).
Mothers were asked to conduct the ESR video sessions on a Wednesday, Friday, and Sunday prior to the next workshop. While the next workshop was not conducted until all completed ESR video sessions were received by the primary investigator, the possibly of some parents recording the ESR video sessions on different days may have influenced the findings. If a parent conducted all of the ESR video sessions on a Sunday they may have had more opportunities to practise the strategies they had been taught and likewise if a parent conducted all of the ESR video sessions on a Wednesday, they may have had less of an opportunity to practise the strategies they had been taught.

Inter-rater reliability coding was high for both book selection and eye-contact/joint attention, however inter-rater reliability was poor for turn taking. Although, the inter-rater reliability percentage (69%) was within the range reported by another study also examining turn taking using a multiple baseline single case experimental design (66% to 92%; Schertz & Odom, 2007). Examination of the scores revealed that the primary investigator had scored fewer occasions of turn taking than the inter-rater speech-language pathologist. Therefore, the conservative approach using the lower scores from the primary investigator was used. This may have influenced the results, as it is possible that more occasions of turn taking occurred.

The final limitation of this study is related to the data collection for the intervention phase for turn taking. Kazdin (2011) recommends a minimum of 10-16 data collection points across baseline and intervention. The current study had 14 data collection points with baseline ranging from five data collection points (for parent’s book selection) to 11 (for turn taking) and intervention data collection points ranging from three data collection points (for turn taking) to nine (for parent’s book selection). Having three data collection points for the intervention phase for turn taking is below the recommended five data collection points for each phase (Kazdin, 2011). Possibly
having more data collected during the intervention phase for turn taking may have provided further information regarding whether the improvements observed were maintained.

5.4.5 Future research directions

The current study points to preliminary evidence for the effectiveness of the ESR intervention workshops for promoting parent-child eye-contact/joint attention and parent-child turn taking for babies who use oral/auditory communication, however further examination of its effectiveness through an intervention study with a larger sample is required. It may be beneficial to examine how the intervention supported parents with ESR beyond the workshops and if the strategies learned were maintained over time. Conducting a longitudinal study examining the effectiveness of the intervention for spoken language and social communication skills as has been conducted with NH babies may also provide useful information (Manuscript by author). However, as children with a HL often receive educational intervention through multiple sources (such as teachers, speech-language pathologists, and early intervention services), it may be difficult to untangle the contribution of each service and the ESR intervention to the child’s potential language and social communication improvement. Due to the many variables that can influence the outcomes for children with a HL and that there is still much unknown about ESR with babies with a HL single case experimental designs can still offer useful initial evidence.

A better understanding of parents’ home reading practices and opinions on ESR, especially for babies with a HL within their first year of life may be useful to better support parents of children with a HL with ESR. Given the ceiling effects observed for book selection, more information on the types of books that parents of children with a HL read with their child may be of benefit. As the current study was provided to children who use oral/auditory methods of communication, future research
should examine if these findings are replicable for children with a HL who use sign language.

5.4.6 Conclusion

This study provided initial support for an ESR intervention provided to parents with babies with a HL, aimed at improving parent-child interactions during ESR through parent-child eye-contact/joint attention, and parent-child turn taking. The study was well received with all mothers reporting that they enjoyed attending the workshops and would recommend the workshops to their friends.

5.5 Acknowledgements:

We would like to thank the mothers and children who participated in this study. Appreciation is also extended to The Sydney Cochlear Implant Centre/Royal Institute of Deaf and Blind Children for recruiting the participants and hosting the study as well as Kathryn O’Leary for her assistance with reliability testing. David Trembath is supported by a NHMRC Early Career Fellowship (GNT1071811).
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Inc.


Chapter 6: A Preliminary Investigation of Early Storybook Reading with Babies and Young Children with a Hearing Loss through a Parent Questionnaire

Statement of contribution to co-authored published paper

This chapter includes a co-authored paper. The bibliographic details of the co-authored paper, including all authors, are:


My contribution to the paper involved: Completion of the ethics application, collection of the data, analysis of the data in collaboration with my PhD supervisors, writing the first draft of the manuscript, and the majority of the writing for subsequent drafts of the manuscript.

(Signed) _______________________________ (Date) 20/12/2017
Michelle I. Brown

(Countersigned) ________________________ (Date) Dec 2017
Supervisor: Marleen F. Westerveld
A Preliminary Investigation of Early Storybook Reading with Babies and Young
Children with a Hearing Loss through a Parent Questionnaire

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Abstract

Purpose: Early storybook reading (ESR) offers a promising opportunity for learning
language and social communication skills. This preliminary investigation aimed to
extend knowledge of ESR with babies and young children with a hearing loss (HL).
Method: Twelve parents with babies and young children (birth to 3 years old) with a HL
completed a questionnaire examining parents’ values and opinions towards ESR and
their home reading practices.
Results: Ten parents (n = 12) reported frequent ESR with their children and all of the
families provided access to children’s books at home. Parents reported limited
occasions of library/bookstore attendance. Analysis of the results revealed difficulties
with selecting age appropriate books and using seating environments known to facilitate
parent-child interactions.
Conclusion: These preliminary findings indicate that parents with babies and young
children with a HL value ESR, although may benefit from further education on the
importance of ESR, book selection, and using seating environments that support parent-
child interactions.
6.1 Introduction

Early storybook reading (ESR) provides opportunities for learning spoken language and social communication skills through parent-child interactions (Bus, van IJzendoorn, & Pellegrini, 1995; Dickinson, Griffith, Michnick Golinkoff, & Hirsh-Pasek, 2012; Fletcher & Reese, 2005). The social constructivist theory put forward by Vygotsky and the bioecological model developed by Bronfenbrenner both highlight the necessity of parent-child interactions for the development of language and social communication skills (Bronfenbrenner, 1979; Vygotsky, 1987). As children with a hearing loss (HL) are susceptible to language and social communication difficulties, strengthening language and social communication development through parent-child interactions is crucial (Netten et al., 2015; Zaidman-Zaid & Dromi, 2007).

While evidence suggests that ESR with young children with a HL may support parent-child interactions during ESR, little is known about the home reading practices, values, and opinions regarding ESR of parents with very young children with a HL (DesJardine et al., 2014; DesJardine et al., 2017; Zaidman-Zaid & Dromi, 2007). Further knowledge of the home reading practices and values regarding ESR of parents with very young children with a HL would have implications for clinicians and educators who provide ESR intervention to this population and would enable the fine tuning of current ESR intervention to ensure it is meeting the current needs of parents. Moreover examination of ESR with very young children with a HL (birth to 3 years old) may identity both the facilitators and barriers towards ESR for parents and direct future research to address potential barriers.

6.1.2 Early storybook reading (ESR) with young children with a hearing loss (HL)

The research investigating ESR with young children with a HL has focussed on comparing children with a HL to their normal hearing (NH) peers. Zaidman-Zait and Dromi (2007) compared the early language skills of children with a HL ($n = 28, M$ age
One of the sections of the questionnaire asked specific questions related to ESR, including the children’s non-verbal and verbal interactions, parent-child joint attention, and gestures used by the children while sharing the story. Analysis of the questionnaire revealed that parents with children with a HL engaged in significantly less parent-child joint attention during ESR compared with parents with NH children. The authors concluded from this finding that parents with children with a HL may require education on how to facilitate parent-child joint attention while engaging in ESR. The study by Zaidman-Zait and Dromi (2007) provides useful information on some of the parent-child interactions provided during ESR, however further information is needed about other factors that are known to influence the quality of parent-child interactions such as enjoyment of ESR for children as well as parents, and the frequency of ESR (Bus et al. 1995; Dickinson et al., 2012; Fletcher & Reese, 2005; Sénéchal, LeFevre, Hudson, & Lawson, 1996).

DesJardin et al. (2017) also investigated aspects of ESR with young children with and without a HL. Using a parent questionnaire, DesJardin et al. (2017) compared the frequency of ESR, amount of time spent reading, and parents’ perceptions of their children’s enjoyment of ESR between parents with children with a HL ($n = 17, M \text{ age} = 14$ months, range: 11- to 16-months-old) and parents with NH children ($n = 34, M \text{ age} = 13$ months, range: 10- to 19-months-old). All of the children with a HL used hearing aids and were diagnosed with a mild-to-severe bilateral HL. Examination of the results revealed that both parents with NH children and children with a HL reported a similar frequency of ESR, read with their children for similar amounts of time, and reported similar perceptions regarding their children’s enjoyment of ESR. The findings were also consistent with a previous study conducted by DesJardin et al. (2014).
These studies examining aspects of ESR using a parent questionnaire by DesJardin et al. (2017) and Zaidman-Zaid and Dromi (2007) provide a useful starting point for further examination of the home reading practices and values regarding ESR of parents with young children with a HL. However, further information is needed to examine other important aspects of ESR with parents with babies and young children with a HL. There is currently little known about the age that parents with young children (birth to 3-years-of-age) with a HL commence ESR, the types of books provided, the number of children’s books within the family home, the seating environment (also referred to as seating position), and attendance at libraries/bookstores. As these aspects of ESR are known to influence parent-child interactions and the quality of ESR, further investigation is needed (Bus et al., 1995; Dickinson et al., 2012; Fletcher & Reese, 2005; Sénéchal et al., 1996).

6.1.3 Present study

The present study aimed to build upon previous research examining ESR with young children with a HL by investigating a wider range of home reading practices and further exploring parents’ values and opinions towards ESR. Furthermore, the current study aimed to include even younger children (from less than 3-months-of-age) with a HL as well as children who used different types of hearing intervention (such as cochlear implants, hearing aids, and bone conductors) to increase generalisatibility and clinical relevance of the findings. This preliminary investigation also aimed to address the need for research to examine ESR with young children with a HL (DesJardin et al., 2014; DesJardin et al., 2017; Zaidman-Zaid & Dromi, 2007).
6.2 Methodology

6.2.1 Participants

Twelve parents of children with a HL participated in the current study. To be included, participants had to be a parent of a child with a HL aged 0- to 3-years-old and able to complete the questionnaire without requiring an interpreter. Parents whose children had diagnoses additional to HL were included in the study in order to obtain a clinically representative sample. Eleven mothers and one father participated. The participants came from suburban Sydney and identified their ancestry as Australian (69%), Asian (23%), and European (8%). Seven of the 12 participants spoke another language in addition to English (i.e., Arabic, Auslan, Italian, and Tamil). The parents ranged in age from 20- to over 40-years-old. Seven parents held a university degree, four had attained a diploma/certificate, and one had completed their high school certificate. Maternal education was used as an indicator for socio-economic status. The children were aged from less than 3-months-of-age to 3-years-of-age with equal numbers of males and females. Severity of HL and auditory intervention are presented in Table 1. Two parents reported that their children had additional diagnoses (Trisomy 21 and Diastrophic dysplasia).

Table 1.

Descriptive statistics for children (n = 12)

<table>
<thead>
<tr>
<th>Child age</th>
<th>LOTE*</th>
<th>HL+ severity</th>
<th>Auditory intervention</th>
<th>Additional disability</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 3 months</td>
<td>Auslan</td>
<td>Profound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-9 months</td>
<td>Profound</td>
<td>Bilateral CI^</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-12 months</td>
<td>Auslan</td>
<td>Severe</td>
<td>Bilateral HA^^</td>
<td></td>
</tr>
<tr>
<td>10-12 months</td>
<td>Italian</td>
<td>Profound</td>
<td>Bilateral CI</td>
<td></td>
</tr>
<tr>
<td>10-12 months</td>
<td>Profound</td>
<td>Awaiting CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Language</td>
<td>Severity</td>
<td>Device</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-----------</td>
<td>----------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>1-2 years</td>
<td>Moderate</td>
<td>Bilateral HA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-3 years</td>
<td>Arabic</td>
<td>Severe</td>
<td>Unilateral CI</td>
<td></td>
</tr>
<tr>
<td>2-3 years</td>
<td>Auslan</td>
<td>Moderate</td>
<td>Bilateral HA, Trisomy 21</td>
<td></td>
</tr>
<tr>
<td>2-3 years</td>
<td>Mild</td>
<td>Bilateral HA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-3 years</td>
<td>Moderate</td>
<td>Mini bone conductor</td>
<td>Diastrophic dysplasia</td>
<td></td>
</tr>
<tr>
<td>2-3 years</td>
<td>Tamil</td>
<td>Moderate</td>
<td>Bilateral HA</td>
<td></td>
</tr>
<tr>
<td>2-3 years</td>
<td>Profound</td>
<td>Bilateral CI</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*LOTE, Language Other Than English; ^HL, hearing loss; ^CI, cochlear implant/s; ^^HA, hearing aid/s

### 6.2.2 Materials

The questionnaire (available on request) that had been used with NH children in a previous study was used for the current study (Published manuscript by author, 2017). The questionnaire comprises five sections: (a) background information, (b) parents’ values and opinions of ESR, (c) frequency of ESR, (d) book selection, and (e) reading and seating environment. There were 46 questions in total. Open responses, check boxes, and Likert scale questions were provided. A ‘prefer not to answer’ option was also available. Within the book selection section was a booklist that was made up of nine age appropriate and recommended books, four chapter books recommended for primary school children, and seven foils (book titles made up by the primary investigator). The recommended books were chosen from library and bookstore displays and articles from newspapers and magazines. The parents were informed that some of the books were foils and were asked to identify books they had read with their children. For further details regarding the structure of the questionnaire please see (Published manuscript by author, 2017).

### 6.2.3 Procedure

The study was approved by three Human Research Ethics committees (names withheld for blind review). Recruitment was conducted through The Sydney Cochlear Implant Centre/Royal Institute of Deaf and Blind Children. Advertisements and flyers were provided that contained a brief description about the study, a link to the online
version of the questionnaire, and the first author’s contact details. Hard copies of the questionnaire with reply paid envelopes were available. Participants received an information sheet prior to commencing the questionnaire outlining that participation was voluntary and anonymous. Consent was obtained through the first question on the questionnaire. As recruitment was conducted at multiple locations by multiple clinicians it is unknown how many parents were invited to participate. Participants were able to skip questions and data was missing in instances where parents preferred not to answer. If parents had not commenced ESR with their child the questionnaire directed them to the next relevant section.

6.2.4 Data analysis

Descriptive statistics were computed using frequency distributions. Parents’ values and opinions of ESR with their child were examined as well as home reading practices.

6.3 Results

6.3.1 Parents’ values and opinions of early storybook reading (ESR)

Five of the 12 parents reported that it was important to read with their baby from birth, six considered ESR important from 3- to 6-months-of-age, and one parent indicated that ESR was important to commence from 1- to 2-years-of-age. Eleven parents reported reading with their children. One mother reported that she had not commenced ESR with her child. ESR was considered a favourite or enjoyed activity by five parents, three of whom also reported that ESR appeared to be a favourite or enjoyed activity for their children. One mother reported that she felt neutral towards ESR, however felt that her child enjoyed the activity. When asked using an open response question what the parents enjoyed about ESR, ten responded that they valued the interaction and bonding opportunity that ESR provided. Three parents also reported
that they enjoyed knowing that ESR fostered learning and development. Parents were also asked, using an open response question, what they found difficult about ESR. Seven parents responded. Four of these responses were related to maintaining the child’s interest. The remaining responses were related to time constraints and difficulties with children tearing the pages in the book.

6.3.2 Home reading practices

Three broad areas of home reading practices were examined: (a) frequency of ESR activities, (b) book selection and, (c) seating environment.

6.3.2.1 Frequency of early storybook reading (ESR) activities.

Ten of the 12 parents reported that they read with their children everyday. As illustrated in Table 2, attendance at libraries/bookstores was low. Nine of the families owned over 30 children’s books and two families owned between 10-30 children’s books.

6.3.2.2 Book selection.

Book selection was analysed using a booklist as well as two questions related to the type of books that parents read with their children, as shown in Table 2. None of the parents indicated that they had read all nine of the recommended books for young children. Two of the 12 parents reported that they had read eight of the recommended books and five indicated that they had read three or less of the recommended books. None of the parents reported reading chapter books aimed at primary school children and 10 parents did not select any foils.

6.3.2.3 Seating environment.

The reading environment implemented by parents whilst reading is illustrated in Table 2. Two parents reported that they sat at eye-level, facing their children while
reading. Half of the parents (6/12) indicated that their children sat on their lap with their back to the parent, facing the book.

Table 2.

*Descriptive Statistics on Parents’ Home Reading Practices*

<table>
<thead>
<tr>
<th>Child age</th>
<th>Attendance at library/bookstore</th>
<th>Number of children’s books at home</th>
<th>Number of books read from booklist</th>
<th>Book type</th>
<th>Reading environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 3 months</td>
<td>Often</td>
<td>&gt;30</td>
<td>6</td>
<td>Thin paged</td>
<td>Sideways*^^</td>
</tr>
<tr>
<td>7-9 months*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-12 months</td>
<td>PNTA^</td>
<td>10-30</td>
<td>1</td>
<td>Board</td>
<td>Eye-level facing parent</td>
</tr>
<tr>
<td>10-12 months</td>
<td>Sometimes</td>
<td>&gt;30</td>
<td>3</td>
<td>Board</td>
<td>Sideways</td>
</tr>
<tr>
<td>10-12 months</td>
<td>Seldom</td>
<td>&gt;30</td>
<td>2</td>
<td>Board</td>
<td>Eye-level facing parent</td>
</tr>
<tr>
<td>1-2 years</td>
<td>Seldom</td>
<td>&gt;30</td>
<td>5</td>
<td>Board</td>
<td>Back to parent</td>
</tr>
<tr>
<td>2-3 years</td>
<td>Never</td>
<td>&gt;30</td>
<td>8</td>
<td>Board</td>
<td>Back to parent</td>
</tr>
<tr>
<td>2-3 years</td>
<td>Seldom</td>
<td>&gt;30</td>
<td>5</td>
<td>Newspapers/magazines</td>
<td>Back to parent</td>
</tr>
<tr>
<td>2-3 years</td>
<td>Seldom</td>
<td>&gt;30</td>
<td>8</td>
<td>Thin paged</td>
<td>Sideways</td>
</tr>
<tr>
<td>2-3 years</td>
<td>Often</td>
<td>&gt;30</td>
<td>2</td>
<td>Thin paged</td>
<td>Back to parent</td>
</tr>
<tr>
<td>2-3 years</td>
<td>Often</td>
<td>&gt;30</td>
<td>5</td>
<td>Board</td>
<td>Back to parent</td>
</tr>
<tr>
<td>2-3 years</td>
<td>Seldom</td>
<td>10-30</td>
<td>1</td>
<td>Thin paged</td>
<td>Back to parent</td>
</tr>
</tbody>
</table>

* Indicates parent has not commenced ESR; ^PNTA, prefer not to answer; ^^Sideways, sitting on parent’s lap sideways.

### 6.4 Discussion

This preliminary investigation aimed to progress knowledge of the home reading practices as well as values and opinions of ESR of parents with babies and young children with a HL, addressing a need identified within the literature (DesJardin et al., 2014; DesJardin et al., 2017; Zaidman-Zaid & Dromi, 2007). The current study expanded previous research by examining a wider range of components of ESR and further investigating parents’ values and opinions of ESR. Examination of these components of ESR was considered important as studies with NH children have
indicated that the quality of ESR and parent-child interactions while reading are influenced by the home reading environment as well as parents values and opinions of ESR (Bus et al., 1995; Dickinson et al., 2012; Fletcher & Reese, 2005; Sénéchal et al., 1996). Additionally, this study extended previous research by including even younger children with a HL.

6.4.1 Parents’ values and opinions of early storybook reading (ESR)

The results from the questionnaire suggested that parents with babies and young children valued ESR as 11 of the 12 participants indicated that they had commenced reading with their children. Moreover, half of the participants reported that they commenced ESR when their children were between 3- to 6-months-of-age. These are positive findings, as studies examining ESR with NH babies have provided evidence that parents who commence ESR with their children from a young age continue reading as their children grow older (Karrass & Braungart-Rieker, 2005). Furthermore, there is also evidence with NH babies that ESR from 3-months-of-age can strengthen language and social communication development (Published manuscript by author, 2017). While this evidence is with NH babies and not with babies with a HL it does offer a tentative platform for interpreting these findings until future research is conducted with children with a HL.

Mixed outcomes were reported for enjoyment of ESR. Most parents reported that they enjoyed ESR with their children, however fewer parents reported that their children appeared to enjoy reading with them. DesJardin et al. (2014) and DesJardin et al. (2017) have both reported similar findings when examining parents’ perceptions of their children’s enjoyment of ESR. When asked in an open-ended question what parents found difficult about ESR the parents reported difficulties with maintaining their children’s attention and interest, children tearing the pages within the book, and time constraints. The findings from the current study, coupled with the research conducted
by DesJardin et al. (2014) and DesJardin et al. (2017) suggest that parents with children with a HL may require further support with maintaining their children’s interest and attention during ESR as well as information on book selection to reduce occurrences of children tearing thin-paged books. Moreover, certain books are considered more effective than others for increasing children’s interest and maintaining their attention (Brookshire, Scharff, & Moses, 2002).

6.4.2 Home reading practices

Frequency of ESR in the current study was high with 10 parents indicating that they read with their children daily. This finding is consistent with DesJardin et al. (2017) who found that both parents with children with a HL and parents with NH children read with their children for ~5 minutes per day. The relationship between frequency and ESR has been examined with NH children and found to predict later language skills (Farrant & Zubrick, 2013). Similar to the research examining parents’ values and opinions of ESR with children with a HL, this is yet to be examined with very young children with a HL, however the research with NH children does offer a starting point for interpreting the results.

While parents provided access to children’s books within the family home, few parents engaged in literacy activities such as attending the library/bookstore. Further investigation is needed to understand why many of the parents with children with a HL seldom or never attended libraries/bookstores. As time restraints were identified as a difficulty with ESR by the parents in this study, it is possible that time constraints were also the reason for the limited attendance at libraries/bookstores.

The books parents provide while reading with babies and young children are important as not all books support parent-child interactions to the same extent (Brookshire et al., 2002). The parents in the current study reported that they had read few of the age appropriate and recommended books for young children on the booklist,
even though many of the books are well established such as *Dear Zoo* (Campbell, 1982). Reading thin-paged books can also be problematic for very young children as they may tear the pages, as identified as a barrier for parents from the current study. Additionally one parent reported reading newspapers and magazines. Given that children’s interest and attention is supported through big, bright, and colour pictures that are relevant to children, reading newspapers and magazines may reduce children’s interest and attention while reading. These findings suggest that parents with young children with a HL may benefit from further education on book selection.

Recent research with babies with a HL has provided preliminary evidence to suggest that the seating environment, specifically when parents sit at eye-level, facing their children while reading, can facilitate parent-child eye-contact/joint attention and parent-child turn taking (Manuscript by author, re-submitted for blind review). This is important, as Zaidman-Zait and Dromi (2007) have found that children with a HL demonstrate significantly less parent-child joint attention than NH children while reading storybooks. The results from the current study indicated that few parents implemented a seating environment that is thought to support parent-child interactions while reading. These findings indicate that parents with young children with a HL may benefit from further education on how the seating environment provided during ESR can support parent-child interactions.

### 6.4.3 Limitations

The results from this study provide preliminary information on ESR with young children with HL, however due to the small sample size, it is limited in terms of generalisability. The current study also reflected the variability of the HL population at large, as the participants had different types and severity of HL and used different auditory intervention. This diversity can also be viewed as a strength, as it provided a more holistic view of children with a HL, rather than one specific cohort.
6.4.4 Future directions

This study provided an initial starting point for future research with larger sample sizes. As this study identified barriers towards ESR for some parents with children with a HL, such as maintaining children’s interest and attention, future research should further investigate these barriers and examine strategies to support parents with ESR. Further examination of how certain components of ESR may promote language and social communication development for babies and young children with a HL may be beneficial. Future research should also examine ESR with other populations of babies and young children who are at risk of language and social communication difficulties including families from culturally and linguistically diverse backgrounds.

6.4.5 Implications and conclusion

This study provided initial insights into the home reading practices as well as values and opinions towards ESR of parents with babies and young children with a HL. The initial evidence provided in this study indicates that parents with young children with a HL may value ESR, read frequently, and provide access to children’s books within the family home, although may require further education on the importance of ESR, book selection, and seating environment. This education should encourage parents to use board books with big, colourful pictures, and interactive components to facilitate children’s participation and maintain children’s attention (Brookshire et al., 2002; Dickinson et al., 2012; Fletcher & Reese, 2005). Parents should also be provided with support on how to provide a seating environment during ESR that creates opportunities for parent-child interactions, as has also been identified by Zaidman-Zaid and Dromi (2007). These findings provide direction for future research and offer initial guidance to clinicians and educators who use ESR to facilitate the development of language and social communication skills for babies and young children with a HL.
6.5 Acknowledgements

We would like to thank SCIC/RIDBC for their assistance with this study and the parents who participated. David Trembath is supported by a NHMRC Early Career Fellowship (GNT1071811).
6.6 References


Chapter 7: General Discussion

There are many benefits that may be attributed to ESR, however one of the most salient is the opportunity it offers for learning language and social communication skills (Bus et al., 1995; Dickinson et al., 2012; Fletcher & Reese, 2005; Whitehurst et al., 1988). Social constructivist theorists including Vygotsky and Brofenbrenner note the importance of parent-child interactions for supporting and advancing language and social communication learning (Bronfenbrenner, 1979; Vygotsky, 1987). ESR provides an opportunity for children to learn language and social communication skills through parent-child interactions. The literature examining ESR interventions using dialogic reading principles that highlight the importance of parent-child interactions have been found to be effective for strengthening language development for NH toddlers, preschool, and primary school children, including children from less advantaged areas (Justice & Pullen, 2003; Lefebvre et al., 2011; Moore & Wade, 2003; Whitehurst et al., 1994; Whitehurst et al., 1988; Zuckerman & Khandekar, 2010). Moreover, there is evidence that an ESR intervention applying dialogic reading principles is also effective for improving spoken language skills for primary school children with a HL who are at risk of spoken language and literacy difficulties (Fung et al., 2005). It is also well documented in the literature that early language skills predict later language and literacy success (Bus et al., 1995; Gillon, 2000; Harrison et al., 2009; High, 2008; Law et al., 2000). In light of the evidence in support of ESR intervention in older children with and without a HL, further examination was needed of the benefits of an ESR intervention with even younger children with and without a HL for strengthening language and social communication development.

The studies presented in this thesis aimed to advance our understanding of ESR with babies and young children with and without a HL and investigate the effectiveness
of an ESR intervention. It was hypothesised that ESR would be effective for strengthening language and social communication development for babies without a HL and facilitating parent-child interactions for babies with a HL. The findings from the four phases presented in this thesis provide support for this hypothesis and provide preliminary evidence to indicate that ESR can be effective for strengthening spoken language and social communication development for NH babies and parent-child eye-contact and parent-child turn taking for babies with a HL.

7.1 Outcomes

Building on previous research examining ESR with older children, the first phase of this thesis examined parents’ perspectives towards ESR and home reading practices via a questionnaire. Parents from both an advantaged area and less advantaged area participated to enable a generalised view of ESR to be obtained. The first phase of this thesis extended previous research into ESR by including babies as well as young children, as recommended in the literature (Dickinson et al., 2012; Fletcher & Reese, 2005). Furthermore, the questionnaire investigated a range of home reading practices and perspectives towards ESR that have received little examination in previous research. Analysis of the questionnaire revealed that parents from both areas valued ESR, read with their babies from birth and engaged in daily ESR (84% advantaged area; 73% less advantaged area). Even though reported daily ESR was high for both groups, there was a significant difference between the more advantaged area and less advantaged area when comparing frequency of ESR. Examination of the questionnaire also identified several areas of ESR that parents with babies and young children may require further support with, including book selection, providing a stimulating seating environment, and implementing ESR strategies that encouraged parent-child interactions. The findings from this phase of the thesis were used to direct future
research examining ESR and to provide clinicians and educators with current information regarding ESR with babies and young children.

The second phase of this thesis compared the effectiveness of a high and low intensity ESR intervention delivered to parents with babies. The ESR intervention was developed in response to the needs of parents identified from the questionnaire in Phase 1. The results provided preliminary evidence that that an ESR intervention can be effective for babies, even babies as young as 3-months-of-age, and that statistically significant results, with a large effect size, can be observed immediately following an ESR intervention with statistically significant results maintained at 2-years-of-age. Furthermore, the results indicated that while both a high intensity ESR intervention (4.5 hours) and a low intensity ESR intervention (90 minutes) were effective for improving language and social communication skills, the high intensity ESR intervention resulted in higher language and social communication scores, both immediately following the intervention and when the children turned 2-years-of-age.

Phase 2 of this thesis extended previous research examining ESR intervention programs delivered to parents with babies by examining the children’s language skills immediately following the intervention as well as at 2-years-of-age. Previous studies that examined ESR with babies only examined the benefits of the intervention during the toddler years (Goldfeld et al., 2011; Goldfeld et al., 2012; Moore & Wade, 2003; Zuckerman & Khandekar, 2010). Moreover, Phase 2 of this thesis started to address the recommendations in the literature for research to examine the intensity of ESR intervention (Goldfeld et al., 2011; Goldfeld et al., 2012; Mendelsohn et al., 2001).

The third phase of this project trialled the high intensity ESR intervention applied to NH babies in Phase 2 with babies with a HL, using a multiple baseline single case experimental design. Parents’ book selection skills, parent-child eye-contact/joint attention, and parent-child turn taking were examined. Significant increases in parent-
child eye-contact/joint attention and parent-child turn taking with a large effect size were observed for all four parent-child dyads. However, ceiling effects were observed for parents’ book selection skills.

The findings from Phase 3 of this thesis advanced knowledge of the high intensity ESR intervention provided in Phase 2 by trialling it with a different population of babies who are at increased risk of language and social communication difficulties. The findings indicated that the high intensity ESR intervention could facilitate parent-child interactions for babies with a HL, specifically parent-child eye-contact/joint attention and parent-child turn taking. Phase 3 of this thesis also identified in the literature the need for further research to examine an ESR intervention with young children with a HL (DesJardin et al., 2014; DesJardin et al., 2017; Zaidman-Zait and Dromi, 2007).

Phase 4 of this project broadened our understanding of ESR with babies and young children with a HL. A questionnaire was used to investigate the home reading practices and values regarding ESR of parents with babies and young children with a HL. The preliminary evidence from Phase 4 indicated that parents with babies and young children with a HL valued ESR and thought it was important to commence reading with their babies between 3- to 6-months-of-age. The findings also indicated that parents engaged in frequent ESR with their children, which was consistent with previous research examining the frequency of ESR with children with a HL (DesJardin et al., 2014; DesJardin et al., 2017). Difficulties with book selection and creating a seating environment that supported parent-child interactions were noted. These findings suggest that parents of children with a HL may benefit from further education and support through an ESR intervention to take advantage of the opportunity ESR provides to strengthen language and social communication development through parent-child interactions.
The findings presented in Phase 4 extended previous research by applying the same study that was provided to parents with NH babies and young children in Phase 1 to parents of children with a HL, who are known to experience language and social communication difficulties. Furthermore, the study presented in Phase 4 advanced knowledge on ESR with young children with a HL by including even younger children. Additionally, the findings extended knowledge on ESR with children with a HL by examining a wider range of home reading practices that had not been investigated previously in this population of children.

7.2 Implications

It was hypothesised that ESR would be effective for strengthening language and social communication skills for NH babies and babies with a HL. The experimental chapters of this thesis (chapters 3 to 6) provided evidence that an ESR intervention provided to parents with NH babies can be effective for strengthening language and social communication development, and preliminary evidence for the effectiveness of an ESR intervention delivered to parents of babies with a HL for strengthening parent-child eye-contact/joint attention and parent-child turn taking. Moreover, the ESR intervention was developed in response to barriers identified within the literature on ESR and through examination of parents’ home reading practices and values regarding ESR, which were investigated within this thesis. The findings from the experimental chapters in this thesis are consistent with the hypothesis and have identified the need for ESR intervention programs to support parents with babies with and without a HL with ESR to strengthen their children’s spoken language and social communication development.

The findings from the experimental chapters of this thesis have significance for clinicians, educators, and practitioners providing ESR intervention programs, such as
ROR, Bookstart, and the Let’s Read program, to parents. The outcomes from this thesis suggest that a six week ESR intervention program (4.5 hours of intervention) that teaches parents how to engage in parent-child interactions using dialogic reading principles is more effective for facilitating language and social communication skills compared with a 90 minute ESR intervention. Furthermore, parents with NH babies reported high satisfaction with the ESR intervention program highlighting its social validity.

The findings from this thesis are also relevant for clinicians and educators working with babies with a HL. The results from this thesis provide preliminary evidence that a high intensity ESR intervention (4.5 hours of intervention) delivered to parents of babies with a HL is effective for strengthening parent-child eye-contact/joint attention and parent-child turn taking. This finding is important given that recent research has found that children who engage in more occasions of turn taking present with stronger verbal language skills and increased language-related brain activation, when examined using a functional MRI (Romeo et al., 2018). Moreover, turn taking has been found to be a stronger predictor of verbal language skills than the number of adult words spoken and the number of children’s utterances produced (Romeo et al., 2018). The relationship between increased occasions of turn taking and stronger verbal language skills has also been found to remain significant even when controlling for parent education and income (Romeo et al., 2018). As parent-child interactions are considered by both the social constructivist theory and the bioecological model to promote language and social communication development, the ESR intervention presented in this thesis, provides promising initial evidence that should be examined further in future research, as discussed in the future directions section. Moreover, the ESR intervention was well received by the parents who participated.
Broader implications for the effectiveness of dialogic reading intervention can also be taken from this research. While the ESR intervention (both high and low intensity) did not strictly use dialogic reading, the ESR intervention was based on key principles of dialogic reading, such as engaging in parent-child interactions while reading and following the child’s interest. The positive outcomes for spoken language and social communication skills for NH babies and increased parent-child eye-contact/joint attention and parent-child turn taking for babies with a HL provide further, albeit tentative, evidence in favour of dialogic reading.

As the focus of the ESR intervention (both high and low intensity) was to facilitate parent-child interactions, with the overarching aim to support language and social communication development, the findings from this thesis also have implications for theories of language development. The results from this thesis provide further support for the importance of parent-child interactions for both babies with a HL and NH babies. Furthermore, the findings from this thesis also provide preliminary evidence that enhancing parent-child interactions with NH babies can strengthen language and social communication skills as advocated by both the social constructivist theory and the bioecological model.

### 7.3 Limitations

Specific limitations for each of the four phases of this project are discussed in the previous experimental chapters. When considered together, some common limitations across each of the four phases were observed. Outlining these limitations firstly provides the context for which the findings should be interpreted and secondly provides insights for future research. The benefits of a large sample size are that it enables generalisability of the results and provides more statistical power (Kazdin, 2011). The small sample sizes obtained for some of the studies within this thesis
reduced the generalisability of the results, however this also reflected difficulties with recruiting large sample sizes. Difficulties with recruiting young children with a HL have also been referenced in the literature (DesJardin et al., 2014; DesJardin et al., 2017; Zaidman-Zait & Dromi, 2007). One research method that is well suited to small sample sizes is a single case experimental design (Kazdin, 2011). A single case experimental design was implemented within this thesis and was considered an appropriate choice given that no previous research had investigated this particular intervention (ESR intervention) with this population of children (babies with a HL).

Children with a HL are also known to be a heterogeneous population. The severity of HL, type of HL, auditory intervention, and access to educational intervention are some of the common variables for children with a HL (Ching et al., 2013). While these variables can add to the complexity of conducting research with children with a HL, it is also a clinical reality and can indicate the robustness of an intervention, as was observed in Phase 3 of this thesis.

This project would have been strengthened by the fourth phase of this project (questionnaire on ESR for parents with babies and young children with a HL), presented in Chapter, 6 being conducted prior to the third phase (ESR intervention for babies with a HL), reported in Chapter 5. This would have modelled the studies presented in phase 1 and 2 (Chapters 3 and 4). Furthermore, this would have enabled Chapter 5 to build upon the findings presented in Chapter 6.

The final broad limitation of this project is the difficulty with assessing spoken language and social communication skills with such young babies, especially babies with a HL, who may have only recently had access to sounds on the speech range. The difficulty of assessing early spoken language and social communication skills with children with and without a HL has been documented in the literature (High, 2008; O’Leary Kane et al., 2004). This was further compounded by not having Australian
normative data for the CSBS (Wetherby & Prizant, 2002), which is a widely used early communication assessment tool for both clinical and research purposes (O’Leary Kane et al., 2004). Moreover, assessments that have been standardised on the Australian population such as the PLS-5 (Zimmerman et al., 2012) provide an age range for standardised scores in increments of two months (such as 3- to 5-months-of-age, 6- to 8-months-of-age). While this is suitable for clinical populations it may not be sufficiently sensitive to the subtle language changes that can occur during a short time period following an intervention. Raw scores were used for this project to increase sensitivity, however this does limit interpretation of the results.

7.4 Future directions

The research presented in this thesis precipitates further questions regarding the effectiveness of ESR with babies and young children with and without a HL. The findings presented in this thesis identified several essential components of ESR with babies and young children and in Phase 3 provided a preliminary investigation into book selection, parent-child eye-contact/joint attention, and parent-child turn taking. However, further examination of book selection, parent-child interactions, and other essential components of ESR, and their relationship with later language abilities, would expand knowledge of ESR and enable refinement of ESR intervention programs. This would build upon the literature that has examined ESR and later language abilities (Bus et al., 1995; Farrant & Zubrick, 2013). Further examination of parents’ perceptions towards ESR interventions and how an intervention supported their approach to ESR may also be beneficial.

The research presented in this thesis included children with a HL who are at risk of language and social communication difficulties (Ching et al., 2013; Netten et al., 2015). Future research examining ESR with babies from other cohorts who are also at
risk of language and social communication difficulties, such as babies with other disabilities as well as babies from culturally and linguistically diverse backgrounds, may be useful. This would also enable examination of the robustness of this intervention with other populations, enabling better generalisability and clinical relevance.

Initial insights into the intensity of ESR intervention needed for significant improvements in spoken language and social communication skills were examined within this thesis, however further examination is required. The question of intensity of ESR intervention has also been raised in previous research (Goldfeld et al., 2011; Goldfeld et al., 2012; Mendelsohn et al., 2001). A greater understanding of the intensity needed for significant gains in spoken language and social communication skills will enable the fine-tuning of ESR intervention programs delivered to parents with babies, which will ensure that parents are provided with sufficient support and, on the other end of the scale, ensure that parents are not over serviced.

7.5 Conclusion

This thesis provided initial evidence that ESR can be effective for strengthening language and social communication development for babies without a HL and for advancing social communication skills for babies with a HL, as was hypothesised. This finding is important as strengthening early language skills can support later language and literacy development, facilitating higher academic outcomes (Harrison et al., 2009; High, 2008; Law et al., 2000; Reilly et al., 2015; Zubrick et al., 2007). Furthermore, the outcomes from this project provide further evidence in favour of social constructivist theories of language development such as those proposed by Vyotsky and Bronfenbrenner that signify the importance of parent-child interactions for facilitating language and social communication skills (Bronfenbrenner, 1979; Vygotsky, 1987).
The results from the experimental chapters provided preliminary evidence that an ESR intervention, using dialogic reading principles that encourage parent-child interaction, is effective for promoting language and social communication skills for NH babies and accelerating social communication skills for babies with a HL. Furthermore, this study expanded knowledge of ESR by providing a more comprehensive and holistic understanding of the home reading practices and values regarding ESR of parents with babies and young children with and without a HL. The research presented in this thesis supports the argument that ESR can be an effective activity that parents can initiate with their babies to strengthen spoken language and social communication learning. Moreover, the findings from this thesis indicate that parents with babies with and without a HL need further support with ESR and are receptive to an ESR intervention.
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Appendix A: Phase 1 and 4 Parent Questionnaire

Parent questionnaire on book reading with under 3 year olds

Consent

I have read and understood the full explanation of this project on the parent information sheet and agree to participate in this questionnaire.

I understand that my participation is voluntary and that I may withdraw my participation and information at any time.

I understand that I will not be identified by participating in this questionnaire and that all of my information will be confidential.

I understand that I can receive a summary of the results of this questionnaire by providing my contact details.

I understand that the de-identified results from this questionnaire may be published.

I understand that I can only complete this questionnaire once and that my answers should be based on my youngest child.

☐ Accept - Commence questionnaire
☐ Decline - Exit questionnaire

Thank you for participating in this valuable research. Your time and honesty is appreciated in answering the questions below.

Commence Questionnaire

2. How did hear about this project?

☐ Early Childhood Nurse
☐ School/pre-school/childcare centre
☐ Library
☐ Shopping Centre
☐ Hearing Centre
☐ Other (Please specify)__________________________________________________

3. What is your postcode?

______________________

4. By way of introduction, is there anything you would like to share with us about your child or family background?

_________________________________________________________________

Demographics and Background Information

5. Is your child male or female?
   
   ☐ Male
   ☐ Female

6. How old is your child?
   
   ☐ Less than 3 months old
   ☐ 4-6 months old
   ☐ 7-9 months old
   ☐ 10-12 months old
   ☐ 1-2 years old
   ☐ 2-3 years old
   ☐ Older than 3 years old

7. How many brothers or sisters does your child have?
   
   ☐ None
   ☐ One
   ☐ Two
   ☐ Three
   ☐ More than three

8. What is your relationship to your child?
☐ Mother
☐ Father
☐ Foster mother
☐ Foster father
☐ Other (Please Specify) ____________________________________________

9. **What is your child’s ancestry?**

☐ Aboriginal and/or Torres Strait Islander
☐ African
☐ Asian
☐ Australian
☐ European
☐ New Zealand
☐ Maori
☐ Pacific Islander
☐ I’d prefer not to answer
☐ Other (Please specify) ____________________________________________

10. **Does your family speak a language other than English at home?**

☐ Yes (Please specify) ________________________________________________
☐ No

11. **Do you or your spouse/partner have a family history of speech and/or language difficulties that required intervention or therapy?**

☐ Yes (Please specify) ________________________________________________
☐ No
☐ I’d prefer not to answer

12. **What is your current age?**

☐ Less than 20 years old
☐ 20-25 years old
☐ 26-30 years old
☐ 31-35 years old
☐ 36-40 years old
☐ More than 40 years old
☐ I’d prefer not to answer

13. **Which of the following best describes your current occupation?**

☐ Household tasks – unpaid full time
☐ Part time paid employment
☐ Full time paid employment
☐ Part time student
☐ Full time student
☐ Paid maternity leave
☐ I’d prefer not to answer
☐ Other (Please specify)

14. **What is the highest level of school you have completed or the highest degree you have received?**

☐ Year 10 school certificate
☐ High school certificate (HSC)
☐ Diploma or certificate (TAFE or similar)
☐ Degree from university
☐ Masters/doctorate from university
☐ I’d prefer not to answer
☐ Other (Please specify)

15. **What is your approximate income?**

☐ Less than $44 000 per year (Less than $900 per week)
☐ Between $45 000 & $84 000 per year (Between $900 and $1600 per week)
☐ More than $85,000 per year (More than $1600 per week)
☐ I’d prefer not to answer

16. Which of the following best describes who looks after your child during the day?

☐ Childcare/preschool full time
☐ Childcare/preschool part time
☐ Parent full time
☐ Grandparent/family friend full time
☐ Nanny/ au Pair full time
☐ I’d prefer not to answer
☐ Other (please specify)_______________________________________________

17. Has your child had any serious medical complications and/or known or suspected syndromes?

☐ Yes (Please specify)________________________________________________
☐ No
☐ I’d prefer not to answer

18. Do you have any speech, language, and/or social skill concerns for your child?

☐ Yes (Please specify)____________________________________________________
☐ No
☐ I’d prefer not to answer

Hearing

19. Was your child’s hearing screened at birth or less than 3 months after s/he was born?

☐ Yes
☐ No
☐ Other (Please specify)__________________________________________________
20. **Does your child have a permanent hearing impairment?**

☐ Yes  
☐ No  *(Please skip to Question 26)*  
☐ Other (Please specify)_______________________________________________

21. **If your child does have a permanent hearing impairment what is the severity?**

☐ Mild  
☐ Moderate  
☐ Severe  
☐ Profound  
☐ Other (Please specify)_______________________________________________

22. **If your child does have a hearing impairment, does s/he use hearing aids or have a cochlear implant?**

☐ My child does not use hearing aids or cochlear implants  
☐ Hearing aid in 1 ear  
☐ Hearing aids in both ears  
☐ Cochlear implant in 1 ear  
☐ Cochlear implant in both ears  
☐ Cochlear implant in 1 ear and hearing aid in the other ear  
☐ Other (Please specify)_______________________________________________

23. **If your child does have a cochlear implant, at what age did they have it inserted?**

☐ Less than 6 months of age  
☐ 6 - 9 months  
☐ 10 - 12 months  
☐ 1 - 2 years  
☐ 2 - 3 years
☐ My child does not have a cochlear implant
☐ Other (Please specify) ____________________________

24. **If your child wears hearing aids, at what age did s/he start wearing them?**

☐ From 1 month of age
☐ 2 - 3 months
☐ 3 - 6 months
☐ 6 - 9 months
☐ 9 - 12 months
☐ 1 - 2 years
☐ 2 - 3 years
☐ My child does not wear hearing aids
☐ Other (Please specify) ____________________________

25. **If your child has a cochlear implant or wears hearing aids, how often do they use them?**

☐ Never / My child does not wear hearing aids/cochlear implants
☐ Seldom
☐ Sometimes
☐ Often
☐ All the time

**Your Opinions on Home Reading**

26. **From what age do you think it is important to read books to children?**

☐ From birth
☐ 3 - 6 months
☐ 7 - 9 months
☐ 10 - 12 months
☐ 1 - 2 years
☐ 2 - 3 years
☐ 3 – 4 years
27. If you do read books to your child, what do you enjoy about it?
_________________________________________________________________
_________________________________________________________________

28. If you don’t read books to your child, what is the main reason for not doing so?
_________________________________________________________________
_________________________________________________________________

29. If you have not started reading books to your child, at what age do you plan to start?
When my child is:
☐ I am already reading books to my child
☐ Younger than 3 months old
☐ 3 - 6 months old
☐ 7 - 9 months old
☐ 10 - 12 months old
☐ 1 - 2 years old
☐ 2 - 3 years old
☐ 3 – 4 years old
☐ When they start school
☐ I have not thought about when I plan to start reading to my child
☐ Other (Please specify) ___________________________________________

30. If you have started reading books to your child, when did you start?
☐ From birth
☐ 3 - 6 months
☐ 7 - 9 months
☐ 10 - 12 months
☐ 1 - 2 years
☐ 2 - 3 years
☐ I have not started reading books to my child (Please skip to Question 46)

31. In comparison to other activities you participate in with your child, how would you rate your interest in reading books to your child?

   1  2  3  4  5
   Least favorite activity  Favorite activity

32. In comparison to other activities, how would you rate your child’s interest in books?

   1  2  3  4  5
   Least favorite activity  Favorite activity

33. If you do read books to your child, what do you find difficult about it?

   ________________________________________________________________
   ________________________________________________________________

34. How often do you read books to your child?

   ☐ ☐ ☐ ☐ ☐
   Never/Rarely On occasion Weekly Daily Several times per day

35. If your child is older than a year, how often does your child bring you a book to play with and read?

   ☐ ☐ ☐ ☐ ☐
   Not Applicable. Never On occasion Weekly Daily
   My child is younger than 1 year old.

36. How often does your child play with/read books on their own?

   ☐ ☐ ☐ ☐ ☐
   Never/Rarely On occasion Weekly Daily Several times per day

37. How often do you take your child to the library and/or bookstore?

   ☐ ☐ ☐ ☐ ☐
   Never Seldom Sometimes Often Very Often

38. Please estimate the number of children’s books that are available in your home.
The Books You Read to Your Child

39. **Which 3 books do you think, are your child’s favorite books (books s/he often likes to read/play with)?**

Please list your child’s 3 favorite books

________________________________________________________________

________________________________________________________________

40. **Which 3 books do you most enjoy reading to your child?**

Please list your 3 favorite books to read to your child

________________________________________________________________

________________________________________________________________

41. **What type of books/texts do you read to your child most often?**

☐ Cloth/plastic books

☐ Hard cardboard books with pictures

☐ Thin-paged books with pictures

☐ Thin-paged books with no pictures

☐ Newspapers/magazines

☐ Other (Please specify)_______________________________________________

42. **Which option below best describes the type of book/texts you read to your child?**

☐ Books with 1 word and 1 picture per page

☐ Books with lots of words and lots of pictures per page

☐ Books with 1 - 2 sentences per page and a picture

☐ Books with lots of sentences on each page and a picture

☐ Chapter books without pictures

☐ Other (Please specify)_______________________________________________

43. **Below is a list of children’s books, please select each book that you have read to your child.**

There are books on the list that may not be familiar and some of the books in this list are made up books.

Some of the books you may have read yourself as a child, but may not have read
the book to your child just yet. Please only select the books that you have read to your child.

☐ The Very Noisy Car
☐ Dear Zoo
☐ The Very Hungry Caterpillar
☐ I Wish I was a Ballerina
☐ Spot Series
☐ Maisy Series
☐ The Magic Faraway Tree
☐ Zoe and Chloe Go Out to Sea
☐ Once Upon a …. Series
☐ Missy’s Big Day Out
☐ Charlotte’s Web
☐ We’re Going on a Bear Hunt
☐ Hello Everyone
☐ The Green Sheep
☐ Goodnight Moon
☐ Treasure Island
☐ Ollie’s House
☐ The Chronicles of Narnia
☐ Brown Bear Brown Bear What do You See
☐ That’s Not My …. Series

Reading Activities

44. Which of the following best describes how you and your child read books together most of the time?

☐ My child sits on my lap, with their back to me, facing the book
☐ My child sits at eye level with me, facing the book and me
☐ My child sits on the floor and plays while I read to them
☐ My child is lying down in bed and I am sitting up on the bed holding the book
☐ My child and I are both lying down in bed with the book between us
☐ My child sits sideways on my lap and is facing the book
☐ Other (Please specify) _____________________________________________

45. Please select which activities you do most often while reading to your child.

Please only select up to 3 options

☐ Read the book word for word
☐ Make up your own story using the pictures
☐ Ask lots of ‘what’s that’ questions
☐ Talk about the letters and sounds
☐ Ask my child to find pictures (e.g., “where’s the …”)
☐ Ask my child to find letters
☐ Talk about events/tasks my child has done which are similar to what the character/s in the book are doing
☐ Let my child pretend to read the story to me
☐ Let my child hold the book, turn the pages and lift the flaps of the book
☐ Other (please specify) _____________________________________________

46. If you and your child would be interested in participating in a language enhancing project which focuses on early language development, please provide your contact details below.

Please also provide your contact details if you would be interested in receiving the results from this questionnaire and/or would be willing to complete a similar questionnaire in approximately 12 months time.

Your details will remain confidential and will only be used to invite you to participate in the project mentioned above and/or to provide you with the results from this questionnaire.

☐ I am interested in participating in a language enhancing project
☐ I am willing to complete a similar questionnaire
☐ Please provide me with the results from this questionnaire
☐ I am unable to participate in future projects or questionnaires

Name: ____________________________________________________________
Appendix

Address: __________________________________________________________
E-mail: __________________________________________________________

If you have any further comments you would like to make please do so here.

_____________________________________________________________________________
_____________________________________________________________________________

Thank you very much for completing this questionnaire
# Appendix B: Phase 2 Home Reading Checklist

**Home Reading Checklist**

**Child’s name:** ______________________  
**Assessment:** ☐ Initial ☐ Review 1 ☐ Review 2 ☐ Final  
**Carer’s name:** ______________________

## Reading Environment

<table>
<thead>
<tr>
<th>Seating Arrangement</th>
<th>Strategy observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child is facing carer /does not have to move/turn to see carer’s face</td>
<td></td>
</tr>
<tr>
<td>Child is at eye-level with carer</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Type of Book Used</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Board/cloth or plastic book</td>
<td></td>
</tr>
<tr>
<td>Picture book with 1-2 pictures per page</td>
<td></td>
</tr>
<tr>
<td>Book with 1-2 short, simple, sentences per page</td>
<td></td>
</tr>
<tr>
<td>Interactive book with lift the flap and/or textured components</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Carer-child interaction</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Carer allows child to select the book</td>
<td></td>
</tr>
<tr>
<td>Carer offers child a choice of 2 age appropriate books</td>
<td></td>
</tr>
<tr>
<td>Carer cuddles/touches/smiles at child while reading</td>
<td></td>
</tr>
<tr>
<td>Carer uses frequent and varied intonation while reading</td>
<td></td>
</tr>
<tr>
<td>Child holds the book/helps to hold the book</td>
<td></td>
</tr>
</tbody>
</table>

Total reading environment: ____/11

## Carer reading behaviours

<table>
<thead>
<tr>
<th><strong>Carer Reading Strategies &amp; Techniques</strong></th>
<th>Strategy observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Makes up their own story using the pictures</td>
<td></td>
</tr>
<tr>
<td>Points to pictures</td>
<td></td>
</tr>
<tr>
<td>Relates story to everyday activities</td>
<td></td>
</tr>
<tr>
<td>Comments on most pages while reading</td>
<td></td>
</tr>
<tr>
<td>Repeats words</td>
<td></td>
</tr>
<tr>
<td>Imitates child</td>
<td></td>
</tr>
<tr>
<td>Uses short, simple sentences on each page</td>
<td></td>
</tr>
<tr>
<td>Asks inference questions</td>
<td></td>
</tr>
<tr>
<td>Pauses after most utterances for turn taking</td>
<td></td>
</tr>
<tr>
<td>5 or more occasions of eye-contact and/or joint attention initiated</td>
<td></td>
</tr>
<tr>
<td>Responds to non-verbal interactions (pointing, smiling, touching, lifting the flap, gestures)</td>
<td></td>
</tr>
<tr>
<td>Responds to verbal interactions (sentences, words, sounds and/or babbling)</td>
<td></td>
</tr>
<tr>
<td>Expands child’s verbal response</td>
<td></td>
</tr>
</tbody>
</table>

Total carer reading behaviors ____/13

## Child reading behaviours

<table>
<thead>
<tr>
<th><strong>Carer Reading Strategies &amp; Techniques</strong></th>
<th>Strategy observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 of more occasions of eye-contact and/or joint attention (initiated or response)</td>
<td></td>
</tr>
<tr>
<td>Non-verbal interaction with book (turns the pages, touches the book, lifts the flap)</td>
<td></td>
</tr>
<tr>
<td>Initiated non-verbal communication (smiles at carer, laughs, cuddles carer, gestures)</td>
<td></td>
</tr>
<tr>
<td>3 responses using non-verbal communication (smiles at carer, laughs, cuddles carer, gestures, points)</td>
<td></td>
</tr>
<tr>
<td>Points to pictures</td>
<td></td>
</tr>
<tr>
<td>Turns the pages (with or without a prompt/help)</td>
<td></td>
</tr>
<tr>
<td>Initiates conversation using vocalisation (sentences, words, sounds and/or babbling)</td>
<td></td>
</tr>
<tr>
<td>3 responses using vocalisation (sentences, words, sounds and/or babbling)</td>
<td></td>
</tr>
</tbody>
</table>

Total child reading behaviors ____/8

Home Reading Checklist Total ____/32
Appendix C: Phase 3 Data Collection Sheet

**Scoring Sheet Phase 2HL**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Total</th>
<th>0.15</th>
<th>0.30</th>
<th>0.45</th>
<th>1.00</th>
<th>1.15</th>
<th>1.30</th>
<th>1.45</th>
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<th>2.30</th>
<th>2.45</th>
<th>3.00</th>
<th>3.15</th>
<th>3.30</th>
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<td>Turns</td>
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</tbody>
</table>

ID: ____________________________________________
Reading occasion: _____________________________
Reading Time: ____________________________________________

**Book Score Total:** _______/ 2½

- ½ point - board/cloth/plastic book
- ½ point – lift the flap book
- ½ point – touch and feel components
- ½ point – one big picture (min 60% of page)
- ½ point – maximum 2 sentences per page

**Measure**

- EC
- JA
- Turns

Total Score for EC + JA = _____________________

Total Score for Turns = _____________________

Only one point can be given per interval for EC and JA combined (i.e., if a point is given for EC at 0.15, a point cannot be given for JA at the same time point at 0.15).

Points for turns CAN be given at the same time as points for EC and JA as it is separate score (i.e., a point can be given for JA at 0.15 and a point can be given for turn taking at 0.15).