

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

**Investigating the home literacy environment and emergent  
literacy skills of children as they start school in New Zealand**

A thesis in partial fulfilment of the requirements for the degree of

Master of Educational Psychology

Massey University, Albany, New Zealand

New Zealand

Brittney Elizabeth Van Tonder

2017



## **Abstract**

Home literacy environment (HLE) has been consistently linked with children's early literacy skills in international research, and is argued to be an important variable influencing the development of children's emergent literacy. However, there is very limited New Zealand research investigating this relationship. Therefore, to address this gap in the literature, the present study sought to explore whether there is a relationship between HLE and children's emergent literacy at school entry within the New Zealand context.

Additional research aims involved exploring the impact of years spent in early childhood education (ECE) on emergent literacy, and exploring the role of parent education level on both HLE and children's emergent literacy within the New Zealand context. The study used a correlational research design to explore these research aims. A total of 35 five-year old children and their parents participated in this study. Children were assessed using a range of emergent literacy assessments and HLE was measured through parental questionnaire.

Results showed that there was some correlation between HLE and children's emergent literacy. However the nature of these correlations differed depending on the component of HLE used in the analysis. Additionally, ECE attendance was not positively associated with any measure of children's emergent literacy. Further, parent educational level showed little or no correlation with children's emergent skills and HLE. Two particular implications associated with the present study include the importance of using a wide conceptualisation of HLE in research and the importance of considering proximal variables of influence, such as HLE, over distal variables of influence, such as socioeconomic status.



## **Acknowledgements**

I would like to take this opportunity to sincerely thank everyone who has supported me in completing this thesis. Firstly, I would like to thank my two supervisors, Dr Alison Arrow and Professor Tom Nicholson. Your guidance and wise words over the course of this year have been immensely valuable and I am so grateful for all your time, effort and patience.

I would also like to thank the families and schools that enabled this research to take place. It was an absolute pleasure working with the wonderful five-year-olds who participated in this research. So, thank you to the parents who allowed me to work with their children.

Thank you also for the time that you gave this research project.

Thank you to all the schools, principals, and teachers that welcomed me into their classrooms and staffrooms! This thesis has given me a new found appreciation for the work that you do.

Lastly, I would like to thank my family and friends for all the support you have given me. Your love, understanding, and motivating words have helped me tremendously along this journey. Thank you, Mum and Dad, for always believing in me. Finally, thank you Bernard for your unwavering support and for being my biggest cheerleader.



## Table of Contents

Abstract.....	iii
Acknowledgements.....	v
Table of contents.....	vii
List of tables.....	ix
List of figures.....	xi
<b>Chapter One: Introduction.....</b>	<b>1</b>
Rationale and potential significance.....	3
Research objective.....	4
Research questions.....	5
Summary of chapters.....	5
Definition of key terms.....	6
<b>Chapter Two: Literature Review.....</b>	<b>9</b>
Search strategy.....	9
Theoretical models.....	10
Bronfenbrenner’s bioecological model.....	10
Family stress model.....	11
Family investment model.....	11
Linking these theoretical models to the present study.....	12
Exploring HLE rather than SES.....	13
Home literacy environment.....	15
Importance of HLE.....	20
Emergent literacy.....	22
Components of emergent literacy.....	23
Importance of emergent literacy.....	24
Early childhood education.....	25
Linking the literature to the present study.....	26
<b>Chapter Three: Methodology.....</b>	<b>29</b>
Research design.....	29
Participants.....	30
Exclusion and inclusion criteria.....	31
Ethical considerations.....	31
Setting and recruitment.....	32
Procedure.....	34
Measures.....	36
British Picture Vocabulary Scale (BPVS-3).....	36
Comprehensive Test of Phonological Processing (CTOPP-2).....	38
York Assessment of Reading Comprehension (YARC).....	40
Parent questionnaire.....	42
Data analysis.....	43

Summary.....	43
<b>Chapter Four: Results.....</b>	<b>45</b>
Descriptive statistics.....	45
Relationship between HLE activities and emergent literacy skills.....	48
Active HLE and children’s emergent literacy.....	49
Passive HLE and children’s emergent literacy.....	55
Child-led HLE and children’s emergent literacy.....	59
Time spent in ECE and children’s emergent literacy.....	62
Exploring the role of parent education.....	64
Summary.....	65
<b>Chapter Five: Discussion.....</b>	<b>67</b>
Exploring the relationship between HLE and emergent literacy.....	67
Years spent in ECE.....	74
The role of parent education level.....	76
Limitations of the current study.....	77
Implications.....	79
Directions for future research.....	81
Conclusion.....	83
References.....	87
Appendices.....	107
Appendix A: MUHEC approval letter.....	108
Appendix B: Request to enter institution.....	109
Appendix C: Principals/teachers information sheet.....	111
Appendix D: Principal consent form.....	115
Appendix E: Teacher consent form.....	116
Appendix F: Parent/caregiver information sheet.....	117
Appendix G: Parent/caregiver consent form.....	120
Appendix H: Parent/caregiver questionnaire.....	121
Appendix I: Child assent form and information.....	124

## List of Tables

Table 1.	Demographic information related to the nine schools that were invited to participate in this research.....	33
Table 2.	Descriptive information including sample size, means, standard deviations, minima and maxima of interval variables.....	46
Table 3.	One sample t-test comparing children's scores on CTOPP-2 subtests and comparison values.....	47
Table 4.	Frequency information to describe variables that contain nominal data.....	48
Table 5.	Bivariate correlational analysis between overall HLE and children's assessments using Pearson's (r).....	49
Table 6.	Bivariate correlational analysis between emergent literacy subtests and components of active HLE using Pearson's (r) correlation.....	52
Table 7.	Least Significant Difference post-hoc for number of books.....	53
Table 8.	Bivariate correlational analysis between passive HLE and children's CTOPP-2 assessment using Pearson's (r) correlation.....	55
Table 9.	Least Significant Difference post-hoc for passive HLE.....	57
Table 10.	Bivariate correlations between passive HLE and aspects of active- HLE using Spearman's (s) rho correlation.....	59
Table 11.	Hierarchical regression analysis for children's receptive vocabulary and phonological awareness.....	61



## List of Figures

Figure 1.	Example of what a test item from the BPVS-3 would look like.....	37
Figure 2.	Example of what a test item from the sound matching subtest of the CTOPP-2 would look like.....	39
Figure 3.	Example of what a test item from the sound deletion subtest of the YARC would look like.	42
Figure 4.	Relationship between active HLE and children’s standard score on the BPVS-3.....	50
Figure 5.	Scatter plot depicting relationship between a child’s access to and use of books in the home and their score on the BPVS.....	51
Figure 6.	Scatter plot depicting years spent in ECE and children’s score on the blending words subtest of the CTOPP-2.....	63



## Chapter One: Introduction

New Zealand has one of the largest gaps in literacy achievement between high and low achieving students (Chamberlain, 2007; Mullis, Martin, Kennedy, & Foy, 2007). While individual differences in academic achievement are to be expected, what is most worrisome is that these inequalities in achievement seem to emerge even before children begin formal teaching instruction (Arrow, 2010). This is of concern because previous research indicates that these gaps in reading and literacy achievement usually remain stable, or widen, over time (Cunningham & Stanovich, 1997; Landerl & Wimmer, 2008; Protopapas, Sideridis, Mouzaki, & Simos, 2011). For example, Tunmer, Chapman, and Prochnow (2006) used a longitudinal research design and found that measures of early literacy skills at school entry accounted for nearly 50% of the variance in New Zealand children's reading comprehension scores in Year 7.

Therefore it appears that New Zealand children may be arriving at school with differing amounts of early literacy knowledge, which then places some students at risk of experiencing reading-related difficulties. In particular, this could be because our current education system favours a whole-language approach to literacy instruction that does not cater well to students with low levels of literacy-related knowledge (Tunmer, Chapman, Greaney, Prochnow, & Arrow, 2013; Tunmer et al., 2006) at school entry. As such, previous research has argued that the New Zealand approach to literacy instruction must change in order to meet the needs of those students who possess low levels of emergent literacy at school entry (Tunmer et al., 2013).

However, while it is certainly worthwhile to investigate methods of reducing this disparity in literacy achievement through formal teaching instruction, previous research has also focused its attention on unpacking children's experiences prior to formal schooling. For example, it could be reasoned that children are exposed to varying amount of literacy-related activities in the home environment before commencing school (Tunmer et al., 2006). These activities have been conceptualised as "home literacy environment" (HLE). The HLE concept has long been reported to be associated with differences in children's school-related skills at school entry (Aram et al., 2013; Bus, van Ijzendoorn, & Pellegrini, 1995; Niklas & Schneider, 2013; van Steensel, 2006). From a theoretical perspective, the concept of literate cultural competence could help to explain this relationship (Tunmer et al., 2006). This concept is linked to Bourdieu's notion of cultural capital and can be thought of as the "literate socialisation" (Nash, 2001, p. 15) of children. Essentially, children who have access to a greater number of literacy-related activities and opportunities in the home should, theoretically, develop better early literacy skills and arrive at school more prepared for formal literacy instruction. These early literacy skills are known as emergent literacy and include skills such as phonological awareness, vocabulary, letter-sound knowledge, oral language, and beginning forms of writing.

While a considerable amount of international research has investigated HLE in relation to children's early academic and literacy skills (Bus et al., 1995; Davidse, de Jong, Bus, Huijbregts, & Swaab, 2011; Levy, Gong, Hessels, Evans, & Jared, 2006; Melhuish et al., 2008; Merz et al., 2014; Rodriguez et al., 2009; Sénéchal & LeFevre, 2002), there is one known piece of New Zealand research to do so. This was undertaken by Westerveld, Gillon, van Bysterveldt, and Boyd (2015) who focused their investigation on identifying

the emergent literacy skills that New Zealand four-year-olds had in their year prior to starting school. While HLE was measured by parental questionnaire, it was only a subsection of the study's aim. Perhaps as a consequence of this, Westerveld et al. (2015) used a limited conceptualisation of HLE. For example, their parental questionnaire narrowly focused on shared storybook reading, library visits, teaching children how to read and write words, and the number of children's books in the family home. There were no questions relating to parents' own engagement in literacy activities and children's own engagement with literacy activities via technology.

### **Rationale and potential significance**

While the findings from Westerveld et al. (2015) were of importance, they did not fully explore the relationship between HLE and children's emergent literacy skills in the New Zealand context. As such, it is reasoned that additional New Zealand research that aims to more thoroughly investigate the relationship between HLE and children's emergent literacy skills is needed. This is because while it is possible to hypothesise that international findings will also apply to the New Zealand context, this cannot be guaranteed. Such research will provide useful information about which aspects of HLE are most strongly associated with early literacy development. This could then help to inform future government and non-government efforts to equip children with a strong foundation in emergent literacy. This is important given that emergent literacy skills have been consistently associated with later reading and academic outcomes (Harlaar, Hayiou-Thomas, Dale, & Plomin, 2008; Kendeou, van den Broek, White, & Lynch, 2009; Tunmer et al., 2006; Whitehurst & Lonigan, 1998).

Additionally, such research will provide further information about the variability of children's emergent literacy skills at school entry. This is useful data because it gives an indication as to whether initiatives have been succeeding at reducing the disparities in emergent literacy. This is particularly in regard to early childhood education (ECE) where concerns had been raised regarding the previous curriculum framework, *Te Whāriki* (Ministry of Education, 1996)(Blaiklock, 2010). While the curriculum framework, *Te Whāriki* (Ministry of Education, 2017), received an update in April 2017, all children involved in this study attended ECE under the previous curriculum framework. Therefore, research findings that relate to the previous curriculum will still be examined in this thesis.

Finally, this study may also prompt future research into this field of inquiry. While a longitudinal or quasi-experimental research design could not be used given the limitations associated with a Master's thesis, it would be very useful to have a better understanding of how the effects of HLE remain stable or change over time. Similarly, quasi-experimental research could give insight into which aspects of HLE, if any, can be manipulated to increase children's emergent literacy skills. Therefore, this particular piece of research could be seen as an important step in developing a better understanding of the relationship between HLE and children's literacy development within the New Zealand context.

### **Research objective**

The overarching research objective of this study is to investigate whether there is a potential relationship between children's HLE and their emergent literacy skills at school entry in the New Zealand context. A wide conceptualisation of HLE will be used so that the results more accurately capture the extensive array of activities and conversations that take place within the family home. Secondary research objectives include investigating whether

parent education level and years spent in ECE are also associated with children's emergent literacy skills at school entry.

### **Research questions**

In order to investigate the main research aim of exploring the potential relationship between HLE and children's emergent literacy skills, a number of specific research questions have been developed. These include:

- 1) Is there is a relationship between HLE and children's emergent literacy skills at school entry in the New Zealand context?
- 2) Do children's emergent literacy skills differ as a function of the number of years that they have spent in ECE in New Zealand?
- 3) Do children's emergent literacy skills differ as a function of their parent's level of education in the New Zealand context?
- 4) Is there is a relationship between parent education level and the quality of HLE provided in the New Zealand context?

### **Summary of chapters**

This chapter, chapter one, has provided a background to the research, identified the rationale for the study and main research aims, and identified why this study may be of significance, particularly to the New Zealand context. The definitions of key terms have also been provided.

The second chapter, the literature review, provides further background to this study. In particular, this chapter examines three important theoretical frameworks and discusses

the concept of HLE. Other ideas explored in this chapter include emergent literacy, the role of ECE, and the utility of considering proximal variables (such as HLE) over distal variables (such as SES). This chapter concludes by making explicit links between the literature and the research questions explored in this thesis.

The third chapter, methodology, provides a detailed account for the methods and procedures that were used to collect data for this study. This chapter also discusses the sample population, the setting and recruitment, the measures used to collect data, the procedure that was followed, and the data analyses conducted.

The fourth chapter, the results section, reviews the actual research findings with respect to the main research questions. A number of statistical analyses including correlational analyses, independent sample t-tests, ANOVAs, and hierarchical regression analyses were used.

The fifth chapter, the discussion, interprets the findings of this study in relation to previous, similar research. In this chapter the main findings are also reiterated and their meaning and significance is explained. Furthermore, the limitations and implications of this study are explored. Avenues for future research are also examined.

### **Definition of key terms**

*Home literacy environment:* the wide range of activities that take place in the family home that contributes to the development of emergent literacy. Conceptualised here as including active HLE (activities that take place between the parent and the child, i.e. storybook reading), passive HLE (parent's own engagement in literacy activities), and

child-led HLE (child engages in literacy activities on their own, i.e. educational television watching).

*Emergent literacy:* the set of skills and knowledge that equip young children to learn how to read and write upon formal literacy instruction (Merz et al., 2014). It includes skills such as phonological awareness, letter-sound knowledge, vocabulary, oral language, understanding the concepts of print, and beginning forms of writing.

*Phonological Awareness:* describes an individual's ability to focus on, reflect on and manipulate both phonemes (the smallest units of spoken language) and larger units (i.e. words and syllables) (Catts & Kamhi, 2005).

*Receptive Vocabulary:* refers to the all the words that are known and understood by an adult or child (i.e. listening vocabulary) (Dunn, Dunn, & NFER, 2009). It differs from the vocabulary that a person uses (known as expressive vocabulary).

*Literate Cultural Capital:* refers to children's emergent literacy skills at school entry which support later literacy development (Tunmer et al., 2006). These skills are strongly associated with the activities that children are exposed to in the home environment.

*Matthew Effects:* with respect to literacy development, those students with an abundance of positive literacy experiences are likely to experience reading success ("rich get richer"), while the opposite is likely to be true for students who have had a lack of positive literacy experiences ("poor get poorer") (Stanovich, 1986).



## **Chapter Two: Literature Review**

The overarching research aim of this thesis is to explore the relationship between the home literacy environment (HLE) and the emergent literacy skills of New Zealand children at school entry. As such, the following literature review will examine both concepts in depth. This will be done to provide a context for the research and to examine whether previous research has found such a relationship. This review will begin by examining some of the theoretical models that may be useful in conceptualising why there may be a relationship between HLE and emergent literacy skills. Next, focus will be placed on exploring HLE. In particular, the conceptualisation of HLE and its potential impact on early literacy development will be discussed. Following this will be an overview on emergent literacy in an attempt to shed further light on both the components and importance of emergent literacy. Related to this will be a brief discussion around early childhood education (ECE) within the New Zealand context. Summary remarks will relate the research aims of this thesis to the gaps in the literature identified in this review.

### **Search strategy**

Utilising databases such as Google Scholar, Web of Science and Science Direct was the first step in sourcing relevant publications, primarily in the form of academic journal articles. Additionally, the Massey University library catalogue and Discover search tool were used to locate additional literature. Search terms used included academic achievement, emergent literacy, reading achievement, child development, home literacy environment, cognitive stimulation, and bioecological model. The reference lists of the relevant publications read were also used to locate additional material. Searches for relevant material were repeated throughout the academic year to ensure that any newly

published literature could potentially be included in this review. While date limits were not always used in searches, an attempt was made to focus on literature published within the last fifteen years.

### **Theoretical models**

The three theoretical models presented below help to explain why there may be an association between HLE and emergent literacy. Notably, Bronfenbrenner's (1979) bioecological model stresses the importance of considering proximal variables (i.e. HLE) over distal variables (i.e. socioeconomic status, SES). The Family Stress Model (FSM) and Family Investment Model (FIM) provide an account by which SES may indirectly influence children's development, particularly through its impact on more proximal variables (i.e. HLE)

**Bronfenbrenner's bioecological model.** Hoff (2006) discusses Bronfenbrenner (1979) bioecological model of development in relation to language development. This model is primarily concerned with the social contexts that shape children's development. Under the bioecological model these social contexts are conceptualised as a set of nested systems in which those systems closest to the child (i.e. their immediate family) have the greatest influence on the child development. As described by Bronfenbrenner and Morris (1998), these proximal influences are the primary "engines of development" (p. 996). In contrast, distal systems such as SES and ethnicity exert their influence indirectly, perhaps by influencing more proximal systems. It is suggested here that HLE is a component of the most proximal systems surrounding the child, and therefore exerts significant influence over the child's development. Bronfenbrenner's bioecological model forms a large

component of the argument made in this thesis that exploring HLE is more important than simply looking at SES in isolation.

**Family stress model.** The family stress model (FSM) was developed by Conger and colleagues in an attempt to explain how financial issues effected the lives of farmers living in Iowa in the 1980s when there was a severe downturn in the agricultural economy (Conger & Conger, 2002; Conger et al., 2002). The FSM postulates that economic hardship can intensify family stresses, which in turn can have a negative influence on parents' emotions, behaviours and relationships (Conger, Conger, & Martin, 2010; Conger & Donnellan, 2007). As a result of this increased parental stress, there may be a decrease in parental involvement with their children (Conger & Donnellan, 2007). For example, research has found parental stress is associated with reduced verbal communication between parent and child, less parental sensitivity to the needs of the child, and hard and inconsistent discipline (McLoyd, 1998; Repetti, Taylor, & Seeman, 2002). Thus, the FSM may help to explain why there is a tendency for low-SES families to provide less enriched HLEs (Bradley, Corwyn, Burchinal, McAdoo, & Coll, 2001; Hart & Risley, 1995; Huttenlocher, Vasilyeva, Waterfall, Vevea, & Hedges, 2007).

**Family investment model.** The family investment model (FIM), on the other hand, is concerned with the economic investments that parents are able to make towards their children's development (for a review see Conger & Donnellan, 2007). It proposes that families with less economic resources (i.e. low income) have less money and resources at their disposal to invest in their children's development. This is because a greater proportion of their income must be put into meeting basic family needs (i.e. housing and food). In contrast, higher-SES families have greater access to financial (i.e. income), human (i.e.

education), and social capital (Conger & Donnellan, 2007) and, therefore, are more capable of investing in their children's development (Bradley & Corwyn, 2002). Examples of such investment include (a) the learning materials (i.e. books, access to computers) that are available in the home, (b) cognitive stimulation through both the parent (i.e. available to help with homework) or additional support (i.e. tutoring), (c) basic needs met through the provision of adequate food, housing and clothing, and (d) living in a neighbourhood or location that fosters positive development (Conger & Donnellan, 2007). As such, the FIM is a theoretical framework that helps in conceptualising how the disadvantages associated with low-SES can be transferred from one generation to the next.

**Linking these theoretical models to the present study.** In their longitudinal research following 493 low-birth weight premature infants from birth to age five, Linver, Brooks-Gunn, and Kohen (2002) found support for both the FSM and the FIM. They found that higher family income was associated with more positive parenting practices, with a more cognitively stimulating home environment, and with lower levels of maternal emotional distress. Of particular interest here is the cognitively stimulating home environment which has been shown to be associated with child outcomes in other studies as well (Evans, 2004; Hart & Risley, 1995; Raviv, Kessenich, & Morrison, 2004). Therefore the FIM relates to this inquiry through its focus on cognitive stimulation. This is because HLE has been conceptualised as means of cognitive stimulation through which early literacy skills are influenced. Therefore, the FSM and the FIM are applicable to this particular study. Furthermore, as was previously mentioned, Bronfenbrenner's bioecological model is also relevant to this inquiry. This is because it is argued that it is more important to focus on the proximal variables of development (i.e. HLE) than the distal

variables of development (i.e. SES). The reasons for this will be discussed in the next section of this review.

### **Exploring HLE rather than SES**

While there certainly are associations between SES and emergent literacy (Bowey, 1995; Hart & Risley, 1995; Hoff, 2013; Huttenlocher, Waterfall, Vasilyeva, Vevea, & Hedges, 2010; Lundberg, Larsman, & Strid, 2010; Mistry, Benner, Biesanz, Clark, & Howes, 2010), using SES as a predictor variable alone does little in helping to understand why such associations may exist. This is because it is more relevant to consider the variables that explain the association between SES and children's development. An example of this is cognitive stimulation, which has been previously identified as one of the most important mediators between SES and academic achievement (Guo & Harris, 2000). Therefore, it is argued here that, HLE is an important measure of cognitive stimulation in the home. A number of studies have also demonstrated that HLE predicts early reading beyond that of SES (Aram et al., 2013; Niklas & Schneider, 2013), demonstrating its value as a potential explanatory variable.

It must also be recognised that not all children from low-SES backgrounds have poor HLEs (Purcell-Gates, 1996). Furthermore, neither high- or low-SES children are monolithic in their language skills (Hoff & Ribot, 2015; Hoff, 2013). This means that there is considerable variation due to individual differences and that there is an overlap in the distributions of language skills of high- and low-SES children (Hoff, 2003; van Steensel, 2006). Despite this, children from low SES backgrounds are commonly thought to have had fewer literacy-related experiences than high-SES children. While this assumption may hold

true for some, caution must be taken. This is because some qualitative studies have challenged this one-to-one assumption that socio-cultural factors determine HLE (Auerbach, 2001; Purcell-Gates, 1996). For example, through observations, Purcell-Gates (1996) found that there was considerable variation in HLE practices of low-SES families.

However, it is still important to consider how SES may influence HLE. This is where the FSM and the FIM become particularly relevant. For example, parent education level, which is often used a measure of SES (Hampden-Thompson, 2013; Hoff, Laursen, & Bridges, 2012), may be a particularly important determinant of HLE. For instance, previous research has found that parent education level is associated with both the quality of HLE (Bracken & Fischel, 2008; Hoff, 2003; Rodriguez et al., 2009) and children's early language development (Bracken & Fischel, 2008; Dollaghan et al., 1999; Merz et al., 2014). Therefore it could be argued that parents with higher levels of education may be better equipped to arrange rich HLEs (Mol, Bus, de Jong, & Smeets, 2008).

Nonetheless, the focus needs to be placed on understanding how SES influences children's development and not just stating that there is a relationship between the two variables. For example, the FSM and FIM give theoretical accounts as to how SES influences the home environment, which then influences children's outcomes. Yet it is vital to consider the home environment itself. This is because placing too much focus on distal variables, such as SES, creates a risk that the relationship between family variables and children's academic outcomes becomes oversimplified. As such, it is argued here that HLE is more relevant than SES in understanding why some children may arrive at school with fewer early literacy skills. When taking the theoretical lens of Bronfenbrenner's (1979) bioecological model, it becomes clear that HLE is tied to the proximal systems surrounding

a child. With its greater proximity to the child, it is arguable that influence of HLE is likely to be greater than that of SES. Therefore, for the purposes of this inquiry, the focus will be placed on unpacking the relationship between HLE and children's early literacy skills.

### **Home literacy environment**

Although HLE may appear to be a simplistic concept, researchers have argued that it is in fact complex and multifaceted (Burgess, Hecht, & Lonigan, 2002; Bus et al., 1995; Leseman & de Jong, 1998; Scarborough & Dobrich, 1994). This is because it encompasses many different activities and conversations that occur in the family home that contribute to children's literacy development. Yet, it appears that "a generally accepted definition of HLE is still missing" (Niklas & Schneider, 2013, p. 41). As a result different studies use different methodological approaches when assessing HLE. For instance, many studies use a qualitative approach whereby they engage in naturalistic observation or interviewing to examine HLE provided by the family (Purcell-Gates, 1996; Roberts, Jurgens, & Burchinal, 2005). Alternatively, other studies have taken a quantitative approach by employing questionnaires to gauge HLE (Foy & Mann, 2003; Hood, Conlon, & Andrews, 2008; Niklas & Schneider, 2013; Sénéchal, LeFevre, Hudson, & Lawson, 1996).

Although both qualitative and quantitative approaches to HLE research have their advantages, there has been a tendency for quantitative research to use limited operationalisations of HLE (van Steensel, 2006). In particular shared reading experiences have been used, and while important (Bus et al., 1995), Burgess et al. (2002) maintain that a multifaceted conceptualisation of HLE is required in quantitative studies too. By using a

limited conceptualisation of HLE much research has failed to capture the full nature of the relationship between HLE and early academic knowledge.

However, as was mentioned in the introduction chapter, the only known piece of New Zealand research to investigate the relationship between HLE and children's emergent literacy used a limited conceptualisation of HLE (Westerveld et al., 2015). Therefore, in the present study, HLE will be broadly defined as the wide range of activities and experiences that children experience in the home that promote literacy development. Examples of some of these activities and experiences include storybook reading, visiting the library, talking about experiences and things, playing word games, exposure to print in the home, watching family members engage in literacy-related activities, and watching educational television shows.

The broad conceptualisation of HLE used in this study is based on Teale and Sulzby's (1986) notion of HLE. Here, they suggest that HLE can be separated into three broad categories. These include a) an active component whereby children interact with adults on literacy-related activities (i.e. storybook reading), b) passive experiences where children learn through watching family members model literacy-related behaviours (i.e. observing parent read fiction novel), and c) experiences where children engage with literacy-related activities on their own (i.e. watching educational television programmes).

Teale and Sulzby's (1986) first component of HLE, active HLE, has received considerable attention in research. This component includes a wide array of activities that families use to foster literacy development (Burgess et al., 2002). Of these activities, storybook reading has received the most attention (Sénéchal, LeFevre, Thomas, & Daley,

1998). A significant amount of research has linked storybook reading to positive literacy development (Bracken & Fischel, 2008; Bus et al., 1995; Mol et al., 2008; Raikes et al., 2006; Scarborough & Dobrich, 1994; Sénéchal, Pagan, Lever, & Ouellette, 2008; Sonnenchein & Munsterman, 2002). However, Mol et al. (2008) indicate that the quality of shared book reading is just as important as the frequency of shared book reading. Additionally, the affective quality of the shared reading experience has been found to be more powerful than the frequency of shared reading experiences in promoting a child's motivation for reading (Sonnenchein & Munsterman, 2002).

Other elements of active HLE, such as caregiver speech, have also been found to influence language development (Huttenlocher et al., 2010). For example, Hoff (2003) found that maternal speech fully accounted for SES-related differences in vocabulary development. Further, Haney and Hill (2004) found that there was a positive correlation between the extent to which parents provide direct literacy instruction (i.e. alphabet teaching) and children's scores on emergent literacy tasks (i.e. alphabet knowledge and writing words). Additionally, Burgess et al. (2002) found that the active component of HLE explained the greatest amount of variance in children's literacy scores.

However, it is worth noting that components of active HLE have not always been consistently associated with children's literacy development. For example, the number of books in the family home is often used in quantitative questionnaires as one of the measures of HLE (Foy & Mann, 2003; Niklas & Schneider, 2013; Rodriguez et al., 2009). Yet, research indicates that the number of books in the family home may not be independently associated with children's language development (Sénéchal & LeFevre, 2002). Further, Foy and Mann (2003) found no significant correlation between children's

storybook exposure and children's phonological awareness and vocabulary. Such research demonstrates that aspects of HLE are not always significantly associated with children's early literacy development, and also reiterates the importance of using a wide conceptualisation of HLE.

Teale and Sulzby's (1986) second component of HLE, where children observe their parents or family members modelling literacy-related behaviours, is thought of as passive HLE. This is because, as is discussed by Burgess et al. (2002), passive HLE is not designed to teach children skills directly. Instead, some learning may take place through modelling. Social learning theory is particularly relevant to understanding passive HLE. For example, Bandura (1971) argues that "most of the behaviours that people display are learned, either deliberately or inadvertently, through the influence of example" (p.5). Therefore, as is claimed by Stainthorp and Hughes (2000), children may learn about literacy incidentally by watching their family members engage in literacy-related activities. Furthermore, it is possible that children may develop more positive affect toward reading and other literacy-activities as a result of watching their parents engage in such activities (Burgess et al., 2002).

Research has found mixed support for the importance of passive HLE. For example, van Steensel (2006) found that children observing their family members read books in the family home had a positive effect on the children's vocabulary. Bracken and Fischel (2008) also found that parent reading interest showed a relationship with children's receptive vocabulary. However, their results indicated that parents' own reading interest showed little association to children's other literacy skills (including letter knowledge, rhyming, segmenting words, print knowledge, and word-letter identification). Other research has

found that passive HLE does not independently predict emergent literacy skills (Burgess et al., 2002).

Finally Teale and Sulzby's (1986) third component of HLE, where children engage in literacy-related activities on their own (child-led HLE), is fairly broad. This includes activities such as reading or looking at story books on their own, playing literacy-related games (including physical games and games on computers, smart phones and tablets), and watching educational television programmes. Given that the past 20 years has seen an exceptional increase in the media and technology content available for young children (Barr & Linebarger, 2017), the focus here will be on exploring how technology can be used to promote literacy development. For example, two samples in the USA (Kabali et al., 2015) and Northern Ireland (Ahearne, Dilworth, Rollings, Livingston, & Murray, 2016) indicate that as much as 70% of toddlers and infants use touch-screen devices on a daily basis. Furthermore, television remains the most popular media medium accessed by preschool-aged children in the United States (Lapierre, Piotrowski, & Linebarger, 2010), with four- to six-year-olds viewing an average of 90 minutes of television daily.

Some research has indicated that engaging with such technologies positively impacts children's learning (Hutchison, Beschoner, & Schmidt-Crawford, 2012; Linebarger & Piotrowski, 2009; Mares & Pan, 2013; Wright et al., 2001). For example, Mares and Pan (2013) conducted a meta-analysis to determine whether exposure to *Seesame Street*, a popular children's educational television programme, had effects on children's learning and development. They found that exposure to the program was associated with positive effects in both low-, middle- and high-income countries.

Furthermore, these positive effects included cognitive outcomes such as literacy and numeracy.

However, as is discussed by Hipp et al. (2017), learning from video and two-dimensional media is generally less effective for infants' and young children's learning than live interactions (Anderson & Hanson, 2010). Further, some research indicates that there may be negligible or even negative effects of television watching for children under the age of two-years (Linebarger & Walker, 2005; Robb, Richert, & Wartella, 2009). Northrop and Killeen (2013) reason that just because a child may be able to use an app on a smart phone or tablet does not mean that they understand the literacy content of the television show or app.

### **Importance of HLE**

HLE is considered of significant importance given that a multitude of studies have indicated that HLE is associated with children's emergent literacy and language development (Aram et al., 2013; Burgess et al., 2002; Bus et al., 1995; Davidse et al., 2011; Levy et al., 2006; Melhuish et al., 2008; Merz et al., 2014; Rodriguez et al., 2009; van Steensel, 2006). Specifically, this includes vocabulary development, reading comprehension, phonological awareness, and letter-name knowledge. It is of note that different patterns of association are typically documented between HLE and children's emergent literacy. Yet, research does tend to indicate that HLE is consistently associated with children's vocabulary development (Aram et al., 2013; Hoff, 2003; Niklas & Schneider, 2013; Rodriguez et al., 2009; van Steensel, 2006). For example, Sénéchal and colleagues (Sénéchal, 2006; Sénéchal & LeFevre, 2002; Sénéchal et al., 1996; Sénéchal et

al., 1998; Sénéchal et al., 2008) have found that shared reading experiences, as reported by parents, are a robust predictor of children's receptive and expressive vocabulary for both English- and French-speaking children.

Among the most influential pieces of research exploring HLE and emergent literacy is that of Bus et al. (1995). Bus et al. conducted a quantitative meta-analysis on joint book reading and found that it explained 8% of the variance on outcome measures such as language growth, emergent literacy, and reading achievement. Similar results were found by Scarborough and Dobrich (1994). Although 8% of the variance may seem of limited practical significance, Whitehurst and Lonigan (1998) suggest that these findings may be reflective of the previous tendency to rely on single measures of HLE (i.e. shared book reading). Taking a another perspective Niklas and Scheinder (2013) argue that while this amount of explained variance may seem unimpressive, increasing the amount of time parents and other family members spend reading to children is much more easily manipulated than other factors such as SES. As such, these results not only have implications for interventions but also lend support to the position that joint book reading between parent and preschooler is important in the development of early literacy skills.

Rodriguez et al. (2009) used a longitudinal research design to investigate whether various aspects of the early literacy environment differentially influenced children's cognitive and language skills. Families involved in the study were predominately from low-income backgrounds, and children were assessed at 14, 24, and 36 months of age. Rodriguez et al. found that all three aspects of HLE that were investigated (quality of maternal engagement, access to learning materials, and participation in literacy activities such as shared book reading) "uniquely and jointly related to children's language and

cognitive skills” (Rodriquez et al., 2009, p. 690). Rodriquez et al. also found that each aspect of HLE was positively associated with maternal education.

It is thought that an enriched HLE contributes to children’s emergent literacy and pre-academic knowledge by providing a context in which children can begin to learn about print and literacy concepts. As indicated by Rodriguez et al. (2009), “early and consistent participation in routine literacy activities, such as shared bookreading, storytelling, and learning about letters and numbers, provide children with a critical foundation for language growth and emergent literacy” (p. 678). These early literacy-based experiences in and out of the home then contribute to children’s literacy and reading development by providing a framework that they can build upon when they reach formal literacy instruction. For example, Sénéchal et al. (2008) indicate that there a number of ways in which shared book reading can promote literacy development. This includes introducing the child to more sophisticated and complex language than is typically used in spoken language and providing parents with the opportunity to use questions to draw their child’s attention to both the language used, the content of the story, the world knowledge needed to understand the story, and their emotional reactions. Therefore, given the correlational research discussed, it is understandable that some researchers have concluded that HLE may be a reason as to why there are disparities in the emergent literacy skills that children bring to school.

### **Emergent Literacy**

Emergent literacy can be described as the set of skills and knowledge that equip young children to learn how to read and write upon entry into formal schooling (Merz et al.,

2014; Whitehurst & Lonigan, 1998). This is because the period of emergent literacy provides a foundation upon which later alphabetic knowledge and literacy skills are built (Justice, Bowles, & Skibbe, 2006). Whitehurst and Lonigan (1998) suggest that emergent literacy is best conceptualised as a continuum, where the beginnings of emergent literacy form early in life through exposure to experiences that are supportive of literacy development. During this period, children's basic awareness of orthography and phonology are established. Under this approach, there is no obvious distinction between pre-reading and reading (Lonigan, Burgess, & Anthony, 2000).

**Components of emergent literacy.** Whitehurst and Lonigan (1998) identify a number of components of emergent literacy including phonological awareness, vocabulary, understanding the conventions of print, narrative knowledge, syntactic awareness, letter-name knowledge, print motivation, beginning forms of printing (i.e. writing one's name) and oral language. Justice et al. (2006) indicate that emergent literacy development can be separated into two main areas of accomplishment. The first of these is print knowledge which includes alphabet knowledge and print-concept knowledge (i.e. knowing that words are read left-to-right). Both early letter knowledge and print-concept knowledge have been associated with later reading success (Adams, 2001; Levy et al., 2006; Torppa, Poikkeus, Laakso, Eklund, & Lyytinen, 2006; Tunmer, Herriman, & Nesdale, 1988). The second component includes phonological awareness which describes an individual's ability to focus on, reflect on and manipulate both phonemes (the smallest units of spoken language) and larger units (i.e. words and syllables). Phonological awareness is considered of significant importance given that a large body of research indicates that it is among the best

predictors of early reading success (Bus & van Ijzendoorn, 1999; Muter, Hulme, Snowling, & Stevenson, 2004; Shankweiler & Fowler, 2004; Torgesen, Otaiba, & Grek, 2005).

**Importance of emergent literacy.** Research indicates that overall emergent literacy is important for later reading and academic success (Harlaar et al., 2008; Kendeou et al., 2009; Muter et al., 2004; Neuman & Dickinson, 2001; Sénéchal & LeFevre, 2002; Whitehurst & Lonigan, 1998). For example, Muter et al. (2004) found that letter knowledge and phoneme sensitivity at school entry predicted children's word recognition skills two years later. Additionally, research has found that deficits in early literacy skills remain fairly stable over time (Cunningham & Stanovich, 1997; Landerl & Wimmer, 2008; Protopapas et al., 2011). Some children may even experience negative Matthew effects (poor-get-poorer) in which struggling readers fall even further behind (Stanovich, 1986). Further, Scarborough (2001) found that those children who have reading difficulties during Grade 4 (approximately age 9- to 10-years) are likely to also have reading difficulties at the end of high school, and these students also have a higher probability of dropping out of high school. Therefore it must be acknowledged that having low levels of emergent literacy at the preschool age may have lasting effects on later reading achievement (Gettinger & Stoiber, 2008). This is particularly if these low levels of literacy are not addressed in the early years of formal literacy instruction (Tunmer et al., 2013; Tunmer, Chapman, & Prochnow, 2003). Thus, it appears that fostering emergent literacy skills in young children is critical (Merz et al., 2014).

## **Early childhood education**

Although HLE is an important source of variance in early literacy abilities, nearly all children in New Zealand attend early childhood education (ECE) regularly before starting school (Ministry of Education, 2015). Access to ECE has been shown to be associated with positive outcomes in early and language skills (Barnett, 2001; Gilliam & Zigler, 2000; Magnuson, Meyers, Ruhm, & Waldfogel, 2004). However, previous research shows that the positive influence of ECE may differ depending on the age of the child and the duration of their ECE attendance (Coley, Lombardi, & Sims, 2015). Therefore, the relationship between ECE attendance and literacy development may not be as straightforward as is often thought.

Considering the role of ECE in the development of children's emergent literacy may be particularly relevant to the New Zealand context. This is because some researchers have raised concerns regarding the current ECE curriculum in New Zealand despite our reputation as a leader in ECE (Blaiklock, 2010, 2013, 2017; McLachlan & Arrow, 2011; Nuttall, 2005). For example, Blaiklock (2013) suggests that there is very limited evidence that ECE attendance in New Zealand is working to reduce the disparity in educational skills that is commonly associated with economic inequality. Further, there is limited evidence to suggest that children who attend ECE in New Zealand are more prepared to enjoy early school success than children who do not attend ECE (Blaiklock, 2017). This is concerning given that the New Zealand government invested large amounts into ECE and that the Ministry of Education continues to promote the benefits of ECE attendance despite the lack of empirical evidence (Blaiklock, 2017).

In particular, McLaughlin, Aspden, and Snyder (2016) argue that there is a danger in the New Zealand government focusing predominantly on participation in ECE. This is because there is a risk of creating inequality among children if the quality of early learning experiences in ECE is not also considered. For example, a number of studies have indicated that there are large disparities in the early literacy skills that children bring to school in New Zealand (Arrow, 2010; McLachlan & Arrow, 2013; Nicholson, 2005; Rachmani, 2011; Tunmer et al., 2006). Therefore, it is possible that the previous ECE curriculum was not effectively working to reduce the disparities often associated with economic inequality. It is reasoned that this thesis could provide additional insight into the relationship between ECE attendance and children's emergent literacy skills within the New Zealand context.

### **Linking the literature to the main research questions**

To conclude this chapter, the main four research questions addressed in this thesis (presented at the end of this chapter) will be recapped and linked to the literature presented in this review. It is of note that models such as Bronfenbrenner's bioecological model, the FSM and the FIM form the theoretical base for this research. This is because these models provide explanations as to how HLE may operate to influence children's emergent literacy. These models are significant because the main research question explored in this thesis was concerned with investigating whether there is a relationship between HLE and children's emergent literacy skills within the New Zealand context.

This research is important because, as was previously noted, there is only one known piece of research to have investigated the relationship between HLE and emergent literacy in the New Zealand context. Furthermore, this study used a limited

conceptualisation of HLE. While it is hypothesised that international findings will also apply to the New Zealand context, this is cannot be guaranteed. Therefore, the need to address this gap in the literature formed the basis for the first research question explored in this thesis (question 1).

Next, an additional research aim was concerned with examining whether time spent in ECE was positively associated with children's emergent literacy at school entry. This was deemed important because ECE attendance has been positively associated with children's emergent literacy in international contexts, and yet there is very limited New Zealand research to support this. Instead, despite almost all children attending ECE in New Zealand, there continues to be considerable variation in the emergent literacy skills that New Zealand children bring to school. Therefore, addressing this concern by exploring the association between ECE attendance and children's emergent literacy formed the second research question.

The next two research questions were concerned with exploring the potential role of parent education level. While it is argued that focusing on proximal variables (such as HLE) are more important than considering distal variables (such as SES), parent education level may be particularly important determinant of HLE. Therefore research questions three and four sought to investigate whether associations exist between parent education level and children's emergent literacy, and between parent education level and HLE, respectively.

Finally, in sum, the four research questions explored in this thesis are as follows:

- 1) Is there is a relationship between HLE and children's emergent literacy skills at school entry in the New Zealand context?
- 2) Do children's emergent literacy skills differ as a function of the number of years that they have spent in early childhood education centres in New Zealand?
- 3) Do children's emergent literacy skills differ as a function of their parent's level of education in the New Zealand context?
- 4) Is there is a relationship between parent education level and the quality of HLE provided in the New Zealand context?

## **Chapter Three: Methodology**

The main purpose of this study was to investigate the relationship between the home literacy environment (HLE) and children's emergent literacy skills at school entry. While this overarching research aim formed the first research question, three other research questions were also explored. These include whether children's emergent literacy skills differ as a function of the amount of time that they have spent in early childhood education (ECE), whether children's emergent literacy skills differ as a function of their parent's level of education, and whether the quality of HLE differs as a function of parent education level. All of the research questions that were explored in this thesis were focused on unpacking relationships within the New Zealand context.

The following chapter will outline the methodology that was used in this study. Firstly, the overall research design will be outlined. This will be followed by an overview of the participants involved in the study, including demographic information and reference to the inclusion and exclusion criteria that was used to select participants. The ethical issues that were taken into consideration will also be discussed. Next, the setting in which the data collection took place, the recruitment procedure, and the data collection procedure itself will be outlined. This will be followed by a detailed overview of the measures that were used to collect data. Lastly, the data analyses conducted will be examined.

### **Research Design**

It was decided that a correlational quantitative research design was appropriate to this study given that the research questions developed were focused on “quantifying relationships between variables” (Punch, 2006, p. 46). Here, the independent variable was

the child's HLE because it was hypothesised that HLE is a variable that accounts for some of the variance in a children's emergent literacy skills at school entry. As such, the child's emergent literacy skills were conceptualised as the dependent variable. The independent variable, HLE, was measured using nominal, interval and ordinal data collected through a parent/caregiver questionnaire. The dependent variable, the child's emergent literacy skills, were measured using three assessment tools designed to measure key aspects of emergent literacy.

## **Participants**

There were 35 child-parent/caregiver participant pairs in this study. Demographic data (with the exception of relationship to the child) was only collected for the children involved in the study and not for their parents/caregivers. In this study, 45.7% of the children participating were boys (N = 19) and 54.3% were girls (N = 19). The mean age was five years and one month (range of 5:01 to 5:04 years). Ethnicity data indicates that 74.3% of children identified as Pākeha/New Zealand European, 14.3% as Maori, 11.4% as Asian, 11.4% as Pasifika, and 8.6% as other European. These percentages add to more than 100% because six participants identified with one or more ethnicity. These demographic statistics are largely representative of the New Zealand population as indicated by the 2013 Census (Statistics New Zealand, 2015). Additionally, with respect to the relationship of the child, 31 (88.6%) of the parents/caregivers indicated that they were the child's mother, and four (11.4%) indicated that they were the father. As no participant indicated that they were the child's grandparent or caregiver, only the term 'parent' will only be used from this point.

**Exclusion and inclusion criteria.** In order for children to participate in this study they had to be five-years-old and in their first 15 weeks of formal schooling at a New Zealand primary school. These criteria were used to capture early literacy abilities at school-entry rather than the learning that occurs at school. Additionally, as the study is focused on emergent literacy in the English-language, participants needed to speak English at home. Exclusion criteria included the presence of complex learning difficulties and disabilities. This is because the cognitive development of children with complex learning needs is determined by a variety of factors that was outside the scope of this study. Additionally, if children with complex learning needs were included in this study then there would be a higher chance of statistical outliers. Both the inclusion and the exclusion criteria were implemented through school identification processes.

### **Ethical considerations**

This study was designed and conducted in accordance with the Massey University Human Ethics Committee (MUHEC). This study was given a ‘high-risk’ notification, which meant that a full application was needed. The application was approved by the MUHEC: Northern A at a meeting held on the 1<sup>st</sup> of June 2017 (see Appendix A for MUHEC approval letter). Some of the most important ethical considerations taken into account include the capacity to consent, informed and voluntary consent, participant confidentiality, and non-intrusive data collection. Additionally Margaret Kawharu, a senior Māori research advisor at Massey University, was consulted on how to best manage Māori participation in the study.

## Setting and recruitment

Participants for this study were recruited through working in collaboration with five primary schools located in a semi-rural area of Auckland, New Zealand. Purposive sampling was used in this particular study. This is a non-probability sampling technique in which participants are recruited according to the logic of the research (Punch, 2014). It was decided that accessing participants through primary schools would be the most convenient method of recruitment. Nine primary schools in this semi-rural area of Auckland were approached and invited to participate in this research. As is shown in Table 1, the five schools that participated varied on their location, decile rating, roll size, and school type. A wide range of schools were purposely approached in an attempt to increase the representativeness of the sample.

For example, in New Zealand schools are given a decile ranking according to the socioeconomic status (SES) of the community from which the school draws its students from (Ministry of Education, 2017). Those schools with a decile one are the 10% of schools who have the highest proportion of students from low-SES communities. In contrast, those schools with a decile 10 are the 10% of schools with the lowest proportion of students from low-SES communities. Given the extensive influence of SES (Evans, 2004; Hoff & Ribot, 2015; Kishiyama, Boyce, Jimenez, Perry, & Knight, 2009; McLoyd, 1998; Mistry et al., 2010; Sirin & Gupta, 2015), it was considered very important to approach schools from a range of decile rankings. As is shown in Table 1, the schools that participated in the study were roughly representative of the decile distribution of state schools in New Zealand. However, there might be a slight underrepresentation of students from low decile schools in this sample (i.e. deciles one to three).

Table 1

*Demographic information related to the nine schools that were invited to participate in this research*

School	Location	Approximate Roll size	Decile ranking	School type	Number of children from sample who attended school
Schools that participated in study					
1	Rural	130	3	State, co-educational contributing primary (Years 1-6)	6
2	Suburban	570	5	State, co-educational contributing primary (Years 1-6)	5
3	Suburban	70	5	State-integrated full primary – Christian education	7
4	Semi-Rural	370	9	State, co-educational full primary	6
5	Suburban	490	8	State, co-educational contributing primary (Years 1-6)	11

The researcher visited the school in person to introduce both her and the project. Where possible, appointments to speak with the school's principal were made. If this was not possible, then a letter addressed to the school's principal (see Appendix B) was left behind. Meetings were arranged if the school principal was interested in becoming involved with the project. During this meeting, principals were given the information sheet (see Appendix C) and were asked for their consent regarding their school's participation (see Appendix D). The next step was to gain teacher consent. Formal consent (see Appendix E) was obtained from all teachers after giving them a copy of the information sheet (see

Appendix B). In finish, five schools agreed to participate in this research. Of the schools that gave a reason for not wishing to take part, the most common was heavy workloads for both the principal and the teacher(s).

Once school consent had been obtained, the researcher worked alongside the school principal to determine what would be the preferred method of recruiting parents. For example, for two schools the student researcher was given the opportunity to meet parents either before or after school to discuss the research project. If parents were interested they were given an information sheet (see Appendix F), a consent form (see Appendix G) and a questionnaire (see Appendix H). For the other three schools the parent information sheet, consent form, and questionnaire were sent home. All parents were asked to return the questionnaire and consent form to their child's school in the supplied envelope. In total, 63 parents were invited to participate, with 35 returning their consent form and questionnaire. This is a response rate of 55.6%.

## **Procedure**

The first step during the data collection phase was the recruitment of participants. Only once the parent consent forms and questionnaires been collected did the assessments of children's emergent literacy take place. The first step here was to arrange a time for the assessments with the classroom teacher. The testing sessions were approximately 15- to 20-minutes long. However, testing times differed depending on the individual child and their concentration level. For all schools, testing took place over a number of days. This was done for a number of reasons including child absence, scheduling demands, and the number of children being tested from the given school.

All assessments took place at a quiet area at the school. The location of this assessment space was decided by the school principal and teacher(s). The assessment space was organised for testing before collecting the child from the classroom. This organisation helped to ensure that the testing ran smoothly, therefore helping to ensure the assessment reliability and validity.

At the beginning of each assessment session, the researcher visited the child's classroom and asked the teacher if she could take the given child out of the classroom. The child and the researcher then walked together to the assessment space. During this walk and at the very beginning of each assessment session the researcher asked the child questions to build rapport (i.e. "how was your weekend?"). After asking these questions and having a quick conversation with the child, the researcher asked the child for their assent to participate (Appendix I). This meant explaining the assessments, asking them whether they would like to take part, and asking them if they are fine for the researcher to share their results with their classroom teacher.

The researcher then conducted the assessment according to the instructions laid out in the examiner's manual of each assessment. Upon completion of each assessment, the researcher walked the child back to their classroom and asked for the next participant. Children were always given a break between testing sessions to ensure that they did not become fatigued or bored. In total, the testing data collection took approximately 10 weeks in total. There were a number of factors that accounted for this, such as the school holidays, delays in recruiting schools to participate, and scheduling demands.

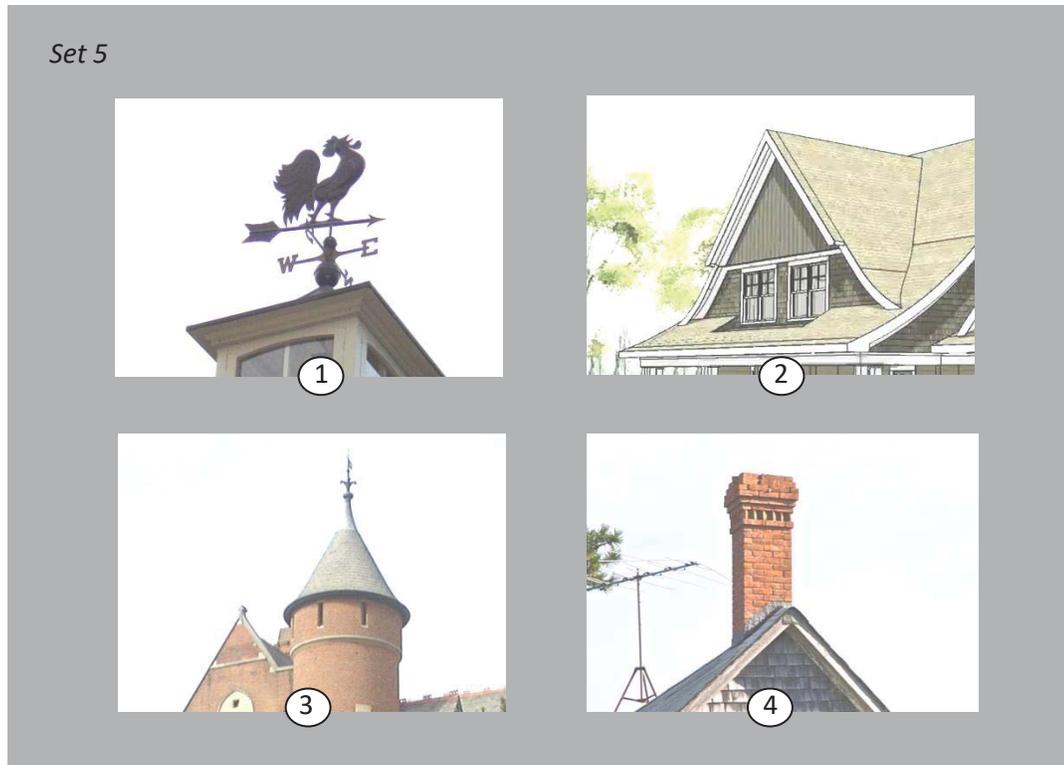
## Measures

**British Picture Vocabulary Scale (BPVS-3).** The BPVS-3 is an individually administered and norm-referenced test of receptive vocabulary for Standard English (Dunn, Dunn, & National Foundation for Educational Research, 2009). The BPVS-3 is designed to be used with individuals aged from three to 16 (3:00-16:11), but it can also be used with adults. Administration of the BPVS-3 takes approximately five to eight minutes. The test consists of four training plates and 14 sets of 12 test items. In total there are 168 test items (see Figure 1 for an example of a test item). The level of difficulty progresses as the student progresses through the test. For each testing item the examiner says a word (i.e. “chimney”) and asks the child to indicate (i.e. by pointing) which picture matches the word.

The first step in administering the BPVS-3 is to administer the training plates. If the student struggles to identify the correct answers on these training plates then the testing is ceased here. To begin the actual test, the examiner starts from the testing set that corresponds with the child’s chronological age. The next step is to determine the basal set. This occurs when a child makes no more than one error in a set. The examiner must test backwards until the basal set is found.

Once the basal set has been established then the examiner can test forward by sets. The examiner must not re-test sets that were previously tested when determining the basal set. The ceiling set is determined when there are eight or more wrong responses in a set of 12 items. Once an examiner begins a set they must always administer every item in that set. A student’s score is calculated by assuming that all items below the basal set would be correct. A student’s raw score is the last item in the ceiling set minus all of the errors made

by the student on the preceding sets. The raw scores can then be converted to a standardised score, which can then be used to find the percentile rank and the age equivalent.



*Figure 1.* Example of what a test item from the BPVS-3 would look like

The BPVS-3 has been designed for use in the United Kingdom and has been standardised on 3278 students from 147 schools in the United Kingdom. The authors of the BPVS-3 examiners manual (Dunn et al., 2009) conclude that the assessment has sufficient validity for drawing inferences about receptive vocabulary. For example, construct validity indicate that the BPVS-3 has a strong, positive correlation with the verbal battery of the Cognitive Abilities Test (.72) and a moderate, positive correlation with overall Cognitive Abilities Test scores (.61). Reliability for the BPVS-3 has been built into the confidence bands that accompany standard scores, percentile ranks and age-equivalents. These

confidence bands were constructed by using both an estimation of the standard error of measurement and an estimation of the age-standardisation model error (Dunn et al., 2009).

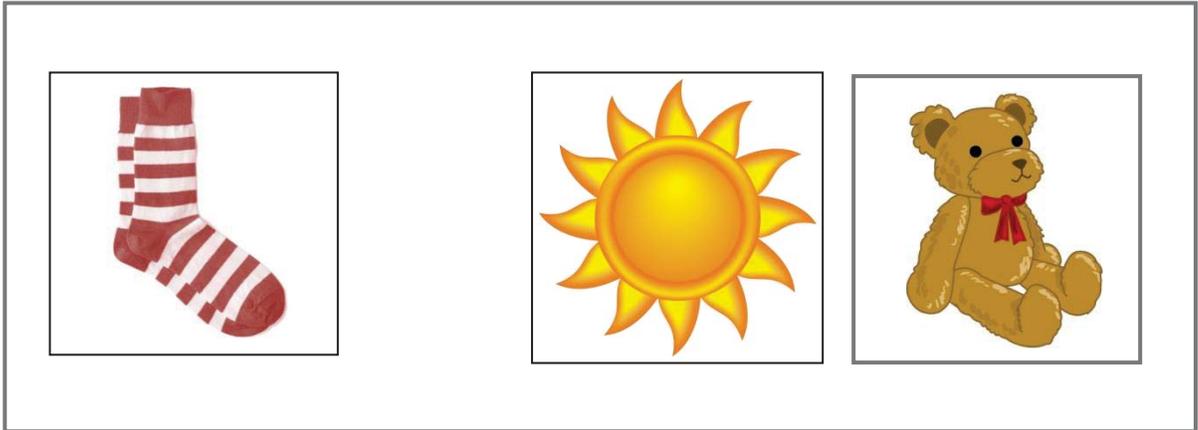
**Comprehensive Test of Phonological Processing (CTOPP-2).** The CTOPP-2 is an individually administered, norm-referenced assessment that measures phonological processing skills related to reading (Wagner, Torgesen, Rashotte, & Pearson, 2013). It can be used with individuals aged from four to 24 (4:00-24:00) however there are two different test booklets depending on the age of the individual being assessed. It is estimated that 40-minutes is needed to administer all of the subtests in the CTOPP-2. However, for the purposes of this research, only three subtests from the CTOPP-2 (from age four-six test booklet) were administered.

The first subtest used, elision, measures the extent to which children can say a word after a component of that word is removed (i.e. say 'cowgirl' without 'girl, or say 'cup' without /k/). This subtest includes 36 items.

The second subtest, the blending words subtest, involves 33 items and measures the extent to which children can identify words when presented with the individual sounds that make up the word. Here, participants hear a word in two or more parts (i.e. /s/ and /un/). They are then asked to repeat the real word that these sounds make when blended together. The audio-CD that accompanies the CTOPP-2 is needed to complete this subtest.

The third subtest, sound matching, involves 26-items and measures the extent to which an individual can match sounds. The picture book supplied with the CTOPP-2 was used for this subtest (see Figure 2). Children are shown a sample picture (i.e. a sock), and are shown two pictures next to the sample picture (i.e. a sun and a bear). The student is then

asked which of these two pictures starts with the same sound as the sample picture. The first 13 items asks students to sound match using the first sound in the words and items 14-26 asks students to sound match using the last sound in the words.



*Figure 2.* Example of what a test item from the sound matching subtest of the CTOPP-2 would look like.

These three subtests are measures of phonological awareness and their scores can be combined to form a phonological awareness composite. Testing ceases when there are three incorrect answers in a row. Raw scores from all three subtests can be converted into standard scores (called scaled scores here), age equivalents and percentile ranks.

The CTOPP-2 was normed on a sample of 1,900 individuals from six states in the United States of America in 2007 and 2008. Reliability for the CTOPP-2 was measured using three types of reliability coefficients (internal consistency, test-retest, and scorer-difference reliability; Wagner et al., 2013). Cronbach's alphas for students aged four to six ranged from .90 to .95 for the subtests used. Time sampling error was measured using the test-retest method, where the time lapse between testing varied from one to two weeks. The correlation coefficients for the subtests used ranged from .78 to .91. Further, the stability of

scoring was tested using correlational data from two trained individuals who independently scored the same 50 protocols. These correlations all exceeded .90, thus providing strong evidence for the test's scorer reliability.

Strong validity of the CTOPP-2 is demonstrated through both criterion-predictive validity and construct-identification validity. For example, correlations between the CTOPP/CTOPP-2 and other, similar measures are strong with an overall correlation of .73 for phonological awareness subtests (Wagner et al., 2013). This demonstrates good criterion-predictive validity. Additionally, confirmatory factor analyses for the four-six year-old normative sample were done and had Comparative Fit Indexes of .99 and a Tucker-Lewis Index of .97 (Wagner et al., 2013). This is indicative of an excellent model fit, therefore supporting the construct validity of the CTOPP-2.

**York Assessment of Reading Comprehension (YARC).** The YARC (Hulme et al., 2012) Early Reading is a standardised assessment tool that has been designed to sample some of the key processes that contribute to reading development, particularly alphabetic literacy. It takes approximately 20 minutes to administer all four subtests. The YARC is designed to be used with students aged from five to seven years (5:00-7:11).

For the first subtest, letter sound knowledge, students are shown lower case letters and digraphs, one at a time, and asked to say the sound that each letter or digraph makes. It is comprised of two sections – the core test (uses 11 letters and six digraphs) and the extended test (uses all 26 letters and six digraphs). For the purpose of this research, only the core test was used. If a student gives the letter name then the assessor must circle 'LN' on the test booklet and ask the student to tell them the sound that the letter or digraph makes.

The second subtest, early word recognition, involves showing students 30 words that are graded in difficulty. Half of these words are phonemically regular (i.e. able to be decoded because there is a regular correspondence between the grapheme to the phoneme) and the other half of the words are phonemically irregular. All students start with the first word ('cat'), and testing stops after 10 consecutive errors.

The third and fourth subtests (sound isolation and sound deletion) together represent the phoneme awareness composite. For both subtests, there are both teaching items (where the feedback can be given) and test items (where feedback cannot be given). Additionally, for both of these subtests all test items are given.

In the sound isolation subtest students are presented with a nonsense word (i.e. 'bem') and asked to repeat this word. For the first six testing items they are asked to tell the assessor what is the sound at the beginning of that word. For the final six testing items they are asked to tell the assessor what sound is at the end of the word.

In the sound deletion subtest the student is asked to say a word (i.e. 'toothbrush'), and then asked to say the word again without one part of that word (i.e. 'say toothbrush without brush'). Later, children are asked to say a word (i.e. 'house') and then say that word with a phoneme missing (i.e. 'say house without /s/'). A small picture book accompanies this subtest. See Figure 3 for an example of a test item from this subtest.

Although the YARC was developed in the UK and published in 2009, it has since been standardised on a large, representative sample of school-aged children in Australia in 2011 (Hulme et al., 2012). The YARC Early Reading reliability was measured using Cronbach's alpha, where the reliability co-efficients for the various subtests ranged from

.81 to .98 (where a measure of .70 or higher is desirable). Validity was also measured by considering the correlations between the various subtests of the YARC Early Reading. The correlations between the YARC Early Reading subtests ranged from moderate (.47) to very strong (.92).



*Figure 3.* Example of what a test item from the sound deletion subtest of the YARC would look like.

**Parent questionnaire.** Another measure of data collection involved the parent questionnaire that was designed to gauge the child's HLE through a number of restricted items (see Appendix H). It was estimated that completion of the questionnaire would take 10 to 15 minutes. It was a condition of the research that children would only be included in the research once their parents had returned the questionnaire.

A number of studies have used a parent questionnaire to quantitatively measure a child's HLE. Therefore the design of this questionnaire was modelled on the questionnaires used by researchers such as Grieshaber, Shield, Luke, and Macdonald (2011), Hood et al. (2008), Niklas and Schneider (2013), and Sénéchal et al. (1998). Importantly, questions were adapted to match the New Zealand context. This was particularly for questions related to ECE attendance and parent education level.

The format of the questionnaire was broken into a number of sections. This was done to ensure that a range of data was collected, particularly regarding the various facets of HLE. For example, the first four questions were designed to measure active HLE which directly involves both the child and their parent or family member. Next, questions five and six asked parents about their child's involvement in ECE and the duration of this involvement. Question seven referred to the parents' personal engagement with literacy-activities, question eight referred to their child's educational media use, and question nine referred to parent education level.

### **Data analysis**

All data analyses were conducted using the SPSS software (IBM Statistics version 24). A range of statistical tools were used including descriptive and frequency statistics, single sample t-tests, independent sample t-tests, one-way analyses of variance (ANOVA), correlational analyses, and hierarchical regression analysis. Missing data was excluded from the data analyses, therefore not all statistical analyses have  $N = 35$ .

### **Summary**

This section described the methodology of this particular research project as being quantitative and correlational in nature. The independent variable, HLE, was measured using a parent questionnaire. The dependent variable, the child's emergent literacy skills at school entry, was measured using three different assessment tools (the BPVS, the CTOPP, and the YARC). A number of ethical considerations were taken into account for this research project. In total, 35 parent-child pairs participated in this study. These participants were recruited through working in collaboration with five primary schools in a semi-rural area of the wider Auckland region. The questionnaires were given or sent to parents, and

parents were asked to return the questionnaire to their child's school sealed in the envelope provided. Once the consent form and questionnaire had been returned, the child was tested on measures of emergent literacy in a quiet place at their school. Data was then analysed using a number of statistical techniques on SPSS.

## **Chapter Four: Results**

The following chapter outlines the results from this quantitative study in relation to the main research aims. To start, descriptive statistics are given to help to characterise the participants and the information collected. Following this, the specific research questions are addressed individually using a range of statistical techniques. These include correlational analyses, independent sample t-tests, simple linear regression, hierarchical linear regression, and one-way analysis of variance (ANOVA).

### **Descriptive Statistics**

Table 2 contains descriptive information on child variables (including their performance on the emergent literacy assessments) and on the interval variables collected in the home literacy environment (HLE) questionnaire. For example, as is shown in Table 2, the average age of children who participated in this study was 61.71 months (five years, one month). While the oldest child was five years and four months at the time of testing (64 months), all children who participated in this study were within their first 15 weeks of formal schooling. There were no statistically significant correlations found between children's age at testing and their performance on any of the subtests used.

As is illustrated in Table 2, all children in this sample attended early childhood education (ECE) before starting school. This matches closely with national data, whereby 96.2% of children in New Zealand had regularly attended ECE prior to starting school (Ministry of Education, 2015). Table 2 also contains descriptive information regarding aspects of HLE such as the shared story book reading frequency in a typical week, and the number of books in the home.

Table 2

*Descriptive information including sample size, means, standard deviations, minima and maxima of interval variables*

Variables	N	M	SD	Min	Max
Child variables					
Age at testing (months)	35	61.71	1.10	60.00	64.00
Emergent literacy assessments					
BPVS-3 standard score	34	102.26	9.56	76.00	120.00
Elision subtest scaled score (CTOPP-2)	35	9.69	1.84	5.00	13.00
Blending words subtest scaled score (CTOPP-2)	34	8.29	1.64	6.00	13.00
Sound matching subtest scaled score (CTOPP-2)	35	9.83	3.07	4.00	17.00
Phonological awareness (P.A.) composite score (CTOPP-2)	34	96.26	11.93	77.00	122.00
Letter sound knowledge subtest standard score (YARC)	35	102.34	19.27	70.00	130.00
Early word reading subtest standard score (YARC)	35	101.86	12.78	87.00	130.00
Sound isolation subtest standard score (YARC)	33	101.09	11.62	77.00	120.00
Sound deletion subtest standard score (YARC)	34	99.21	11.33	72.00	121.00
Phoneme awareness standard score (YARC)	33	97.90	11.78	70.00	113.00
Home literacy environment questionnaire					
Shared book reading frequency (in a typical week)	35	5.54	1.73	1.00	7.00
Number of books in the home	35	54.00	34.35	11.00	101.00
Number of years spent in ECE	35	2.76	1.04	0.50	4.50

However, it must be noted that floor effects were found for the ‘early word reading subtest’ of the YARC. This is because 15 children in the sample scored ‘0’ correct answers and as a result had standard scores of either ‘88’ or ‘92’ (depending on their age). As such, this subtest will be excluded from future analyses. Similarly, possible floor effects may exist for the ‘sound deletion’ subtest of the YARC. Therefore, caution will be taken when interpreting results related to this subtest.

Furthermore, as is seen in Table 2, there was considerable variability in children’s scores across all of the subtests. This indicates that at school entry, even before formal teaching, there are disparities in the skills that children bring to school. One sample t-tests were also run to determine whether there was a significant difference between children’s mean scores on the assessments and a comparison value (taken as the 50<sup>th</sup> percentile standard score for each subtest). This one sample t-test indicated that children in this sample generally performed at a level comparable to the population across these subtests. The only exception to this was on the ‘blending words’ subtest of the CTOPP-2, where children performed significantly worse than would be expected (see Table 3). Therefore, care will be taken when interpreting results related to this particular subtest.

Table 3

*One sample t-test comparing children’s scores on CTOPP-2 subtests and comparison values*

Subtest	N	M	Comparison value	Mean difference	t	df	Sig. (2-tailed)
Blending subtest (CTOPP-2)	34	8.29	10	-1.71	-6.06	33	.000

Table 4 contains frequency information regarding the children’s sex and parent education level. For example the frequency data collected on children’s sex suggests that there were roughly equal proportions of boys and girls participating in this study. Furthermore, an independent samples t-test was conducted to compare children’s performance on the emergent literacy assessments by sex. There were no significant differences in performance found for any of the subtests depending on the participant’s sex.

Table 4

*Frequency information to describe variables that contain nominal data*

Variable	Frequency	Percent
Child sex		
Male	16	45.7
Female	19	54.3
Total	35	100.0
Parent Education Level		
No formal qualification	3	8.6
High school diploma	5	14.3
Tertiary diploma/certificate	12	34.3
Bachelor's degree	6	17.1
Postgraduate qualification	9	25.7
Total	35	100.0

Additionally this sample of parents was more highly educated than anticipated. For example, as is seen in Table 4, 42.8% of the parent sample held a Bachelor's degree or higher. This statistic is higher than the national average because only 29.8% of the adult population of New Zealand held a Bachelor's degree or higher in 2015 (Statistics New Zealand, 2016).

### **Relationship between HLE activities and emergent literacy skills**

The first research question addressed in this study is concerned with exploring the relationship between HLE and children's emergent literacy in the New Zealand context. HLE is conceptualised both as an overall construct and as being made up of separate components. These separate components include active HLE (literacy-related activities between parent and child), passive HLE (parent's own engagement with literacy and reading), and child-led HLE (where children engage with literacy-related technologies on their own). It was hypothesised that the overall HLE would be correlated with children's

emergent literacy. Similarly, it was hypothesised that all aspects of HLE would correlate with children’s emergent literacy, with the strongest correlations being between active HLE and children’s emergent literacy.

Correlational analyses using Pearson’s product moment correlation co-efficient were computed to assess the relationship between the overall-HLE and children’s emergent literacy. As is shown in Table 5, significant and positive correlations were found between the overall-HLE and a number of the subtests used. The following sections report on the statistical analyses used to investigate the relationships between the three components of HLE (active, passive, and child-led) and children’s emergent literacy.

Table 5

*Bivariate correlational analysis between overall HLE and children’s assessments using Pearson’s (r)*

Variable	1	2	3	4	5	6	7
1. Overall HLE	-						
2. BPVS-3	.54**	-					
3. Elision (CTOPP-2)	.50**	.60**	-				
4. Blending (CTOPP-2)	.41*	.46**	.53**	-			
5. P.A. (CTOPP-2)	.43*	.53**	.83**	.79**	-		
6. Sound Isolation (YARC)	.37*	.55**	.65**	.52**	.72**	-	
7. Phoneme Composite (YARC)	.38*	.62**	.78**	.57**	.80**	.93**	-

Note: only statistically significant correlations between overall-HLE and children’s emergent literacy are reported

\*\* p < .01 (2-tailed) \* p < .05 (2-tailed)

N = 35 for all variables 1 & 3, N = 34 for variables 2, 4 & 5, N = 33 for variables 6 & 7

**Active HLE and children’s emergent literacy.** Active HLE was computed by scaling and summing three aspects of the parent HLE questionnaire. This included the total

score of literacy-based activities in the home (question one of HLE questionnaire, see Appendix H), the shared storybook reading frequency (scaled), and the number of children’s books in the home (scaled).

A Pearson’s product-moment correlation coefficient was computed to assess the relationship between active HLE and children’s scores on the British Picture Vocabulary Scale (BPVS-3) (M = 102.26, SD = 9.56). A moderately strong positive correlation was found between the two variables ( $r = .54$ ,  $n = 34$ ,  $p = < .01$ ). This relationship is summarised in the scatter plot below (Figure 4). Additionally, positive, significant correlations were found between active HLE and children’s performance on the elision subtest of the CTOPP-2 ( $r = .42$ ,  $n = 35$ ,  $p = .01$ ) and on the blending words subtest of the CTOPP-2 ( $r = .34$ ,  $n = 34$ ,  $p = < .05$ ).

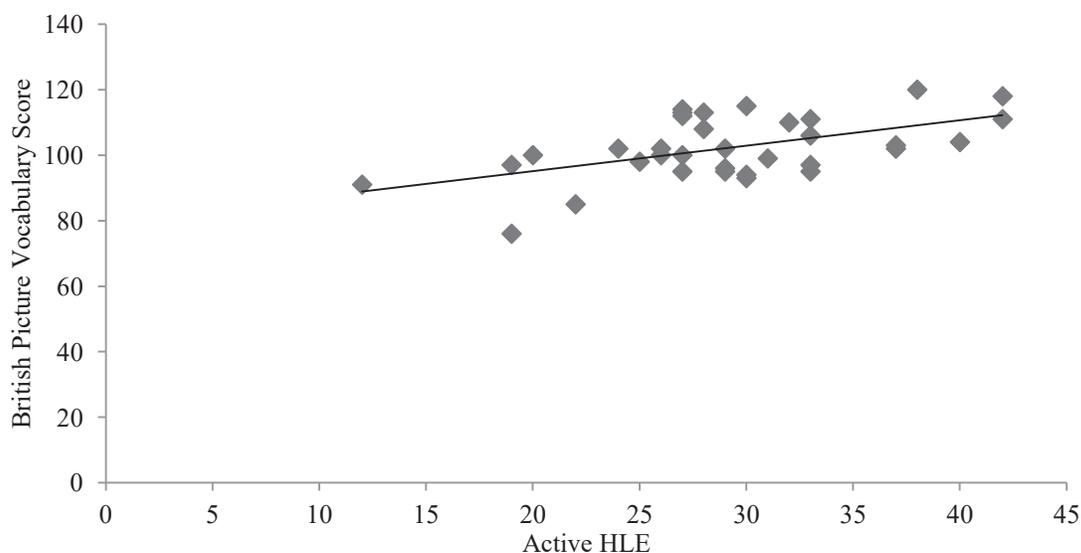


Figure 4. Relationship between active HLE and children’s standard score on the BPVS-3

To further explore the relationship between active HLE and children’s emergent literacy skills, the specific components of active HLE were individually correlated with the children’s performance on the emergent literacy assessments. These results are presented in

Table 6 and demonstrate that particular aspects of active HLE (such as playing word games and alphabet teaching) may be more important than others in helping to explain the relationship between active HLE and children’s emergent literacy skills at school entry.

The frequency to which family members read to their children and the number of books in the family home were not significantly correlated with any measure of children’s emergent literacy. The only exception to this is when these two scores are added together to form an ‘access to and use of books in the family home’ composite score. Here, a Pearson’s product-moment correlation coefficient was computed to assess the relationship between ‘access to and use of books in the home’ and children’s scores on the BPVS-3 (M = 102.26, SD = 9.56). A moderate positive correlation was found between these two variables ( $r = .38$ ,  $n = 34$ ,  $p = .03$ ). This relationship is summarised in a scatter plot below (Figure 5). There were no statistically significant correlations found between the ‘access to and use of books in the family home’ score and the subtests of the CTOPP-2 or YARC.

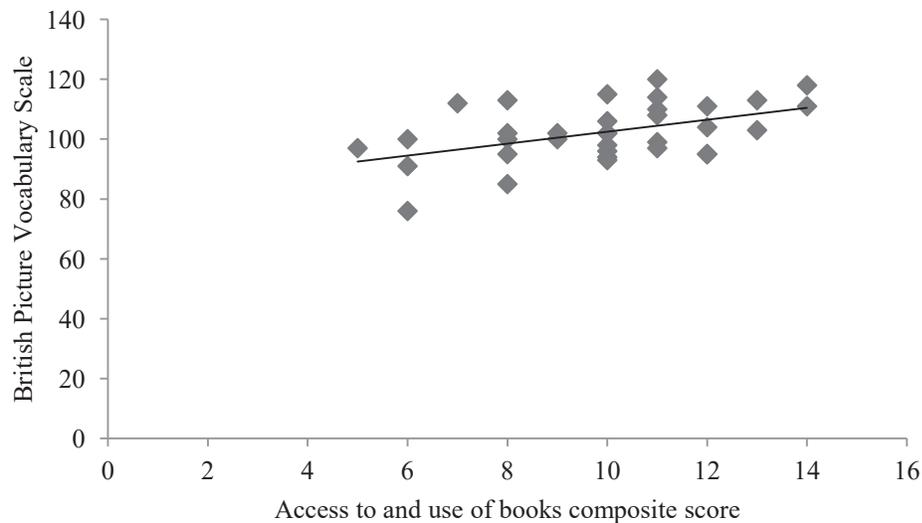


Figure 5. Scatter plot depicting relationship between a child’s access to and use of books in the home and their score on the BPVS.

Table 6

*Bivariate correlational analysis between emergent literacy subtests and components of active HLE using Pearson's (r) correlation*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. BPVS-3	-												
2. Elision CTOPP-2	.60**	-											
3. Blending CTOPP-2	.46**	.53**	-										
4. Sound matching CTOPP-2	.37*	.57**	.58**	-									
5. P.A. CTOPP-2	.53**	.83**	.79**	.92**	-								
6. Letter-sound (YARC)	.40*	.54**	.55**	.61**	.70**	-							
7. Sound Isolation (YARC)	.55*	.65**	.52**	.60**	.72**	.71**	-						
8. Phoneme Composite (YARC)	.62**	.78**	.57**	.57**	.80**	.69**	.93**	-					
9. Word games	.37*	.51**	.37*	.36*	.47**	.31	.33	.31	-				
10. Alphabet teaching	.36*	.25	.19	.41*	.36*	.13	.42*	.42*	.43*	-			
11. Visiting library	.34*	.32	.27	.08	.25	.31	.37*	.37*	.39*	.25	-		
12. Talking about what you had read	.35*	.32	.26	.17	.26	.35*	.09	.01	.55**	.06	.31	-	
13. Talking about what you had done	.43*	.30	.15	-.17	.07	.04	.18	.19	.49**	.18	.27	.28	-

\*\* p < .01 (2-tailed) \* p < .05 (2-tailed)

N = 35 for variables 2, 4, 6, 9-13, N = 34 for variables 1, 3 & 5, N = 33 for variables 7 & 8

However, it must be noted that the number of books in the family home was measured using a categorical scale in the parent questionnaire (see Appendix H). Therefore, an ANOVA was also conducted to assess whether children’s scores on the emergent literacy assessments significantly differed according to the number of books in the family home. Significant group differences were found for four of the eight subtests used in these analyses (see Table 7 for the Least Significant Difference post-hoc for these four subtests).

Table 7

*Least Significant Difference post-hoc results for number of books*

Literacy Assessment	Number of books in the family home		Mean Difference	Std. Error	Sig.
BPVS-3	11-25	26-50**	-19.00	5.36	<.01
		51-100**	-17.92	5.62	<.01
		100+**	-18.58	5.41	<.01
	26-50	11-25**	-19.00	5.36	<.01
		51-100	1.08	3.79	.78
		100+	.42	3.47	.90
	51-100	11-25**	17.92	5.62	<.01
		26-50	-1.08	3.79	.78
		100+	-.66	3.86	.87
	100+	11-25**	18.58	5.41	<.01
		26-50	-.42	3.47	.90
		51-100	.66	3.86	.87
Elision (CTOPP-2)	11-25	26-50**	-3.18	1.05	<.01
		51-100**	-3.71	1.11	<.01
		100+**	-3.15	1.07	<.01
	26-50	11-25**	3.18	1.05	<.01
		51-100	-.53	.74	.48
		100+	.03	.67	.97
	51-100	11-25**	3.71	1.11	<.01
		26-50	.53	.74	.48
		100+	.56	.76	.47
	100+	11-25**	3.15	1.07	<.01
		26-50	-.03	.67	.97
		51-100	-.56	.76	.47

Sound deletion (YARC)	11-25	26-50**	-20.17	6.68	<.01
		51-100*	-16.00	7.00	.03
		100+	-13.36	6.74	.06
	26-50	11-25*	20.17	6.68	<.01
		51-100	4.17	4.72	.38
		100+	6.80	4.32	.13
	51-100	11-25*	16.00	7.00	.03
		26-50	-4.17	4.72	.38
		100+	2.64	4.81	.59
	100+	11-25	13.36	6.74	.06
		26-50	-6.80	4.32	.13
		51-100	-2.64	4.81	.59
Phoneme composite (YARC)	11-25	26-50**	-21.17	6.87	<.01
		51-100*	-19.43	7.35	.01
		100+*	-15.27	6.94	.04
	26-50	11-25**	21.17	6.87	<.01
		51-100	1.74	5.07	.73
		100+	5.89	4.45	.20
	51-100	11-25*	19.43	7.35	.01
		26-50	-1.74	5.07	.73
		100+	4.16	5.15	.43
	100+	11-25*	15.27	6.94	.04
		26-50	-5.89	4.45	.20
		51-100	-4.16	5.15	.43

\*p <.05

\*\*p <.01

As is seen in Table 7, there appears to be a significant difference on these subtests between children who have 11-25 children's books in the family home and children who have 26-50, 51-100 and 100+ children's books in the family home. Group differences were not found between the other three categories.

**Passive HLE and children’s emergent literacy.** Correlational analyses using Pearson’s product-moment coefficient were computed to explore the relationship between parents’ own engagement in literacy activities (passive HLE) and children’s emergent literacy. Here, parents’ own engagement in literacy activities was conceptualised both as a total score and also as separate components. This was done so that insight could be gained into which aspects of passive HLE were most significant.

As shown in Table 8, significant correlations were found between the overall passive HLE and all of the subtests from the CTOPP-2. However, no significant correlations were found the overall passive HLE and children’s performance on the subtests from the YARC or the BPVS-3.

Table 8

*Bivariate correlational analysis between passive HLE and children’s CTOPP-2 assessment using Pearson’s (r) correlation*

Variable	1	2	3	4	5	6	7	8
1. Parents’ own engagement in literacy activities	-							
2. Parent fiction and non-fiction book reading	.67**	-						
3. Parent magazine or newspaper reading	.85**	.29	-					
4. Parent reading of online articles	.75**	.19	.61**	-				
5. Elision (CTOPP-2)	.51**	.58**	.22	.36*	-			
6. Blending (CTOPP-2)	.58**	.51**	.30	.29	.53**	-		
7. Sound matching (CTOPP-2)	.29	.23*	.19	.26	.57**	.58**	-	
8. P.A. (CTOPP-2)	.47**	.51**	.25	.33	.83**	.79**	.92**	-

\*\* p < .01 (2-tailed) \* p < .05 (2-tailed)

N = 35 for all variables except for variables 6 & 8 where N = 34, variable 9 where N = 29, variable 10 = 20, & variable 11 where N = 19.

Furthermore, as is shown in Table 8, parents' own engagement in book reading appears to be the most important component of passive HLE. This is because it was significantly and positively correlated with all of the CTOPP-2 subtests, unlike the other two components of passive HLE. Additionally, parent book reading was significantly correlated with children's performance on the BPVS-3 ( $r = .55$ ,  $n = 34$ ,  $p < .01$ ), children's performance on the sound isolation subtest of the YARC ( $r = .38$ ,  $n = 33$ ,  $p = .03$ ), and children's performance on the phoneme awareness composite of the YARC ( $r = .44$ ,  $n = 33$ ,  $p = .01$ ). A significant, positive correlation was also found between parent book reading and children's performance on the sound deletion subtest of the YARC ( $r = .43$ ,  $n = 34$ ,  $p = .01$ ). However, as was previously mentioned, there were potential floor effects with the sound deletion subtest and so this result must be interpreted with caution.

To further test the hypothesis that children's emergent literacy skills differ as a function of passive HLE, an ANOVA was computed. Here, parents' own engagement in literacy-related activities was grouped into one of three categories: parents either, a) seldom engaged in literacy activities, b) occasionally engaged in literacy activities, or c) often engaged in literacy activities. For this ANOVA there were significant between group differences for the blending words subtest (CTOPP-2), the elision subtest (CTOPP-2), the P.A. composite (CTOPP-2), and the sound deletion subtest (YARC). The Least Significant Difference post-hoc for these five subtests is presented in Table 9.

The results from this Least Significant Difference post-hoc suggest that there is some evidence that group differences in children's emergent skills exist depending on passive HLE. Specifically, it was found that children performed worse on these assessments

when their parents had low levels of literacy engagement compared to when their parents had either mid or high levels of literacy engagement.

Table 9

*Least Significant Difference post-hoc results for those passive HLE*

Literacy Assessment	Parent level of literacy engagement		Mean Difference	Std. Error	Sig.
Blending (CTOPP-2)	Low	Mid*	-1.62	.55	<.01
		High*	-2.22	.62	<.01
	Mid	Low*	1.62	.55	<.01
		High	-.61	.62	.34
	High	Low*	2.22	.62	<.01
		Mid	.61	.62	.34
Elision (CTOPP-2)	Low	Mid*	-1.38	.64	.04
		High*	-2.26	.74	<.01
	Mid	Low*	1.38	.64	.04
		High	-.88	.74	.24
	High	Low*	2.26	.74	<.01
		Mid	.88	.74	.24
P.A. (CTOPP-2)	Low	Mid*	-9.77	4.06	.02
		High*	-15.98	4.66	<.01
	Mid	Low*	9.77	4.06	.02
		High	-6.21	4.65	.19
	High	Low*	15.98	4.65	<.01
		Mid	6.21	4.65	.19
Sound deletion (YARC)	Low	Mid*	-12.36	4.01	<.01
		High	-9.00	4.65	0.06
	Mid	Low*	12.36	4.00	<.01
		High	3.35	4.52	.46
	High	Low	9.00	4.65	.06
		Mid	-3.36	4.52	.46

\*p < .01

It was further hypothesised that there would be a positive relationship between parents' own engagement in literacy activities and the quality of active HLE. It was reasoned that parents who engage in higher levels of literacy-related behaviour place a higher value on literacy and thus scaffold HLE to reflect this. While no information was collected regarding parents' perceptions of the importance of literacy, correlational analyses using Spearman's rank order were used to investigate whether there is a relationship between parent engagement in literacy activities and the quality of active HLE.

These results are presented in Table 10 and demonstrate that parents' own engagement in literacy is significantly correlated with both the overall active HLE and various components of active HLE. However, it appears that strength in the associations comes when the various components of passive HLE are considered as a whole rather than individually.

Furthermore, a simple linear regression was calculated to predict whether the overall active HLE is based on parents' own engagement in literacy activities. A significant regression equation was found ( $F(1, 33) = 6.38, p .02$ ), with an  $R^2$  of .16. The score for the overall active HLE is equal to  $15.04 + .86$  (passive HLE) frequency points when passive HLE is measured in terms of ordinal frequency. Active HLE increases .86 for each frequency point. Therefore, these results provide some evidence for a relationship between passive HLE and active HLE

Table 10

*Bivariate correlations between passive HLE and aspects of active HLE using Spearman's (s) rho correlation*

Variable	1	2	3	4	5	6	7	8
1. Parent own engagement in literacy activities	-	.	.	.				
2. Parent fiction and non-fiction book reading	.64**	-						
3. Parent magazine or newspaper reading	.85**	.28	-					
4. Parent reading of online articles	.73**	.18	.58**	-				
5. Active HLE	.44**	.42*	.39*	.22	-			
6. Access to and use of books	.47**	.21	.44**	.45**	.72**	-		
7. Word games	.60**	.38*	.54**	.49**	.72**	.52**	-	
8. Talking about what you have done	.37*	.30	.27	.30	.66**	.79**	.47**	-

\*\* p < .01 (2-tailed) \* p < .05 (2-tailed) N = 35 for all variables

**Child-led HLE and children's emergent literacy.** Correlational analyses were computed to assess the relationship between child-led HLE and children's emergent literacy skills. Both the overall child-led HLE and the three components of this construct (child educational TV watching, child playing educational games on smart phone or tablet, and child playing educational computer games) were used in these correlational analyses. No statistically significant correlations were found between the overall child-led HLE and children's emergent literacy skills. Further, only one statistically significant correlation was found when this overall construct was broken down into its three components. Here, the

only statistically significant correlation was found between children's educational television watching and their receptive vocabulary as measured by the BPVS-3 ( $r = .41$ ,  $n = 34$ ,  $p = .02$ ).

Additionally, to further explore the relationship between HLE and children's emergent literacy, two hierarchical regression analyses were conducted. A preliminary examination of the variables was performed to test the several assumptions that are related to the reliable and valid use of hierarchical regression analysis. Firstly, scatter plots between the DV and IVs showed that the assumption of linearity had been met. Analysis of collinearity statistics also demonstrated that the assumption of multicollinearity had been met. The Durbin-Watson statistic showed that the assumption that the values of the residuals are independent had been met. However, the P-Plot model that was computed for second hierarchical regression analysis (where P.A. is the DV) suggested that the assumption of normality of the residuals may have been violated. However, this violation was minimal and so the results are likely to still be valid. Finally, Cook's Distance values fell well below one which indicated that there were no significant outliers that were influencing these models.

The first of these two hierarchical regression analyses looked at predicting children's receptive vocabulary (as measured by the BPVS-3) based on active HLE, passive HLE, and child-led HLE. A significant regression equation was found ( $F(3, 30) = 4.69$ ,  $p < .01$ ), with an  $R^2$  of .32, when all variables were entered into the regression. However, as is seen in Table 11, active HLE was the only significant predictor of children's receptive vocabulary.

Table 11

*Hierarchical regression analysis for children's receptive vocabulary and phonological awareness*

Step	Variable Added	b	SE b	R <sup>2</sup>	ΔR <sup>2</sup>	β
Receptive vocabulary (as measured by BPVS-3)						
1.	Constant	79.59	6.43			
	Active HLE	.78	.22	.29	.29***	.54***
2.	Constant	79.74	6.57			
	Active HLE	.80	.25			.56**
	Passive HLE	-.12	.59	.29	.00	-.03
3.	Constant	77.39	6.87			
	Active HLE	.70	.27			.49*
	Passive HLE	.02	.60			.01
	Child-led HLE	.72	.64	.32	.03	.18
Phonological awareness (as measured by CTOPP-2)						
1.	Constant	28.65	19.22			
	BPVS-3 Standard Score	.66	.19	.28	.28***	.53***
2.	Constant	29.79	19.69			
	BPVS-3 Standard Score	.61	.23			.49*
	Active HLE	.13	.33	.28	.00	.07
3.	Constant	26.00	18.12			
	BPVS-3 Standard Score	.63	.21			.51**
	Active HLE	-.27	.33			-.15
	Passive HLE	1.77	.68	.42	.13*	.42*
4.	Constant	26.50	18.36			
	BPVS-3 Standard Score	.61	.21			.49**
	Active HLE	-.31	.35			-.17
	Passive HLE	1.84	.70			.44
	Child-led HLE	.41	.77	.42	.01	.08

\*p < .05 \*\* p < .01 \*\*\* p < .001

Secondly, a hierarchical linear regression was calculated to predict children's scores on the phonological awareness composite (P.A.) of the CTOPP-2 based on children's receptive vocabulary, active HLE, passive HLE, and child-led HLE. A significant regression equation was found ( $F(4, 29) = 5.32, p < .01$ ), with an  $R^2$  of .42. As is seen in Table 11, both children's scores on the BPVS-3 and passive HLE were significant predictor variables in this regression equation. However, as is seen in Table 11, active HLE was not a significant predictor variable in this regression. It could be possible that all of the variance that active HLE explains is subsumed by receptive vocabulary. Nonetheless, these results indicate that passive HLE contributes to children's phonological awareness over and above receptive vocabulary.

### **Time spent in ECE and children's emergent literacy skills**

The second research question was concerned with identifying whether children's emergent literacy skills differ as a function of the amount of time that they have spent in ECE in New Zealand. It was hypothesised that children who spent longer in ECE would show higher levels of emergent literacy. Pearson product-moment correlation coefficients were computed to assess the relationship between children's time spent in ECE ( $M = 2.76$  years,  $SD = 1.04$ ) and children's results on the emergent literacy assessments. There was no support was found in favour of this hypothesis. In fact, the only significant correlation that was found was negative. For example, a negative correlation was found between children's time spent in ECE and the blending words subtest of the CTOPP-2 ( $r = -.34, n = 34, p < .05$ ). This relationship is captured in a scatter plot below (Figure 6).

To further test this hypothesis, an ANOVA was conducted to compare whether there was difference in children’s performance on these emergent literacy assessments depending on whether they had spent a) two years or less in ECE, b) two to three years in ECE, or c) three years or more years in ECE. Again, the only statistically significant difference was on the blending words subtest of the CTOPP-2 ( $f(2, 31) = 3.48, p = 0.04$ ). For example, post hoc comparisons using the Least Significant Difference indicate that the mean score on the blending words subtest for those children who have spent two years or less in ECE ( $M = 9.11, SD = 2.03$ ) was significantly higher than the mean score on the blending words subtest for those children who had spent three years or more in ECE ( $M = 7.53, SD = 1.06$ ).

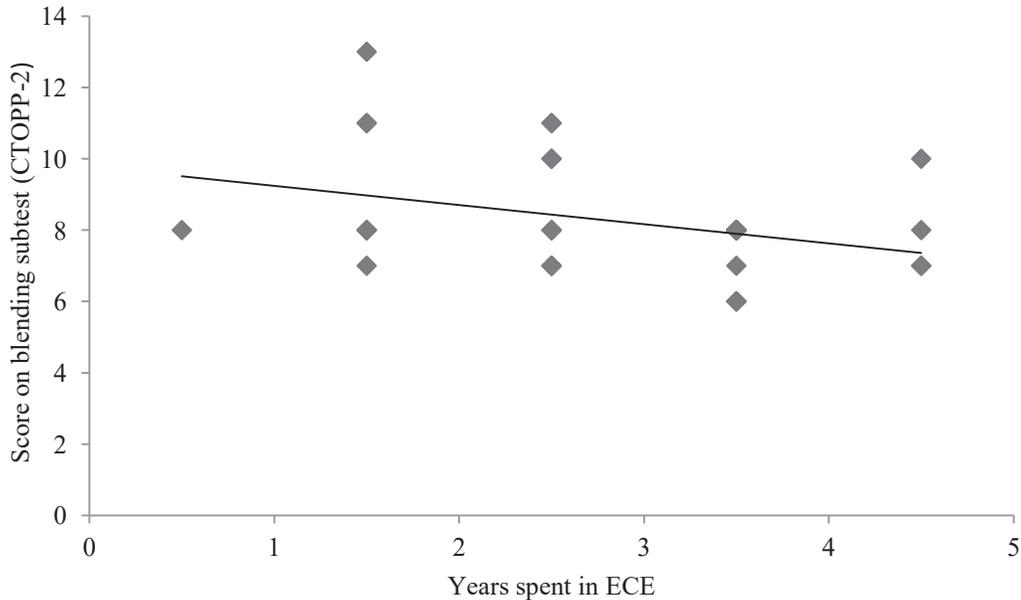


Figure 6. Scatter plot depicting years spent in ECE and children’s score on the blending words subtest of the CTOPP-2.

However, as was previously noted, caution must be taken when interpreting results related to the blending words subtest of the CTOPP-2. Nonetheless, these results suggest that there is no evidence against the null hypothesis (that there is no increase in children's emergent literacy skills with time spent in ECE). Therefore the null hypothesis cannot be rejected.

### **Exploring the role of parent education**

The next two research questions were specifically focused on exploring the relationship between a parent's level of education and their child's performance on the emergent literacy assessments, and on exploring the relationship between parent level of education and HLE provided to the child. Firstly, correlational analyses were conducted by converting parent's level of education (ranging from no qualification to postgraduate qualification) into ordinal scores (ranging from 0-4). It was hypothesised that there would be a positive relationship between parent educational level and children's emergent literacy. In order to test this, a Spearman's rank-order correlation was run. There was only one statistically significant correlation between parent's level of education and children's performance on the emergent literacy assessments. This was between parent education and the phoneme composite of the YARC, where a moderate, positive correlation was found ( $r_s = .37, n = 33, p = .03$ ).

To further test this hypothesis, an ANOVA was conducted to compare whether children's emergent literacy skills differed as a function of parent education level. Here, parent education was split into three groups (high school qualification or less, trade certificate or diploma, and bachelor's degree or higher). No significant differences were

found between the three groups on any of the measures of children's emergent literacy skills. Therefore, utilising both the correlational analyses and the ANOVA there is very limited evidence against the null hypothesis. As such, these results indicate that there is very limited evidence that children's emergent literacy skills differ as a function of their parent's level of education.

Next, correlational analyses were computed to assess whether there is a relationship between parent education level and the quality of the overall HLE. Spearman's rank order correlations were used and found that there were no significant correlations between parent level of education and any facet of HLE measured in the parent questionnaire.

Furthermore, an ANOVA was conducted to compare whether there was a significant difference in HLE provided by parents with high, medium and low levels of education. Here, again, parent education levels were split into three groups (high school qualification or less, trade certificate or diploma, and bachelor's degree or higher). No significant differences were found between the three groups on any facet of HLE measured in the parent questionnaire. Therefore, utilising both the correlational analyses and the ANOVA there is very limited evidence against the null hypothesis. As such, these results indicate that there is very limited evidence that HLE differs as a function of parent level of education.

## **Summary**

In summary, support was found for the first research question that investigated the relationship between HLE and children's emergent literacy skills. While child-led HLE did not seem to be related to children's emergent literacy, both active and passive HLE appear

to be differentially associated with children's emergent literacy skills at school entry in New Zealand. Additionally, no support was found for the hypothesis that children's emergent literacy skills would increase as a function of the amount of time that they spent in ECE. Instead, the only statistically significant correlation that was found was negative. This same pattern was found when an ANOVA was used. Furthermore, both correlational analyses and ANOVAs yielded very limited or no support for the relationship between parent education level and both HLE and children's emergent literacy skills.

## **Chapter Five: Discussion**

The following chapter discusses findings of this study in relation to previous, similar research. This will begin with a general discussion in which the overarching research aim, of identifying whether there is a relationship between the home literacy environment (HLE) and children's early literacy skills, will be explored. Following this, the research questions concerned with understanding the role of time spent in early childhood education (ECE) and parent education will be discussed. Finally, the limitations and wider implications of the present study will also be addressed before discussing directions for future research. This chapter will finish with a conclusion section that aims to recap the most salient elements of this thesis.

### **Exploring the relationship between HLE and emergent literacy**

While there is a considerable amount of international research that has explored the relationship between HLE and children's language development (Bus et al., 1995; Davidse et al., 2011; Levy et al., 2006; Melhuish et al., 2008; Merz et al., 2014; Rodriguez et al., 2009; Sénéchal & LeFevre, 2002), there is very limited New Zealand research that has done so. As was previously mentioned, the only known New Zealand study to explicitly investigate the relationship between HLE and emergent literacy was undertaken by Westerveld et al. (2015). Although Westerveld et al. (2015) found some correlation between HLE and children's letter name knowledge, they used a limited conceptualisation of HLE in their study.

This was an important limitation of their study given that other researchers have suggested that HLE is best thought of as a broad concept that encompasses a wide range of

literacy-based activities (Burgess et al., 2002). As such, the current study sought to investigate the relationship between HLE and children's emergent literacy skills within the New Zealand context by using a broader conceptualisation of HLE. In this study HLE was specifically conceptualised as having three main components, adapted from those described by Teale and Sulzby (1986). These included: a) an active component where children interact with adults on literacy-related activities such as storybook reading or alphabet teaching, b) a passive component where children learn about literacy by watching their family members model literacy-related behaviours, and c) another component whereby children engage in literacy-related activities on their own (such as watching educational television programmes). Therefore, while HLE was conceptualised as a 'whole', it was also of interest to investigate which components of HLE were most significantly associated with children's emergent literacy.

In order to address the first research question, which aimed to investigate whether there is a relationship between HLE and children's emergent literacy skills within the New Zealand context, HLE was first conceptualised as a whole construct. This meant that all three components were considered together. Here, statistically significant correlations were found between HLE and both children's receptive vocabulary and phonological awareness. Furthermore, simple linear regression indicated that the total HLE accounted for 30% of the variance in children's receptive vocabulary and 18% of the variance in children's phonological awareness at school entry. These results support the general consensus that HLE is an important contributor to the development of children's early literacy skills (Bracken & Fischel, 2008; Burgess et al., 2002; Niklas & Schneider, 2013; van Steensel, 2006).

While the whole HLE was associated with children's receptive vocabulary and phonological awareness, different associations emerge when HLE is broken down into the three main components. For example, active HLE was significantly and positively correlated with children's receptive vocabulary and some aspects of children's phonological awareness. However, when entered into a hierarchical regression analysis alongside passive HLE and child-led HLE some interesting patterns emerge. Here, active HLE was the only significant predictor of children's receptive vocabulary but passive HLE was the only significant predictor of children's overall phonological awareness (as measured by the CTOPP-2). This was over and above receptive vocabulary, which was also explained a significant amount of the variance in children's phonological awareness. These results sit in contrast to some of the previous research which has found that active HLE explains the greatest amount of variance in children's literacy scores (Burgess et al., 2002). However, it may be possible that all of the variance explained by active HLE in this study has been subsumed by receptive vocabulary. This explanation would match the findings from Kim, Im, and Kwon (2015). They found an indirect relationship between children's HLE at age two and their decoding skills at preschool age, with vocabulary at preschool age being the mediating variable.

Alternatively, perhaps this unexpected finding can be explained by taking a closer examination of the correlations found in this study. For example, two aspects of active HLE (shared book reading frequency and number of children's books in the family home) were not significantly correlated with any measure of children's emergent literacy. This is in contrast to much of the research which has found that story book reading is a robust predictor of children's receptive and expressive vocabulary, emergent literacy and later

reading achievement (Bracken & Fischel, 2008; Bus et al., 1995; Hindman, Connor, Jewkes, & Morrison, 2008; Saracho & Spodek, 2010; Sénéchal et al., 1998; Sénéchal et al., 2008). Additionally, only when these two components of active HLE were conceptualised together (as children's 'use and access of books in the family home') was there a significant, positive correlation with receptive vocabulary. Therefore, it is possible that active HLE would have been a significant predictor of children's phonological awareness had these two constructs shown significant correlations with children's emergent literacy.

However, it must be noted that the number of books in the family home was measured categorically in the parental questionnaire. To address this, ANOVAs were computed and found that there was a statistically significant difference for number of books in the family home for children's receptive vocabulary and some measures of phonological awareness. This difference was between children who had less than 25 children's books in the family home and children who had 26-50, 51-100 or 100+ children's books in the family home. Group differences were not found between the other three categories. These results indicate that there may be an effect on emergent literacy when children have access to very few children's books in the family home. However, this effect may become insignificant once the family owns a certain number of books. While this finding needs to be replicated with a larger sample size, this finding suggests that access to children's books in the family home may play an important role in emergent literacy development.

Nonetheless, the lack of association between shared story book reading frequency and emergent literacy development still suggests that simply reading storybooks to your child may not be enough in itself to promote literacy development. As is pointed out by van Steensel (2006) and Mol et al. (2008), the quality of this shared reading interaction is just as

important to consider. This is because observational studies have found that parents differ in the ways in which they read to their children (Leseman & de Jong, 1998; Sonnenchein & Munsterman, 2002). Therefore, it is possible to speculate that the findings of this study may have been different had the quality of shared reading experiences between caregiver and child also been explored.

Of the various components of active HLE measured in this study, playing words games and explicit alphabet teaching were most consistently associated with children's emergent literacy skills. Additionally, it was found that parents talking about what they had done and what they had read was positively correlated with children's receptive vocabulary. This finding concurs with that of both Huttenlocher et al. (2010) and Hoff (2003) who found that maternal speech is associated with language development. Further, a New Zealand study by Reese and Newcombe (2007) found that mothers from a wide range of educational backgrounds can be successfully taught how to use more elaborate speech with their toddlers. These researchers also found that, at 44 months of age, the children of the mothers who had received the training told richer narratives than the children of mothers who were in the control group. These findings confirm the need to explore wider aspects of HLE than simply measuring shared reading frequency.

Focusing on passive HLE, it was found that parent engagement in literacy activities was consistently correlated with children's emergent literacy skills. For example, parents' overall engagement in their own literacy activities was correlated with children's phonological awareness and children's ability to quickly recall numbers and letters. Additionally, parent book reading was correlated with children's receptive vocabulary. These results are partially in alignment with previous research. For instance, van Steensel

(2006), Bracken and Fischel (2008), and Sénéchal et al. (1996) also found an association with parent reading behaviour and children's receptive vocabulary. However, the correlation that was found between parent overall literacy engagement and children's phonological awareness was unusual given that previous research has not generally found support for this particular association (Bracken & Fischel, 2008; Burgess et al., 2002).

Explaining the correlation that was found between parents own engagement in literacy activities and children's emergent literacy creates another challenge. This is because there are a number of hypotheses that have previously been posited to account for this potential relationship. For example, it could be possible that social learning theory is at play whereby children learn to model their parent's literacy-related behaviours (Bandura, 1971; Stainthrop & Hughes, 2000). Additionally, observing one's family members frequently engaging in reading-related activities could communicate a positive message around literacy (Burgess et al., 2002). Yet, it could also be argued that parents who engage more frequently with literacy-based activities create richer active HLEs for their children because they place a higher value on literacy. While it is possible that all three of these hypotheses may operate concurrently, this study found some support for the third hypothesis.

For example, significant positive correlations were found between parents' overall engagement in their own literacy activities and active HLE. For instance, a strong, positive correlation was found between parents' overall engagement in literacy activities and the extent to which parents' play word games with their children. Additionally, a significant group difference on the quality of active HLE was found between parents who engaged in low and high levels of literacy-related activities. These results suggest that parents who

engage in higher levels of reading-related behaviour may place a higher value on literacy, and therefore may create richer HLEs. This concurs with previous research which has found that parental beliefs regarding the importance of literacy may be important in determining HLE (Baker & Scher, 2002; Sonnenschein et al., 1997; Weigel, Martin, & Bennett, 2006). However, in this study, no information was collected on parents' views about the importance of literacy learning. Therefore, further empirical research is needed to test this hypothesis.

Finally, no empirical support was found for the relationship between children's own engagement in literacy-based activities using technology, child-led HLE, and their emergent literacy skills at school entry. While some research has found support for the positive impact of engaging with such technologies (Foy & Mann, 2003; Hutchison et al., 2012; Linebarger & Piotrowski, 2009; Mares & Pan, 2013), the results from this study are similar to those of other studies (Linebarger & Walker, 2005; Robb et al., 2009; Zimmermann, Christakis, & Meltzoff, 2007). These studies have found negligible effects for engaging in technology-based activities when children are under the age of five. Here, the concept of the zone of proximal development is relevant (Vygotsky, 1978). For example, in order for children to benefit from technology it must be within their ability level (both with and without assistance from more experienced others). Put more simply, just because a child may be watching television or using a tablet does not mean that they understand what they are hearing or seeing (Northrop & Killeen, 2013).

## **Years spent in ECE**

The second hypothesis explored in this thesis was concerned with the notion that children's emergent literacy skills differ as a function of the number of years that they have spent in early ECE. While it was expected that time spent in ECE would be positively correlated with children's emergent literacy skills, no such correlation was found. Instead, the only significant correlation was negative and suggested that children who spent more time in ECE performed worse on the 'blending word' subtest of the CTOPP-2. Additionally, post-hoc comparisons after the use of an ANOVA demonstrated that children who had spent three or more years in ECE performed significantly lower than children who had spent two years or less in ECE on this same subtest.

These results were unexpected given that a considerable amount of research has found that participation in ECE is associated with positive outcomes in early academic and language skills (Barnett, 2001; Burger, 2010; Gilliam & Zigler, 2000; Magnuson et al., 2004; Mitchell, Wylie, & Carr, 2008; OECD, 2006). However, as was pointed out by Blaiklock (2013), international evidence suggests that the effectiveness of ECE is dependent on the quality of the programme offered (OECD, 2006; Sylva & Roberts, 2010). It must be noted that concerns had been raised regarding the previous ECE curriculum in New Zealand, *Te Whāriki* (Ministry of Education, 1996). Although the curriculum was revised in April 2017 (Ministry of Education, 2017), all children in this sample attended ECE under the previous curriculum framework. Therefore, the concerns related to the previous ECE framework are still relevant to the findings of this study.

For example, some New Zealand researchers called for more empirical evidence to investigate whether *Te Whāriki* was actually working to promote literacy development in early childhood (Blaiklock, 2010, 2013, 2017; Nuttall, 2005). As was stated by Nuttall (2005) there was “almost no empirical evidence examining whether *Te Whāriki* [was] actually making a difference to children’s learning and development relative to other models [of curriculum]” (p. 20). Further, an Education Review Office (ERO) report to the Ministry of Education questioned whether the curriculum was doing enough to promote literacy learning and development (ERO, 2011). For example, they found that the literacy activities in early childhood were “based on common practice rather than a deeper understanding of children’s learning progressions in literacy” (ERO, 2011, p.1). They also concluded that *Te Whāriki* did not specifically advise educators about how to best promote or teach early literacy.

In addition, all children in this sample attended ECE and yet there was still considerable variation in the emergent literacy skills that these children brought to school. This finding closely matches other New Zealand research, which has also indicated that there are disparities in the skills that New Zealand children have upon school entry (Arrow, 2010; McLachlan & Arrow, 2013; Nicholson, 2005; Rachmani, 2011; Tunmer et al., 2006). This is concerning because evidence suggests the gap in achievement does not reduce with time but rather widens (Caro, McDonald, & Willms, 2009; Heckman, 2006; Sirin, 2005). While it is logical to view ECE as an opportunity for early intervention to ensure that all children begin school on a level playing field, it appears that something may have been going amiss within the New Zealand context. Although the holistic and socio-cultural approach within *Te Whāriki* has its place, there seemed to be a lack of explicit focus around

promoting literacy development within the previous framework (ERO, 2011; McLachlan & Arrow, 2011; Zhang, 2016). It is promising that the Ministry of Education has reviewed and revised the ECE curriculum. However, future research will be needed to assess whether the changes made to *Te Whāriki* are working to increase literacy-related learning within ECE centres.

### **The role of parent education level**

This study found very limited support for the third hypothesis that there would be a relationship between parent education level and children's early literacy skills.

Correlational analyses found a significant, positive correlation between parent education level and children's scores on the phoneme awareness composite of the YARC. However, no other significant correlations between parent education level and children's emergent literacy were found. Furthermore, use of an ANOVA found no significant differences in children's emergent literacy depending on their parent's level of education. These results indicate that parent education level is not associated with children's early language development, which is in contrast to other research (Bracken & Fischel, 2008; Dollaghan et al., 1999). Additionally, the results from this study indicated that parent education level is not associated with the quality of HLE provided (hypothesis four). Again, this is in contrast to some other research (Bracken & Fischel, 2008; Rodriguez et al., 2009).

Both of these findings are of interest because they highlight that caution must be taken when considering how socio-cultural factors (such as parent education level or family income) are associated with both children's language development and the quality of HLE provided. As was noted by van Steensel (2006), often there is thought to be a one-to-one

assumption between family SES (often measured by parent education level) and children's literacy experiences in the home. Yet the results from the present study may provide further support for the notion that this assumption doesn't always hold true. Further, such results also highlight the importance of examining proximal variables of influence (such as HLE) rather than distal variables of influence (such as family SES). However, it must be noted that it is possible that the results from this study would have been different had the parent education level been more representative of the wider New Zealand population. This is a limitation of the present study that will soon be discussed in greater detail.

### **Limitations of the current study**

Perhaps the most notable limitation of this study was in the correlational research design. Due to the nature of the overarching research question, it would have been difficult to have employed an experimental research design. As such, a correlational research design was chosen. However, by doing so it is not possible to determine the direction of causation and it is not possible to eliminate confounding variables (Punch, 2014). Further, a longitudinal research design may have strengthened this research methodology. However, this was not possible given the time constraints associated with this research project.

An additional limitation of this research project involved the parent sample. This is because the sample included a greater proportion of parents with tertiary level education than would be expected. For example, descriptive statistics showed that 42.8% of the sample had a Bachelor's degree or higher. This is because only 29.8% of the adult population of New Zealand held a Bachelor's degree or higher in 2015 (Statistics New Zealand, 2016). Although this study found limited support for association between parent

education and children's emergent literacy skills, international research has found such an association (Bracken & Fischel, 2008; Dollaghan et al., 1999). Therefore, it could be possible that different patterns of correlation may have been found had there been a more representative parent sample. This is particularly because previous research has found parent education level to be an important predictor of HLE (Bracken & Fischel, 2008).

This unrepresentative sample occurred even though efforts were made to approach parents from a wide range of socioeconomic areas. This was done because of the link between parent education level and socioeconomic status (Chung, 2015). For example, a decile one school originally agreed to participate in the research. Unfortunately the school later withdrew consent after the teacher involved realised that she was too busy to participate. It is anticipated that the percentage of parents with Bachelor's degrees or higher would have been more representative of the wider New Zealand population had this school continued its involvement in the study. As such, this limitation was largely out of the control of the student researcher given the practical and time constraints associated with this research project. It is suggested that future research into this area aims to capture a larger sample size so that the risk of obtaining an unrepresentative sample is minimised.

Upon reflection, another limitation associated with this research project involved HLE questionnaire that was given to parents to complete. When completing the data analysis it became apparent that additional information regarding both ECE attendance and shared book reading experiences could have been useful. For example, it was not known how many hours the children spent in their ECE facility. This could have been very useful information when understanding the potential relationship between ECE and children's early literacy skills. Furthermore, as was noted by Mol et al. (2008) and van Steensel

(2006), the quality of shared story book reading is also important to consider. Therefore, future investigations into the contribution of HLE should also aim to include questions that capture how parents' engage their children when reading storybooks together.

### **Implications**

One of the most significant findings to come from this research is that it is important to use a wide conceptualisation of HLE when examining how HLE contributes to children's literacy development. While shared story book reading is certainly of importance (Bus et al., 1995), some researchers also suggest that it is important to consider the other aspects of HLE (Burgess et al., 2002; van Steensel, 2006). Therefore, given these findings, it is recommended that future research uses a quasi-experimental research design to investigate whether increasing parents' literacy-related activity positively influences children's emergent literacy skills. Such research could then potentially influence future policy and intervention initiatives.

Additionally, this study found mixed support for the relationship between the number of children's books in the family home and children's emergent literacy. For example, correlational analyses found that there was no association between these two variables. This finding concurs with that of Sénéchal and LeFevre (2002). Yet, ANOVAs suggested that there is some effect for the number of children's books in the family home. It may be that children who have very few books in the family home are less likely to develop strong emergent literacy skills, but that the effect of books in the family home becomes insignificant once a certain number of books are owned. While this finding reaffirms the notion that families should be support in accessing children's books, it also

cautions against the one-to-one assumption that families with more financial resources will provide richer HLEs (Auerbach, 2001; Purcell-Gates, 1996). This is particularly because, as was found in this study, that there are a number of aspects of HLE that contribute to emergent literacy development – not just physical access to books.

Here, there is an important theoretical implication. While models such as the FIM and FSM may have some utility in explaining the association between SES and children's academic outcomes, care is needed when applying these models. This is because there is a risk that if these models are incorrectly reported (such as in the media) the relationship between SES and children's academic outcomes can become oversimplified. For example, it may be that SES influences children's academic outcomes because of the stress associated with financial hardship rather than the physical access to books.

Nonetheless, evidence still suggests that, on the whole, children from low-SES families tend to arrive at school with lower levels of literate cultural capital (Nicholson, 2003; Tunmer et al., 2006). This places them at risk of experiencing difficulties learning to read because they are less likely to benefit from literacy instruction than children who arrive at school with high levels of literate cultural capital (Nicholson, 2003; Tunmer et al., 2013). However, the point argued here is that there needs to be a shift away from simply stating that children from low-SES families arrive at school less prepared for formal literacy instruction. More emphasis needs to be placed on unpacking exactly what is happening in the homes of low-SES families that is impacting children's literacy development. Doing so moves away from broad generalisations that low-SES families are not equipped to provide their children with the same literacy-based opportunities as high-SES families. Instead, focus is placed on the proximal variables that are the root of the

problem. Furthermore, intervention efforts that target these proximal variables are more likely to be effective given that proximal variables are thought to be the primary factors influencing development (Bronfenbrenner & Morris, 1998). Directions for future research based on this argument will be shortly discussed.

Additionally, given the findings from this study and concerns raised by other researchers, the Ministry of Education needs to closely monitor whether changes to the ECE curriculum are effective. It is concerning that this study found no positive relationship between ECE exposure and literacy skills. This is despite high levels of government funding into ECE each year (Blaiklock, 2013). While ECE is most certainly a time to promote play and exploration, ECE is also an opportunity to help all New Zealand children arrive at school with a powerful set of emergent literacy skills. Therefore, future research is needed to ensure that the changes made to *Te Whāriki* have been effective in reducing the disparity in emergent literacy skills brought to school by New Zealand children.

### **Directions for future research**

Using this particular piece of research as a base, it is possible to identify a number of avenues for future research. However, for the purposes of this thesis, only three possible avenues will be discussed. To begin, it was found that there was very limited research regarding the use of educational games on ‘tablets’ or ‘smart phones’ for children. This is concerning considering that a high percentage of parents report that their children play such games on a weekly basis (Ahearne et al., 2016; Kabali et al., 2015). Furthermore, “very few of the commercially available apps found in the educational section of app stores have evidence-based design input with demonstrated learning effectiveness” (Reid Chassiakos et

al., 2016, p.5). Therefore parents could be under the impression that playing such games is beneficial for their children's learning and development when, in reality, there is little or no evidence to support this. As such, it is recommended that future research focuses on experimentally testing whether playing these games impacts children's language or literacy development in any way.

Secondly, as was previously mentioned, there is a risk that current theoretical models can be misinterpreted, which can potentially lead to the oversimplification of complex relationships. While it is maintained that the family investment model (FIM) and family stress model (FSM) are useful in conceptualising the link between SES and child academic outcomes, it is suggested that further research is needed. Here, it is recommended that research uses these two models as a base for mixed-methods research (Punch, 2014). It is argued that research needs to explore which elements of these two models (i.e. financial hardship, access to resources, family stress, and time availability) are most closely associated with both HLE and children's literacy development. For example it may be that family stress or lack of time is more closely associated with children's language development than financial resources. In addition, such research could provide further evidence supporting the need to consider proximal variables (such as HLE) over distal variables (such as SES). This is because it is anticipated that families will not be monolithic in HLE that they provide.

Finally, it is also recommended that future research replicates the current research design using a larger sample size and with some variation in the questions used in the parental questionnaire. For example, it is recommended that future HLE questionnaires also include questions regarding the quality of the shared book reading, parental views on the

importance of literacy, and the amount of hours spent per week in ECE. These questions are important because their inclusion may influence both the presence and strength of correlations between HLE and children's literacy development. Additionally, utilising a larger sample size may also influence the strength of correlations and reduce the risk of obtaining an unrepresentative sample. Replicating this study with these modifications could give further support to the findings reported here.

## **Conclusion**

In conclusion, this study aimed to explore the relationship between HLE and children's emergent literacy within the New Zealand context using a wide conceptualisation of HLE. This overarching research aim formed the first research question. It was hypothesised that significant, positive correlations would be found between all three aspects of HLE (active, passive, and child-led) and children's emergent literacy. In sum, support was found for the relationship between the total HLE and children's receptive vocabulary and phonological awareness. However, when the various components of HLE were broken down it became clear that some aspects of HLE may be more significant than others. In particular, both active and passive HLE were positively correlated with children's emergent literacy. No support was found for the role of children's own engagement with literacy-activities using technology, yet this was not unprecedented given previous research.

However no correlation was found between the shared book reading frequency and children's emergent literacy. This was unexpected given that this variable has been consistently used in previous research as a proxy for HLE. There was no correlation

between the number of children's books in the family home and children's emergent literacy. Yet, there was some effect for the number of books in the home when ANOVAs were computed. It may be that the number of children's books in the family home is only of significant importance when the family has access to very few books.

Nonetheless, it is arguable that using these two constructs (shared storybook reading and number of children's books in the home) in isolation to capture HLE creates a risk that the relationship between HLE and children's literacy development will not portrayed accurately. Therefore, one of the most significant findings to come from this study was the importance of viewing HLE as a broad concept that encompasses many different literacy-based activities within the home. This has implications for intervention and policy because it demonstrates that tapping into other dimensions of HLE, such as playing word games or increasing parents' own engagement with literacy, may also be important.

Additionally, this study found no support for the commonly held assumption that time spent in ECE is associated with gains in academic performance and literacy development. This formed the second research question, where again it was hypothesised that time spent in ECE would be positively correlated with children's emergent literacy. This is a particularly significant finding given that a number of local researchers have raised concerns around the current ECE framework operating within New Zealand. Furthermore, it was found that there was a wide disparity in children's emergent literacy skills upon school entry despite all children in this sample attending ECE before starting school. This finding matches other New Zealand research.

Therefore, it is arguable that the previous ECE curriculum was failing to reduce the disparities in children's emergent literacy. Ensuring that children arrive at school with equitable levels of emergent literacy is very important. This is because those children with lower levels of emergent literacy and cultural capital at school entry are less likely to benefit from formal reading instruction than peers with high levels of these skills and knowledge. Further, boosting children's emergent literacy in ECE is likely to reduce the chance of negative Matthew effects and minimise the comparatively wide gap in literacy achievement that currently plagues the current educational landscape of New Zealand. Therefore it is recommended that future research closely monitors the new ECE curriculum to see whether it is working to promote the development of emergent literacy.

This study also found very limited support for the association between parent education level and both children's early literacy skills and HLE provided (research questions three and four). This finding was unexpected given that previous research has generally identified parental education as an important predictor of HLE and children's academic performance. While additional research with a larger sample size is probably needed to re-test this hypothesis (given the unrepresentative parent sample), some comments can still be made. Most notably, this finding cautions against the one-to-one assumption that is often made with regards to parent education, or SES, and children's academic outcomes. Although there does seem to be a relationship between these variables, care is needed when interpreting this relationship because there is a risk of oversimplification. As such, it is recommended that future research uses the FIM and FSM models as a base to thoroughly explore which elements of SES are most closely tied to both HLE and children's language and academic development.

Additionally, it can be noted that this research finding confirms the importance of considering proximal variables (such as HLE) over distal variables (such as SES or parent education level). This is linked to Bronfenbrenner's bioecological model whereby those variables closest to the child (i.e. playing word games with parents) have the greatest influence on a child's development. In contrast, while distal variables certainly play a role (perhaps in influencing more proximal variables) their influence is less pronounced. Further, by focusing on proximal variables there is less risk of generalisation (i.e. that low-SES families are less equipped to provide rich-HLEs). This is important because it recognises that families from low or high SES backgrounds are not monolithic in HLEs that they provide.

In sum, this study has thrown light on some of the complexity involved in understanding how HLE is related to emergent literacy in the New Zealand context. To the best of the writer's knowledge, it is one of only two New Zealand studies to have investigated the relationship between HLE and children's emergent literacy. It built on the findings from Westerveld et al. (2015) by using a wider conceptualisation of HLE. It is hoped that future New Zealand research continues to investigate the relationship between emergent literacy and HLE given that New Zealand children continue to arrive at school with disparities in their essential emergent literacy skills. Emergent literacy is strongly associated with later reading and literacy outcomes. Therefore with greater understanding of the role of HLE in facilitating emergent literacy, future intervention efforts will be better able to provide equitable outcomes for New Zealand children.

## References

- Adams, M. J. (2001). Alphabetic anxiety and explicit, systematic phonics instruction. In S. B. Neuman & G. J. Duncan (Eds.), *Handbook of early literacy research* (pp. 66-80). New York, NY: Guilford.
- Ahearne, C., Dilworth, S., Rollings, R., Livingston, V., & Murray, D. (2016). Touch-screen technology usage in toddlers. *Archives of Disease in Childhood, 101*(2), 181-183. doi: 10.1136/archdischild-2015-309278
- Anderson, D. R., & Hanson, K. G. (2010). From blooming, buzzing confusion to media literacy: The early development of television viewing. *Developmental Review, 30*(2), 239-255. doi: 10.1016/j.dr.2010.03.004
- Aram, D., Korat, O., Saiegh-Haddad, E., Arafat, S. H., Khoury, R., & Elhija, J. A. (2013). Early literacy among Arabic-speaking kindergartners: The role of socioeconomic status, home literacy environment and maternal mediation of writing. *Cognitive Development, 28*(3), 193-208. doi: 10.1016/j.cogdev.2012.10.003
- Arrow, A. W. (2010). Emergent literacy skills in New Zealand kindergarten children: Implications for teaching and learning in ECE settings. *He Kupu, 2*(3), 57-69.
- Auerbach, E. (2001). Toward a social-contextual approach to family literacy. In S. W. Beck & L. N. Olah (Eds.), *Language and literacy. Beyond here and now* (pp. 381-397). Cambridge, MA: Harvard Educational Review.
- Baker, L., & Scher, D. (2002). Beginning readers' motivation for reading in relation to parental beliefs and home reading experiences. *Reading Psychology, 23*(4), 239-269. doi: 10.1080/713775283
- Bandura, A. (1971). *Social learning theory*. New York, NY: General Learning Press.

- Barnett, W. S. (2001). Preschool education for economically disadvantaged children: Effects on reading achievement and related outcomes. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (Vol. 1, pp. 421-443). New York, NY: Guilford.
- Barr, R., & Linebarger, D. N. (2017). Preface. In R. Barr & D. N. Linebarger (Eds.), *Media exposure during infancy and early childhood: The effects of content and context on learning and development* (pp. xi-xvi). Cham, Switzerland: Springer.
- Blaiklock, K. (2010). Te Whāriki, the New Zealand early childhood curriculum: Is it effective? *International Journal of Early Years Education*, 18(3), 201-212. doi: 10.1080/09669760.2010.521296
- Blaiklock, K. (2013). What are children learning in early childhood education in New Zealand? *Australasian Journal of Early Childhood*, 38(2), 51-56.
- Blaiklock, K. (2017). Is New Zealand a world leader in early childhood education? An examination of the empirical evidence in recent reports. *Australasian Journal of Early Childhood*, 42(3), 38-45. doi: 10.23965/ajec.42.3.05
- Bowey, J. A. (1995). Socioeconomic status differences in preschool phonological sensitivity and first-grade reading achievement. *Journal of Educational Psychology*, 87(3), 476-487. doi: 10.1037/0022-0663.87.3.476
- Bracken, S. S., & Fischel, J. E. (2008). Family reading behavior and early literacy skills in preschool children from low-income backgrounds. *Early Education and Development*, 19(1), 45-67. doi: 10.1080/10409280701838835
- Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology*, 53(1), 371-399. doi: 10.1146/annurev.psych.53.100901.135233

- Bradley, R. H., Corwyn, R. F., Burchinal, M., McAdoo, H. P., & Coll, C. G. (2001). The home environments of children in the United States part II: Relations with behavioural development through age thirteen. *Child Development, 72*(6), 1868-1886. doi: 10.1111/1467-8624.t01-1-00383
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In R. M. Lerner (Ed.), *Handbook of child psychology: Theoretical models of human development* (5 ed., Vol. 1, pp. 993-1028). New York, NY: Wiley.
- Burger, K. (2010). How does early childhood care and education affect cognitive development? An international review of the effects of early interventions for children from different social backgrounds. *Early Child Research Quarterly, 25*(2), 140-165. doi: 10.1016/j.ecresq.2009.11.001
- Burgess, S. R., Hecht, S. A., & Lonigan, C. J. (2002). Relations of the home literacy environment (HLE) to the development of reading-related abilities: A one-year longitudinal study. *Reading Research Quarterly, 37*(4), 408-426. doi: 10.1598/rrq.37.4.4
- Bus, A. G., & van Ijzendoorn, M. H. (1999). Phonological awareness and early reading: A meta-analysis of experimental training studies. *Journal of Educational Psychology, 91*(3), 403-414. doi: 10.1037//0022-0663.91.3.403
- Bus, A. G., van Ijzendoorn, M. H., & Pellegrini, A. D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of Educational Research, 65*(1), 1-21. doi: 10.3102/00346543065001001

- Caro, D. H., McDonald, J. T., & Willms, J. D. (2009). Socio-economic status and academic achievement trajectories from childhood to adolescence. *Canadian Journal of Education, 32*(3), 558-590.
- Catts, H. W., & Kamhi, A. G. (2005). *Language and reading disabilities* (2 ed.). Boston, MA: Pearson.
- Chamberlain, M. (2007). *Reading literacy in New Zealand: An overview of New Zealand's results from the Progress in Reading Literacy Study (PIRLS) 2005/2006*. Wellington, New Zealand.
- Chung, K. K. H. (2015). Socioeconomic status and academic achievement. *International Encyclopedia of the Social & Behavioural Sciences, 22*, 924-930. doi: 10.1016/b978-0-08-097086-8.92141-x
- Coley, R. L., Lombardi, C. M., & Sims, J. (2015). Long-term implications of early education and care programs for Australian children. *Journal of Educational Psychology, 107*(1), 284-299. doi: 10.1037/a0037456
- Conger, R. D., & Conger, K. J. (2002). Resilience in Midwestern families: Selected findings from the first decade of a prospective, longitudinal study. *Journal of Marriage and Family, 64*(2), 361-673. doi: 0.1111/j.1741-3737.2002.00361.x
- Conger, R. D., Conger, K. J., & Martin, M. J. (2010). Socioeconomic status, family processes, and individual development. *Journal of Marriage & Family, 72*(3), 685-704. doi: 10.1111/j.1741-3737.2010.00725.x
- Conger, R. D., & Donnellan, M. B. (2007). An interactionist perspective on the socioeconomic context of human development. *Annual Review of Psychology, 58*(1), 175-199. doi: 10.1146/annurev.psych.58.110405.085551

- Conger, R. D., Wallace, L. E., Sun, Y., Simons, R. L., McLoyd, V. C., & Brody, G. H. (2002). Economic pressure in African American families: A replication and extension of the family stress model. *Dev Psychol*, 38(2), 179-193. doi: 10.1037//0012-1649.38.2.179
- Cunningham, A. E., & Stanovich, K. E. (1997). Early reading acquisition and its relation to reading experience and ability 10 years later. *Dev Psychol*, 33(6), 934-345. doi: 10.1037/0012-1649.33.6.934
- Davidse, N. J., de Jong, M. T., Bus, A. G., Huijbregts, S. C., & Swaab, H. (2011). Cognitive and environmental predictors of early literacy skills. *Reading & Writing*, 24(4), 395-412. doi: 10.1007/s11145-010-9233-3
- Dollaghan, C. A., Campbell, T. F., Paradise, J. L., Feldman, H. M., Janosky, J. E., Pitcairn, D. N., & Kurs-Lasky, M. (1999). Maternal education and measures of early speech and language. *Journal of Speech Language and Hearing Research*, 42(6), 1432-1443. doi: 10.1044/jslhr.4206.1432
- Dunn, L. M., Dunn, D. M., & NFER. (2009). *The British Picture Vocabulary Scale* (3rd ed.). London, UK: GL Assessment.
- ERO. (2011). *Literacy in early childhood services: Teaching and learning*. Wellington, New Zealand.
- Evans, G. W. (2004). The Environment of Childhood Poverty. *American Psychologist*, 59(2), 77-92. doi: 10.1037/0003-066X.59.2.77
- Foy, J. G., & Mann, V. (2003). Home literacy environment and phonological awareness in preschool children: Differential effects for rhyme and phoneme awareness. *Applied Psycholinguistics*, 24(01). doi: 10.1017/s0142716403000043

- Gettinger, M., & Stoiber, K. (2008). Applying a response-to-intervention model for early literacy development in low-income children. *Topics in Early Childhood Special Education, 27*(4), 198-213. doi: 10.1177/0271121407311238
- Gilliam, W. S., & Zigler, E. F. (2000). A critical meta-analysis of all evaluations of state-funded preschool from 1977 to 1998: Implications for policy, service delivery and program evaluation. *Early Childhood Research Quarterly, 15*(4), 441-473. doi: 10.1016/s0885-2006(01)00073-4
- Grieshaber, S., Shield, P., Luke, A., & Macdonald, S. (2011). Family literacy practices and home literacy resources: An Australian pilot study. *Journal of Early Childhood Literacy, 12*(2), 113-138. doi: 10.1177/1468798411416888
- Guo, G., & Harris, K. M. (2000). The mechanisms mediating the effects of poverty on children's intellectual development. *Demography, 37*(4), 431-447. doi: 10.1353/dem.2000.0005
- Hampden-Thompson, G. (2013). Family policy, family structure, and children's educational achievement. *Soc Sci Res, 42*(3), 804-817. doi: 10.1016/j.ssresearch.2013.01.005
- Haney, M., & Hill, J. (2004). Relationships between parent-teaching activities and emergent literacy in preschool children. *Early Child Development and Care, 174*(3), 215-228. doi: 10.1080/0300443032000153543
- Harlaar, N., Hayiou-Thomas, M. E., Dale, P. S., & Plomin, R. (2008). Why do preschool language abilities correlate with later reading? A twin study. *Journal of Speech Language and Hearing Research, 51*, 688-705. doi: 10.1044/1092-4388(2008/049)
- Hart, B., & Risley, T. (1995). *Meaningful differences in the everyday experiences of young American children*. Baltimore, MD: Brookes.

- Heckman, J. J. (2006). Skill formation and the economics of investing in disadvantaged children. *Science*, *312*(5782), 1900-1902. doi: 10.1126/science.1128898
- Hindman, A. H., Connor, C. M., Jewkes, A. M., & Morrison, F. J. (2008). Untangling the effects of shared book reading: Multiple factors and their associations with preschool literacy outcomes. *Early Childhood Research Quarterly*, *23*(3), 330-350. doi: 10.1016/j.ecresq.2008.01.005
- Hipp, D., Gerhardstein, P., Zimmermann, L., Moser, A., Taylor, G., & Barr, R. (2017). The dimensional divide: Learning from TV and touchscreens during early childhood. In R. Barr & D. N. Linebarger (Eds.), *Media exposure during infancy and early childhood: The effects of content and context on learning and development* (pp. 33-54). Cham, Switzerland: Springer.
- Hoff, E. (2003). The specificity of environmental influence: Socioeconomic status affects early vocabulary development via maternal speech. *Child Development*, *74*(5), 1368-1378. doi: 10.1111/1467-8624.00612
- Hoff, E. (2006). How social contexts support and shape language development. *Developmental Review*, *26*(1), 55-88. doi: 10.1016/j.dr.2005.11.002
- Hoff, E. (2013). Interpreting the early language trajectories of children from low-SES and language minority homes: Implications for closing achievement gaps. *Dev Psychol*, *49*(1), 4-14. doi: 10.1037/a0027238
- Hoff, E., Laursen, B., & Bridges, K. (2012). Measurement and model building in studying the influence of socioeconomic status on child development. In M. Lewis & L. Mayes (Eds.), *A developmental environmental measurement handbook* (pp. 590-606). Cambridge, England: Cambridge University Press.

- Hoff, E., & Ribot, K. M. (2015). Language development: Influence of socio-economic status. *International Encyclopedia of the Social & Behavioural Sciences*, 13, 324-328. doi: 10.1016/b978-0-08-097086-8.23132-2
- Hood, M., Conlon, E., & Andrews, G. (2008). Preschool home literacy practices and children's literacy development: A longitudinal analysis. *Journal of Educational Psychology*, 100(2), 252-271. doi: 10.1037/0022-0663.100.2.252
- Hulme, C., Stothard, S. E., Clarke, P., Bowyer-Crane, C., Harrington, A., Truelove, E., & Snowling, M. J. (2012). *York assessment of reading for comprehension early reading: Australian edition manual*. London, UK: GL Assessment.
- Hutchison, A., Beschorner, B., & Schmidt-Crawford, D. (2012). Exploring the use of the iPad for literacy learning. *The Reading Teacher*, 66(1), 15-23. doi: 10.1002/trtr.01090
- Huttenlocher, J., Vasilyeva, M., Waterfall, H. R., Vevea, J. L., & Hedges, L. V. (2007). The varieties of speech to young children. *Dev Psychol*, 43(5), 1062-1083. doi: 10.1037/0012-1649.43.5.1062.supp
- Huttenlocher, J., Waterfall, H., Vasilyeva, M., Vevea, J., & Hedges, L. V. (2010). Sources of variability in children's language growth. *Cogn Psychol*, 61(4), 343-365. doi: 10.1016/j.cogpsych.2010.08.002
- Justice, L. M., Bowles, R. P., & Skibbe, L. E. (2006). Measuring preschool attainment of print-concept knowledge: A study of typical and at-risk 3- to 5-year-old children using item response theory. *Language, Speech, and Hearing Services in Schools*, 37(3), 224-235. doi: 10.1044/0161-1461(2006/024)

- Kabali, H. K., Irigoyen, M. M., Nunez-Davis, R., Budacki, J. G., Mohanty, S. H., Leister, K. P., & Bonner Jr, R. L. (2015). Exposure and use of mobile media devices by young children. *Pediatrics*, *136*(6), 1044-1050. doi: 10.1542/peds.2015-2151d
- Kendeou, P., van den Broek, P., White, M. J., & Lynch, J. S. (2009). Predicting reading comprehension in early elementary school: The independent contributions of oral language and decoding skills. *Journal of Educational Psychology*, *101*(4), 765-778. doi: 10.1037/a0015956
- Kim, S., Im, H., & Kwon, K.-A. (2015). The role of home literacy environment in toddlerhood in development of vocabulary and decoding skills. *Child & Youth Care Forum*, *44*(6), 835-852. doi: 10.1007/s10566-015-9309-y
- Kishiyama, M. M., Boyce, W. T., Jimenez, A. M., Perry, L. M., & Knight, R. T. (2009). Socioeconomic disparities affect prefrontal function in children. *Journal of Cognitive Neuroscience*, *21*(6), 1106-1115. doi: 10.1162/jocn.2009.21101
- Landerl, K., & Wimmer, H. (2008). Development of word reading fluency and spelling in a consistent orthography: An 8-year follow-up. *Journal of Educational Psychology*, *100*(1), 150-161. doi: 10.1037/0022-0663.100.1.150
- Lapierre, M. A., Piotrowski, J. T., & Linebarger, D. N. (2010). *Measuring the home media environment of young children: Results from a nationally representative sample of American families*. Philadelphia, PA: Annenberg School for Communication.
- Leseman, P. P. M., & de Jong, P. F. (1998). Home literacy: Opportunity, instruction, cooperation and social-emotional quality predicting early reading achievement. *Reading Research Quarterly*, *33*(3), 294-318. doi: 10.1598/rrq.33.3.3

- Levy, B. A., Gong, Z., Hessels, S., Evans, M. A., & Jared, D. (2006). Understanding print: Early reading development and the contributions of home literacy experiences. *J Exp Child Psychol*, 93(1), 63-93. doi: 10.1016/j.jecp.2005.07.003
- Linebarger, D. L., & Piotrowski, J. T. (2009). TV as storyteller: How exposure to television narratives impacts at-risk preschoolers' story knowledge and narrative skills. *British Journal of Developmental Psychology*, 27(1), 47-69. doi: 10.1348/026151008x400445
- Linebarger, D. L., & Walker, D. (2005). Infants' and toddlers' television viewing and language outcomes. *American Behavioral Scientist*, 48(5), 624-645. doi: 10.1177/0002764204271505
- Linver, M. R., Brooks-Gunn, J., & Kohen, D. E. (2002). Family processes as pathways from income to young children's development. *Dev Psychol*, 38(5), 719-734. doi: 10.1037//0012-1649.38.5.719
- Lonigan, C. J., Burgess, S. R., & Anthony, J. L. (2000). Development of emergent literacy and early reading skills in preschool children: Evidence from a latent-variable longitudinal study. *Dev Psychol*, 36(5), 596-613. doi: 10.1037//0012-1649.36.5.596
- Lundberg, I., Larsman, P., & Strid, A. (2010). Development of phonological awareness during the preschool year: The influence of gender and socio-economic status. *Reading and Writing*, 25(2), 305-320. doi: 10.1007/s11145-010-9269-4
- Magnuson, K., Meyers, M. K., Ruhm, C. J., & Waldfogel, J. (2004). Inequality in preschool education and school readiness. *American Educational Research Journal*, 41(1), 115-157. doi: 10.3102/00028312041001115

- Mares, M.-L., & Pan, Z. (2013). Effects of Sesame Street: A meta-analysis of children's learning in 15 countries. *Journal of Applied Developmental Psychology, 34*(3), 140-151. doi: 10.1016/j.appdev.2013.01.001
- McLachlan, C., & Arrow, A. W. (2011). Literacy in the early years in New Zealand: Policies, politics and pressing reasons for chance. *Literacy, 45*(3), 126-133. doi: 10.1111/j.1741-4369.2011.00598.x
- McLachlan, C., & Arrow, A. W. (2013). Promoting alphabet knowledge and phonological awareness in low socioeconomic child care settings: a quasi experimental study in five New Zealand centers. *Reading and Writing, 27*(5), 819-839. doi: 10.1007/s11145-013-9467-y
- McLaughlin, T., Aspden, K., & Snyder, P. (2016). Intentional teaching as a pathway to equity in early childhood education: Participation, quality, and equity. *New Zealand Journal of Educational Studies, 51*(2), 175-195. doi: 10.1007/s40841-016-0062-z
- McLoyd, V. C. (1998). Socioeconomic disadvantage and child development. *American Psychologist, 53*(2), 185-204. doi: 10.1037/0003-066x.53.2.185
- Melhuish, E. C., Phan, M. B., Sylva, K., Sammons, P., Siraj-Blatchford, I., & Taggart, B. (2008). Effects of the home learning environment and preschool center experience upon literacy and numeracy development in early primary school. *Journal of Social Issues, 64*(1), 95-114. doi: 10.1111/j.1540-4560.2008.00550.x
- Merz, E. C., Landry, S. H., Williams, J. M., Barnes, M. A., Eisenberg, N., Spinrad, T. L., . . . the School Readiness Research, C. (2014). Associations among parental education, home environment quality, effortful control, and preacademic knowledge. *Journal of Applied Developmental Psychology, 35*(4), 304-315. doi: 10.1016/j.appdev.2014.04.002

- Mistry, R. S., Benner, A. D., Biesanz, J. C., Clark, S. L., & Howes, C. (2010). Family and social risk, and parental investments during the early childhood years as predictors of low-income children's school readiness outcomes. *Early Childhood Research Quarterly, 25*(4), 432-449. doi: 10.1016/j.ecresq.2010.01.002
- Mitchell, L., Wylie, C., & Carr, M. (2008). *Outcomes of Early Childhood Education: Literacy Review*. Wellington, New Zealand.
- Ministry of Education. (1996). *Te Whariki: He whariki matauranga mo nga mokopuna o Aotearoa: Early childhood curriculum*. Wellington, New Zealand.
- Ministry of Education. (2015). Annual ECE data summary report. Retrieved from [www.educationcounts.govt.nz/statistics/early-childhood-education/annual-ece-summary-reports](http://www.educationcounts.govt.nz/statistics/early-childhood-education/annual-ece-summary-reports)
- Ministry of Education. (2017). *Te Whariki: He whariki matauranga mo nga mokopuna o Aoteroa: Early childhood curriculum*. Wellington, New Zealand.
- Mol, S. E., Bus, A. G., de Jong, M. T., & Smeets, D. J. H. (2008). Added value of dialogic parent-child book readings: A meta-analysis. *Early Education and Development, 19*(1), 7-26. doi: 10.1080/10409280701838603
- Mullis, I. V. S., Martin, M. O., Kennedy, A. M., & Foy, P. (2007). *PIRLS 2006 international report*. Boston, MA.
- Muter, V., Hulme, C., Snowling, M. J., & Stevenson, J. (2004). Phonemes, rimes, vocabulary, and grammatical skills as foundations of early reading development: Evidence from a longitudinal study. *Dev Psychol, 40*(5), 665-681. doi: 10.1037/0012-1649.40.5.665
- Nash, R. (2001). Cultural capital and competent children. *The First Years: New Zealand Journal of Infant and Toddler Education, 3*, 13-16.

- Neuman, S. B., & Dickinson, D. K. (Eds.). (2001). *Handbook of early literacy research*. New York, NY: Guilford.
- Nicholson, T. (2003). Risk factors in learning to read. In B. Foorman (Ed.), *Preventing and remediating reading difficulties: Bringing science to scale* (pp. 165-193). Timonium, MD: York Press.
- Nicholson, T. (2005). *At the cutting edge: The importance of phonemic awareness in learning to read and spell*. Wellington, New Zealand: NZCER Press.
- Niklas, F., & Schneider, W. (2013). Home literacy environment and the beginning of reading and spelling. *Contemporary Educational Psychology, 38*(1), 40-50. doi: 10.1016/j.cedpsych.2012.10.001
- Northrop, L., & Killeen, E. (2013). A framework for using iPads to build early literacy skills. *The Reading Teacher, 66*(7), 531-537. doi: 10.1002/trtr.1155
- Nuttall, J. (2005). Looking back, looking forward: Three decades of early childhood curriculum development in Aotearoa New Zealand. *Curriculum Matters, 1*(1), 12-28.
- OECD. (2006). *Starting strong II: Early childhood education and care*. Paris, France.
- Protopapas, A., Sideridis, G. D., Mouzaki, A., & Simos, P. G. (2011). Matthew effects in reading comprehension: Myth or reality? *J Learn Disabil, 44*(5), 402-420. doi: 10.1177/0022219411417568
- Punch, K. F. (2006). *Developing effective research proposals* (2 ed.). London, England: Sage Publications Ltd.
- Punch, K. F. (2014). *Introduction to social research: Qualitative and quantitative approaches* (3rd ed.). Los Angeles, CA: SAGE Publications.

- Purcell-Gates, V. (1996). Stories, coupons, and the "TV guide": Relationships between home literacy experiences and emergent literacy knowledge. *Reading Research Quarterly, 31*(4), 406-428. doi: 10.1598/rrq.31.4.4
- Rachmani, R. (2011). *The effects of a phonological awareness and alphabet knowledge intervention on four year old kindergarten children*. (Unpublished master's thesis).
- Raikes, H., Pan, B. A., Luze, G., Tamis-LeMonda, C. S., Brooks-Gunn, J., Constantine, J., . . . Rodriguez, E. T. (2006). Mother-child bookreading in low-income families: Correlates and outcomes during the first three years of life. *Child Dev, 77*(4), 924-953. doi: 10.1111/j.1467-8624.2006.00911.x
- Raviv, T., Kessenich, M., & Morrison, F. J. (2004). A mediational model of the association between socioeconomic status and three-year-old language abilities: The role of parenting factors. *Early Childhood Research Quarterly, 19*(4), 528-547. doi: 10.1016/j.ecresq.2004.10.007
- Reese, E., & Newcombe, R. (2007). Training mothers in elaborative reminiscing enhances children's autobiographical memory and narrative. *Child Development, 78*(4), 1153-1170. doi: 10.1111/j.1467-8624.2007.01058.x
- Repetti, R. L., Taylor, S. E., & Seeman, T. E. (2002). Risky families: Family social environments and the mental and physical health of offspring. *Psychological Bulletin, 128*(2), 330-366. doi: 10.1037//0033-2909.128.2.230
- Robb, M. B., Richert, R. A., & Wartella, E. A. (2009). Just a talking book? Word learning from watching baby videos. *British Journal of Developmental Psychology, 27*(1), 27-45. doi: 10.1348/026151008x320156
- Roberts, J., Jurgens, J., & Burchinal, M. (2005). The role of home literacy practices in preschool children's language and emergent literacy skills. *Journal of Speech*

*Language and Hearing Research*, 48(2), 345-359. doi: 10.1044/1092-4388(2005/024)

- Rodriguez, E. T., Tamis-LeMonda, C. S., Spellmann, M. E., Pan, B. A., Raikes, H., Lugo-Gil, J., & Luze, G. (2009). The formative role of home literacy experiences across the first three years of life in children from low-income families. *Journal of Applied Developmental Psychology*, 30(6), 677-694. doi: 10.1016/j.appdev.2009.01.003
- Saracho, O. N., & Spodek, B. (2010). Parents and children engaging in storybook reading. *Early Child Development and Care*, 180(10), 1379-1389. doi: 10.1080/03004430903135605
- Scarborough, H. S. (2001). Connecting early language and literacy to later reading (dis)abilities: Evidence, theory and practices. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 97-110). New York, NY: Guildford.
- Scarborough, H. S., & Dobrich, W. (1994). On the efficacy of reading to preschoolers. *Developmental Review*, 14(3), 245-302. doi: 10.1006/drev.1994.1010
- Sénéchal, M. (2006). Testing the home literacy model: Parent involvement in kindergarten is differentially related to grade 4 reading comprehension, fluency, spelling, and reading for pleasure. *Scientific Studies of Reading*, 10(1), 59-87. doi: 10.1207/s1532799xssr1001\_4
- Sénéchal, M., & LeFevre, J.-A. (2002). Parental involvement in the development of children's reading skill: A five-year longitudinal study. *Child Development*, 73(2), 445-460. doi: 10.1111/1467-8624.00417

- Sénéchal, M., LeFevre, J.-A., Hudson, E., & Lawson, E. P. (1996). Knowledge of storybooks as a predictor of young children's vocabulary. *Journal of Educational Psychology, 88*(3), 520-536. doi: 10.1037/0022-0663.88.3.520
- Sénéchal, M., LeFevre, J.-A., Thomas, E. M., & Daley, K. E. (1998). Differential effects of home literacy experiences on the development of oral and written language. *Reading Research Quarterly, 33*(1), 96-116. doi: 10.1598/rrq.33.1.5
- Sénéchal, M., Pagan, S., Lever, R., & Ouellette, G. P. (2008). Relations among the frequency of shared reading and 4-year-old children's vocabulary, morphological and syntax comprehension, and narrative skills. *Early Education and Development, 19*(1), 27-44. doi: 10.1080/10409280701838710
- Shankweiler, D., & Fowler, A. E. (2004). Questions people ask about the role of phonological processes in learning to read. *Reading and Writing, 17*(5), 483-515. doi: 10.1023/b:read.0000044598.81628.e6
- Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research, 75*(3), 417-453. doi: 10.3102/00346543075003417
- Sirin, S. R., & Gupta, T. (2015). School achievement as moderated by sociodemographic status: The US case. *International Encyclopedia of the Social & Behavioural Sciences, 21*, 42-47. doi: 10.1016/b978-0-08-097086-8.23102-4
- Statistics New Zealand. (2015). 2013 Census - Major ethnic groups in New Zealand. Retrieved from <http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/infographic-culture-identity.aspx>

- Statistics New Zealand. (2016). Adult educational attainment. Retrieved from [www.stats.govt.nz/browse\\_for\\_stats/snapshots-of-nz/nz-progress-indicators/home/social/adult-educational-attainment.aspx](http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/nz-progress-indicators/home/social/adult-educational-attainment.aspx)
- Sonnenchein, S., & Munsterman, K. (2002). The influence of home-based reading interactions on 5-year-olds reading motivations and early literacy development. *Early Childhood Research Quarterly, 17*(3), 318-337. doi: 10.1016/s0885-2006(02)00167-9
- Sonnenschein, S., Baker, L., Serpell, R., Scher, D., Truitt, V. G., & Munsterman, K. (1997). Parental beliefs about ways to help children learn to read: The impact of an entertainment or a skills perspective. *Early Child Development and Care, 127*(1), 111-118. doi: 10.1080/0300443971270109
- Stainthrop, R., & Hughes, D. (2000). Family literacy activities in the homes of successful young readers. *Journal of Research in Reading, 23*(1), 41-54. doi: 10.1111/1467-9817.00101
- Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21*(4), 340-406. doi: 10.1598/rrq.21.4.1
- Sylva, K., & Roberts, K. (2010). Quality in early childhood education: Evidence for long-term effects. In G. Pugh & B. Duffy (Eds.), *Contemporary issues in the early years* (5 ed., pp. 47-62). London, UK.: Sage.
- Teale, W. H., & Sulzby, E. (1986). Emergent literacy as a perspective for examining how young children become writers and readers. In W. H. Teale & E. Sulzby (Eds.), *Emergent literacy: Writing and reading* (pp. vii-xxv). Norwood, NJ: Ablex.

- Torgesen, J. K., Otaiba, A., & Grek, M. L. (2005). Assessment and instruction for phonemic awareness and word recognition skills. In H. W. Catts & A. G. Kamhi (Eds.), *Language and reading disabilities* (2 ed., pp. 127-156). Boston, MA: Pearson.
- Torppa, M., Poikkeus, A. M., Laakso, M. L., Eklund, K., & Lyytinen, H. (2006). Predicting delayed letter knowledge development and its relation to grade 1 reading achievement among children with and without familial risk for dyslexia. *Dev Psychol*, *42*(6), 1128-1142. doi: 10.1037/0012-1649.42.6.1128
- Tunmer, W. E., Chapman, J. W., Greaney, K., Prochnow, J. E., & Arrow, A. (2013). Why the New Zealand Literacy Strategy has failed and what can be done about it: Evidence from the Progress in International Reading Literacy Study (PIRLS) 2011 and Reading Recovery monitoring reports. *Australian Journal of Learning Difficulties*, *18*(2), 139-180. doi: 10.1080/19404158.2013.842134
- Tunmer, W. E., Chapman, J. W., & Prochnow, J. E. (2003). Preventing negative Matthew effects in at-risk readers: A retrospective study. In B. Foorman (Ed.), *Preventing and remediating reading difficulties: Bringing science to scale* (pp. 121-163). Timonoum, NY: York Press.
- Tunmer, W. E., Chapman, J. W., & Prochnow, J. E. (2006). Literate cultural capital at school entry predicts later reading achievement: A seven year longitudinal study. *New Zealand Journal of Educational Studies*, *41*(2), 183-204.
- Tunmer, W. E., Herriman, M. L., & Nesdale, A. R. (1988). Metalinguistic abilities and beginning reading. *Reading Research Quarterly*, *23*(3), 134-158. doi: 10.2307/747799

- van Steensel, R. (2006). Relations between socio-cultural factors, the home literacy environment and children's literacy development in the first years of primary education. *Journal of Research in Reading, 29*(4), 367-382. doi: 10.1111/j.1467-9817.2006.00301.x
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Wagner, R. K., Torgesen, J. K., Rashotte, C. A., & Pearson, N. A. (2013). *Comprehensive test of phonological processing: Examiners manual* (2nd ed.). Austin, Texas: PRO-ED, Inc. .
- Weigel, D. J., Martin, S. S., & Bennett, K. K. (2006). Mothers' literacy beliefs: Connections with the home literacy environment and pre-school children's literacy development. *Journal of Early Childhood Literacy, 6*(2), 191-211. doi: 10.1177/1468798406066444
- Westerveld, M. F., Gillon, G. T., van Bysterveldt, A. K., & Boyd, L. (2015). The emergent literacy skills of four-year-old children receiving free kindergarten early childhood education in New Zealand. *International Journal of Early Years Education, 23*(4), 339-351. doi: 10.1080/09669760.2015.1033617
- Whitehurst, G. J., & Lonigan, C. J. (1998). Child development and emergent literacy. *Child Development, 69*(3), 848-872. doi: 10.2307/1132208
- Wright, J. C., Huston, A. C., Murphy, K. C., St. Peters, M., Pinon, M., Scantlin, R., & Kotler, J. (2001). The relations of early television viewing to school readiness and vocabulary of children from low-income families: The early window project. *Child Development, 72*(5), 1347-1366. doi: 10.1111/1467-8624.t01-1-00352

Zhang, Q. (2016). Emergent literacy as sociocultural practice: How well do New Zealand parents fit with Te Whāriki? *Journal of Early Childhood Literacy*, 17(1), 69-91. doi: 10.1177/1468798415607939

Zimmermann, F. J., Christakis, D. A., & Meltzoff, A. N. (2007). Associations between media viewing and language development in children under age 2 years. *The Journal of Pediatrics*, 151(4), 364-368. doi: 10.1016/j.jpeds.2007.04.071

## Appendices

## Appendix A: MUHEC approval letter



Date: 01 June 2017

Dear Brittney Van Tonder

Re: Ethics Notification - NOR 17/25 - Investigating the home literacy environment and literacy skills of children as they start school.

Thank you for the above application that was considered by the Massey University Human Ethics Committee: Human Ethics Northern Committee at their meeting held on Thursday, 1 June, 2017.

On behalf of the Committee I am pleased to advise you that the ethics of your application are approved.

Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested.

If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

Yours sincerely



Dr Brian Finch  
Chair, Human Ethics Chairs' Committee and Director (Research Ethics)

## Appendix B: Request to enter institution



Institute of Education  
Massey University  
Private Bag 102904  
North Shore, Auckland 0745  
New Zealand

Brittney Van Tonder  
Master's Student  
10a Ridgeway Road,  
Pukekohe

Principal's Name  
Position (i.e. Principal)  
Address of School Line 1  
Address of School Line 2

Date: 07/05/2017

Dear \_\_\_\_\_ (insert Principal's name),

My name is Brittney Van Tonder and I am currently studying toward a Master of Educational Psychology at Massey University. I am passionate about the academic and social development of New Zealand children and youth. Particularly close to my heart are issues of inequality within education. Although it is known that there are disparities in the skills that New Zealand children bring to school, less is known about why this may be. Therefore, for my Master's thesis, I am aiming to explore how the literacy experiences that New Zealand children have prior to starting school contribute to their early literacy skills.

For this project I am hoping to work alongside a few Franklin primary schools and invite your school to participate in this study. My hope is that schools who are interested in participating will be able to help me in accessing the local children and families that I will invite to participate. Therefore, in particular, I ask for permission to access those children who are in their first term of school. If your school is interested in participating, I am happy to work with you in deciding how best to involve families and their children (i.e. could be through a meeting/gathering with parents/caregivers if appropriate or other means).

In this study I will be assessing children on standardised measures of early literacy skills (to assess vocabulary, phonological processing, early word recognition, and letter-sound knowledge). It is expected that the testing will take 40 minutes in total, but this will be split across a few different sessions to ensure that children do not become fatigued or bored. I also plan to send the children's parents/caregivers a questionnaire to measure the home literacy environment (with questions focused around the literacy experiences that occurred prior to the child starting school).

As I am hoping to do the assessment of early literacy skills at your school and during the school day, I also ask permission to access your teachers who have students that are involved in the study. This means that I would like to work in collaboration with your teachers to find the most appropriate times

to take the child out of the classroom for their assessments. It is also hoped that, provided parents/caregivers give their consent, I will be able to share the results of these assessments with the child's teacher. At the end of the project I will send a summary of the research findings, aggregated across all participating schools.

It would be immensely helpful for my research if I could work in collaboration with your school. I have attached additional information about the study for your review. If you have any other questions please do not hesitate to contact me.

Thank you for taking the time to consider participating in this study. I look very forward to hearing whether your school would be interested in taking part.

Kind regards,

Brittney Van Tonder  
Ph: 021 134 6350  
Email: [brittney.van.tonder.1@uni.massey.ac.nz](mailto:brittney.van.tonder.1@uni.massey.ac.nz)

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application NOR 17/25. If you have any concerns about the conduct of this research, please contact Dr Ralph Bathurst, Acting Chair, Massey University Human Ethics Committee: Northern, email [humanethicsnorth@massey.ac.nz](mailto:humanethicsnorth@massey.ac.nz)

## Appendix C: Principals/teachers information sheet



**MASSEY UNIVERSITY**  
**TE KUNENGA KI PŪREHUROA**  
**UNIVERSITY OF NEW ZEALAND**

Institute of Education  
Massey University  
Private Bag 102904  
North Shore, Auckland 0745  
New Zealand

### *Home Literacy Environment Study*

### **INFORMATION SHEET (FOR PRINCIPALS/TEACHERS)**

#### ***Researcher's Introduction***

*My name is Brittney Van Tonder and I am currently studying toward a Master of Educational Psychology at Massey University. I am passionate about the academic and social development of New Zealand children and youth. Particularly close to my heart are issues of inequality in education. Although it is known that there are differences in the skills that New Zealand children bring to school, less is known about why this may be. Therefore I am aiming to explore whether the literacy experiences that New Zealand children have before starting school have a relationship with children's skills when they start school.*

#### **Project Description and Invitation**

I am hoping to work with a number of families in the Franklin region and invite your school to participate in this study. Participation in this study is completely optional but it is my hope that schools who are interested in participating will be able to help me in accessing the local children and families that I will invite to participate. In particular, I ask for permission to access those children who are in their first term of school.

I also would like to ask for teachers' consent to participate in this study. This is because I hope to complete the children's assessments of early literacy skills at the school during the school day. Therefore, I ask for a teacher's permission to remove the student from their classroom for these assessments. It is expected that the total time needed for these assessments is approximately 40 minutes. However, these assessments will be split over a few sessions (approximately 15 minutes each) to ensure that the child does not become bored or fatigued. I hope to work in collaboration with teachers to find the most appropriate times to take the child out of the classroom for their assessments. All measures will be taken to ensure that the assessments cause as little disturbance as possible to both the students involved in the study and their classmates.

The assessment tools that will be used are well-established and are designed to measure early literacy skills such as vocabulary, phonological processing, early word recognition, and letter-sound knowledge. No child will be assessed for their early literacy skills without consent from their parents/caregivers. It is also hoped that, provided parents/caregivers give their consent, I will be able to share the results of these assessments with the child's teacher.

I also plan to send the children's parents/caregivers a brief questionnaire to measure the home literacy environment (with questions focused around the literacy experiences that occurred prior to the child starting school). It is expected that filling out the 4-page questionnaire will take approximately fifteen minutes. Parents/caregivers will be asked to return these questionnaires to their child's teacher in a sealed envelope (and I will collect them from the classroom teachers).

I invite your school to participate and, if you are interested, ask permission to contact the parents/caregivers of those students who are in their first term of school. In particular, this means that I hope to work with you in deciding how best to involve families and their children (i.e. could be through a meeting/gathering with parents/caregivers if appropriate or other means).

#### **Participant Identification and Recruitment**

Children are being recruited for this study through collaboration with local primary schools. Children who were 5-years-old and in their first term of school were identified as possible participants for this study. It is hoped that approximately 40 families from the Franklin area will participate in the study.

#### **Data Management**

I will ensure that no teacher or school will be able to be identified if they choose to participate in this study. The name of the teacher/school will only be listed on the children's assessment booklets (for the purpose of the assessment result summaries). All 'write-ups' of this project will ensure that the location of this project is not named.

Additionally, all information provided by parents/caregivers and children will be kept confidential. All identifying information (i.e. names) will be replaced with an identifying number which means that no individual teacher, school, child, or parent/caregiver will be named. All of the data that I collect will be stored in locked filing cabinets and will be securely destroyed five years. The information that I collect will only be used for the purposes of this particular research project.

#### **Participant's Rights**

You are under no obligation to accept this invitation. If you decide to participate you have the right to:

- Withdraw from the study at any time prior to September 2017
- Ask any questions about the study at any time during participation
- Be given access to a summary of the project findings when it is concluded
- Provide information on the understanding that your name will not be used in the publication or presentation of this study (i.e. confidentiality will be maintained).

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application NOR 17/25. If you have any concerns about the conduct of this research, please contact Dr Ralph Bathurst, Acting Chair, Massey University Human Ethics Committee: Northern, email [humanethicsnorth@massey.ac.nz](mailto:humanethicsnorth@massey.ac.nz)

---

If you have any questions about this project, please do not hesitate to contact either the researcher or supervisors involved. Their contact details are as listed below:

**Researcher Contact Details:**

Brittney Van Tonder (Master's Student).

Email: [brittney.van.tonder.1@uni.massey.ac.nz](mailto:brittney.van.tonder.1@uni.massey.ac.nz)

**Supervisors:**

Dr Alison Arrow

Email: [a.w.arrow@massey.ac.nz](mailto:a.w.arrow@massey.ac.nz)

Phone: +64 (06) 356 9099 (ext. 84460)

Professor Tom Nicholson

Email: [t.nicholson@massey.ac.nz](mailto:t.nicholson@massey.ac.nz)

Phone: +64 (09) 414 0800 (ext. 43519)

## Home Literacy Environment Study

### INFORMATION FOR PRINCIPALS/TEACHERS (SUMMARY SHEET)

If you choose to participate in this study, then:

- Children in their first term of school will have their literacy skills assessed using established assessment tools during Terms 2 and 3 of 2017. Only students who have parent/caregiver consent will be assessed on these measures.
- Assessments will not take place in the child's first two weeks at school.
- These assessments will take place in a quiet spot at your school by the Master's student. These assessments will take place over a number of sessions but the total time across all of these sessions should not exceed 40 minutes.
- I will work with the child's teacher to organise the times for these assessments. This means that participation in the study will cause as little disruption as possible.
- Children will be asked whether or not they would like to participate. They will also be told that they can choose to stop participating at any point and that no one will be angry with them if they do decide that they no longer want to take part.
- I will ask parents/caregivers to complete a short questionnaire about literacy at home. This will help us to find out whether or not there is a relationship between the literacy experiences children have prior to starting school and their literacy skills at school entry.
- If you would like, I can also send you a copy of the project's findings once it is completed (November 2017).

Please remember that participating in this study is completely optional and that there is no pressure on your school or you to take part. If you would like to take part in this study, please sign the consent forms and the Master's student will shortly be in touch to arrange the next steps. Thank you so much for your time!

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application NOR 17/25. If you have any concerns about the conduct of this research, please contact Dr Ralph Bathurst, Acting Chair, Massey University Human Ethics Committee: Northern, email [humanethicsnorth@massey.ac.nz](mailto:humanethicsnorth@massey.ac.nz)

## Appendix D: Principal consent form



**MASSEY UNIVERSITY**  
TE KUNENGA KI PŪREHUROA  
UNIVERSITY OF NEW ZEALAND

Institute of Education  
Massey University  
Private Bag 102904  
North Shore, Auckland 0745  
New Zealand

### Home literacy environment study

#### PRINCIPAL CONSENT FORM

I have read the Information Sheet and any questions I may have had have been answered to my satisfaction. I understand that I may ask further questions at any time. Participation in this study is completely optional and there will be no penalty if you choose for your school to not participate.

I agree to participate in this study under the conditions set out in the information sheet.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Full Name – printed: \_\_\_\_\_

School: \_\_\_\_\_

## Appendix E: Teacher consent form



Institute of Education  
Massey University  
Private Bag 102904  
North Shore, Auckland 0745  
New Zealand

### Home literacy environment study

#### TEACHER CONSENT FORM

I have read the Information Sheet and any questions I may have had have been answered to my satisfaction. I understand that I may ask further questions at any time. Participation in this study is completely optional and there will be no penalty if you choose not to participate.

WISH / DO NOT WISH to receive a summary of the research findings upon completion of the study (please provide email below if you wish you receive this summary).

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Full Name – printed: \_\_\_\_\_

Email address (if applicable): \_\_\_\_\_

School: \_\_\_\_\_

## Appendix F: Parent/caregiver information sheet



Institute of Education  
Massey University  
Private Bag 102904  
North Shore, Auckland 0745  
New Zealand

### *Home Literacy Environment Study*

## INFORMATION SHEET (FOR PARENTS/CAREGIVERS)

### **Researcher's Introduction**

*My name is Brittney Van Tonder and I am currently studying toward a Master of Educational Psychology at Massey University. I am passionate about the academic and social development of New Zealand children and youth. Particularly close to my heart are issues of inequality in education. Although it is known that there are differences in the skills that New Zealand children bring to school, less is known about why this may be. Therefore I am aiming to explore whether the literacy experiences that New Zealand children have before starting school have a relationship with children's skills when they start school.*

### **Project Description and Invitation**

I am hoping to work with a number of families in the Franklin region and invite you and your child to participate in this study. Participation in this study is completely optional and there will be no disadvantage to your child's learning if you choose not to participate.

Participation in this study will include two main parts. The first explores literacy experiences that children have before starting school. To investigate this, parents/caregivers who wish to participate will be asked to complete a brief questionnaire. It is expected that filling out the 4-page questionnaire (attached) will take no more than fifteen minutes. The questionnaire has been attached so that you can have a look at it before deciding whether or not you would like to take part in this study. The questionnaire is optional and you only need to complete as much or as little as you feel comfortable with.

The second part of this study will be assessing your child on early literacy skills. These assessments are designed to measure skills such as alphabet knowledge, vocabulary, and letter-sound knowledge. These assessments will take place in a quiet spot at your child's school and will take approximately 40 minutes in total, but will take place over a number of sessions (approximately fifteen minutes each). I will work with your child's teacher to find the best times to take them out of class for the assessments. If your child does not want to do the assessments then I will take them back to class. No child will be assessed for their early literacy skills without consent from their parents/caregivers. If you would like for you and your child to participate please return your completed questionnaire and consent form to your child's teacher in the envelope supplied. I will collect the sealed envelope from the teacher.

### **Participant Identification and Recruitment**

Children are being recruited for this study through collaboration with local primary schools. Children who were 5-years-old and in their first term of school were identified as possible participants for this study. It is hoped that approximately 40 families from the Franklin area will participate in the study.

## Data Management

I will ensure that all information provided by both parents/caregivers and children will be kept confidential. All identifying information (i.e. names) will be replaced with an identifying number which means that no individual teacher, school, child, or parent/caregiver will be named. All of the data that I collect will be stored in locked filing cabinets and will be securely destroyed five years. The information that I collect will only be used for the purposes of this particular research project.

On the consent form provided, you can also request a summary of your child's assessment results. You can also indicate whether or not you would like your classroom's teacher to receive this same summary. Finally, on the consent form you can also indicate whether or not you would like a summary of this study's findings once it has been completed.

## Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you and your child have the right to:

- Decline to answer any particular questions or decline to take part in any assessments
- Withdraw from the study at any time prior to September 2017
- Ask any questions about the study at any time during participation
- Be given access to a summary of the project findings when it is concluded
- Provide information on the understanding that your name will not be used in the publication or presentation of this study (i.e. confidentiality will be maintained).

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application NOR 17/25. If you have any concerns about the conduct of this research, please contact Dr Ralph Bathurst, Acting Chair, Massey University Human Ethics Committee: Northern, email [humanethicsnorth@massey.ac.nz](mailto:humanethicsnorth@massey.ac.nz)

---

If you have any questions about this project, please do not hesitate to contact either the researcher or supervisors involved. Their contact details are as listed below:

### Researcher Contact Details:

Brittney Van Tonder (Master's Student).  
Email: [brittney.van.tonder.1@uni.massey.ac.nz](mailto:brittney.van.tonder.1@uni.massey.ac.nz)

### Supervisors:

Dr Alison Arrow  
Email: [a.w.arrow@massey.ac.nz](mailto:a.w.arrow@massey.ac.nz)  
Phone: +64 (06) 356 9099 (ext. 84460)

Professor Tom Nicholson  
Email: [t.nicholson@massey.ac.nz](mailto:t.nicholson@massey.ac.nz)  
Phone: +64 (09) 414 0800 (ext. 43519)

## Home Literacy Environment Study

### INFORMATION FOR PARENTS/CAREGIVERS (SUMMARY SHEET)

If you choose to participate in this study, then:

- Your child will have their literacy skills assessed using established assessment tools during Terms 2 and 3 of 2017. These assessments will take place in a quiet spot at your child's school by the Master's student. These assessments will take place over a number of sessions but the total time across all of these sessions should not exceed 40 minutes.
- Assessments will not take place in your child's first two weeks at school.
- I will work with your child's school and teacher to organise the times for these assessments. This means that participation in the study will cause as little disruption as possible.
- Your child will be asked whether or not they would like to participate. They will also be told that they can choose to stop participating at any point and that no one will be angry with them if they do decide that they no longer want to take part.
- I ask that you complete a short questionnaire about literacy at home. This will help me to find out whether or not there is a relationship between the literacy experiences children have prior to starting school and their literacy skills at school entry. It is expected that filling out the 4-page questionnaire (attached) will take no more than fifteen minutes.
- If you would like, I can email you a summary of your child's assessment results.
- If you would like, I can email your child's teacher a summary of your child's assessment results.
- If you would like, I can also send you a copy of the project's findings once it is completed (November 2017).

Please remember that participating in this study is completely optional and that there is no pressure on you or your child to take part – their learning will not be affected in any way if you do not want to participate. If you would like to take part in this study, please sign the consent form and complete the home literacy questionnaire (both have been attached). Once these are completed, please return them together in a sealed envelope to your child's teacher (envelope has also been supplied). Thank you for your time!

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application NOR 17/25. If you have any concerns about the conduct of this research, please contact Dr Ralph Bathurst, Acting Chair, Massey University Human Ethics Committee: Northern, email [humanethicsnorth@massey.ac.nz](mailto:humanethicsnorth@massey.ac.nz)

## Appendix G: Parent/caregiver consent form



**MASSEY UNIVERSITY**  
TE KUNENGA KI PŪREHUROA  
UNIVERSITY OF NEW ZEALAND

Institute of Education  
Massey University  
Private Bag 102904  
North Shore, Auckland 0745  
New Zealand

### Home literacy environment study

#### PARTICIPANT CONSENT FORM

I have read the Information Sheet and any questions I may have had have been answered to my satisfaction. I understand that I may ask further questions at any time. Participation in this study is completely optional and there will be no penalty if you choose not to participate.

YES / NO I understand that I may, for whatever reason, withdraw access to my child and any information that has been provided by both me and my child prior to the completion of data collection.

YES/NO I give consent for a summary of the results from my child's assessment to be shared with their classroom teacher.

WISH / DO NOT WISH to receive a summary of the research findings upon completion of the study (please provide email below if you wish you receive this summary).

WISH / DO NOT WISH to receive a summary of my child's performance on the assessments (please provide email below if you wish you receive this summary).

I agree to participate in this study under the conditions set out in the Information Sheet. I also give consent for my child to participate in this study under the conditions set out in the Information Sheet.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Full Name – printed: \_\_\_\_\_

Relationship to child: \_\_\_\_\_

Email address (if applicable): \_\_\_\_\_

## Appendix H: Parent/caregiver questionnaire

### Home Literacy Environment Study

#### Parent/Caregiver Questionnaire

Thank you for agreeing to participate in our important studying looking at whether the home literacy experiences that children have prior to starting school are associated with children's early literacy skills. Your participation is very valuable to us!

Please complete this short questionnaire and return it, along with the completed consent form, to your child's school sealed in the envelope provided.

Thank you!

Brittney Van Tonder (Master's student)

Email: brittney.van.tonder.1@uni.massey.ac.nz

---

1. Before your child started school how often did you, or someone else, do the following activities with your child?

	Never	Rarely	Sometimes	Often	Very Often
Tell stories					
Visit the library					
Talk about things you had done					
Talk about what you had read					
Play word games					
Read aloud signs and labels					
Write letters or words (i.e. their name)					
Teach them about alphabet letters					

2. In a typical week how often do you, or other members of your family/household, read to your child?

Never

Once

Twice

3-4 times

5-6 times

7 or more times

3. Generally when your child is being read a story, how interested do they appear to be?

- Not interested at all
- Somewhat interested
- Quite interested
- Very interested
- Unsure

4. How many children's books do you think you have at home?

- 0-10
- 11-25
- 26-50
- 51-100
- More than 100

5. Has your child attended early childhood education before starting school? If yes, please select where your child spent the majority of their time attending.

- No early childhood education
- Playcentre
- Kindergarten
- Early childhood education and care centre (childcare centre)
- Kōhanga Reo
- Other (please state)

6. For roughly how long did your child attend any form of early childhood education? (Please combine the time spent at different centres).

- No early childhood education
- Less than 1 year
- 1-2 years
- 2-3 years
- 3-4 years
- 4-5 years

7. Before your child started school, how often did they do the following activities?

	Never	Rarely	Sometimes	Often	Very Often
Watch educational TV shows (i.e. Sesame Street)					
Play educational games on the computer					
Play educational games on a tablet or smart phone					

8. In a typical week how often would you or someone else in the household do the following activities?

	Never	Rarely	Sometimes	Often	Very Often
Read fiction or nonfiction books or e-books					
Read magazines or newspapers					
Read articles online (i.e. on the computer, smart phone, tablet)					

9. What is the highest level of education of either parent/caregiver?

- No formal qualification
- High school or secondary school qualification
- Tertiary Diploma/Certificate (including vocational qualifications)
- Bachelor's Degree
- Postgraduate Qualification

## Appendix I: Child assent form and information



Institute of Education  
Massey University  
Private Bag 102904  
North Shore, Auckland 0745  
New Zealand

### Home Literacy Environment Study

#### INFORMATION FOR CHILDREN & ASSENT CONFIRMATION

*The researcher will read the following information to the child prior to the assessment. Once the information has been read, the child will be verbally asked for their permission to participate in the study.*

“Massey University is doing some work with families and kids to see how the things you do before coming to school, help you learn when you are at school. Part of this includes asking kids like you to help us. We will ask you to do some activities that are linked to learning.

If you don't want to take part you don't have to. No one will be upset if you decide you don't want to take part or if you change your mind later on and want to stop.

Do you have any questions?” *(Answer any questions asked)*

*When there are no more questions ask:*

“Do you want to take part in this by doing these activities?”

**YES / NO**

“Is it okay if we share your results from these activities with your teacher?”

**YES / NO**

Child's Name: \_\_\_\_\_

Teacher: \_\_\_\_\_

School: \_\_\_\_\_

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application NOR 17/25. If you have any concerns about the conduct of this research, please contact Dr Ralph Bathurst, Acting Chair, Massey University Human Ethics Committee: Northern, email [humanethicsnorth@massey.ac.nz](mailto:humanethicsnorth@massey.ac.nz)