

IMPLEMENTATION AND EVALUATION OF A CHINESE  
LANGUAGE FAMILY LITERACY PROGRAM: IMPACT ON  
YOUNG CHILDREN'S LITERACY DEVELOPMENT IN  
ENGLISH AND CHINESE

by

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A thesis submitted in conformity with the requirements  
for the degree of Doctor of Philosophy  
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# Implementation and Evaluation of a Chinese Language Family Literacy Program: Impact on Young Children's Literacy Development in English and Chinese

Doctor of Philosophy, 2010

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## Abstract

Previous research on family literacy in North America has generally been conducted in English, even if the program targets English for speakers of other languages. However, the differences in English proficiency among parent participants may vary enormously in ways that are not easily predictable. In addition to the differences in parent participants' English proficiency and their concept and experience of instruction, parents from diverse cultural backgrounds also have differences in parental beliefs, parental roles in supporting educational achievement and communicating with the school. All these differences make the provision of family literacy programs which target minority families as one group a challenging endeavor, both in program design and implementation.

This study investigated the potential learning outcomes when a family literacy program with language supports were provided to Chinese immigrant families. An eight-week (two hours per week) literacy program was implemented in three Chinese community centers in Ontario, Canada. The overall objectives of the study were to provide a Chinese family literacy program in the Chinese community using Chinese as the language of instruction, and to evaluate the impact of this culturally related family literacy program in

terms of children's gains in both English and Chinese. This study has shown that a family literacy intervention, adapted for use with Chinese preschoolers and their parents, can have a significant and positive impact on children's literacy development in both English and Chinese. This study found that children's expressive vocabulary (both in English and in Chinese) improved as a result of the intervention. Children's knowledge of the alphabet and their ability to produce letter-sounds improved significantly more if their parents participated in the intervention. Further, it was shown that specific home literacy environments in Chinese and in English are related to children's literacy development in both languages. In Chinese, the number of Chinese reading materials in the home had the greatest impact on children's Chinese receptive and expressive vocabularies. In English, the age at which the child was first read to in English had the greatest impact on children's English expressive vocabularies, their letter-sound production knowledge, and their early reading ability. The study has shown that the provision of culturally and linguistically appropriate family literacy support goes a long way in helping diverse families to foster optimal literacy experiences for their young children at home.

## **Acknowledgements**

I would like to express my wholehearted gratefulness to many people whose encouragement and help made this dissertation possible. I would like to thank foremost Professor Janette Pelletier, my supervisor for guiding, advising and supervising me in my academic journey. Professor Pelletier, you have inspired and encouraged me through my graduate years with your considerable knowledge, expertise, and most of all, your sincere support. My special thanks go to Professor Carl Corter and Professor Xi Chen, my committee members. Professor Corter, I am grateful for all your inspirations, considerations, and intellectual support. Many thanks go to you, Professor Xi Chen, for your helpful supports that illuminate my academic work. Your profound knowledge and expertise on Chinese reading development have strengthened my academic writing. My heart-felt thanks go to Professor Stephen Norris, my external examiner from the University of Alberta. Thank you, Professor Norris, for your valuable suggestions and insightful comments.

I also extend my warmest thanks to Antoinette Doyle and Kathleen Hipfner-Boucher. I treasure the discussion time that we spent together at our lab on the third floor at ICS. Thank you both for reviewing an earlier version of this thesis. Thank you, Toni, for all your invaluable support throughout this journey. It is hard to imagine how I could go through this without your supports and encouragement. I really appreciate the friendship with those Chinese friends who studied and who are still studying at University of Toronto. Thank you, Bing Yu, Yunmei Xu, Yang Luo, Jian Liu, Jingping Shun, Xiaoyan Wang, and Mingzhu Qiu, for being together with me through all these years to face with many challenges in the alien land. Yanchun Chen, special thanks go to you for facilitating my programs. Your supports make this thesis possible.

Thanks to my parents who have afforded me every possible opportunity and support to pursue my dream. Thanks for coming all the way from China to take care of my daughter YouYou and household chores so that I can focus on writing this thesis. Tons of thanks go to YouYou, my dearest angel, for your inspiration. Your beautiful smiles are the biggest motivation for me to work on this thesis. Finally, to my husband, Haisong, thank you for your encouragement and support.

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## **CHAPTER ONE: INTRODUCTION**

My involvement with young children and their families started in 2004 when I first worked as a research assistant for the Parents in Kindergarten project in the region of Peel, Ontario (Pelletier & Corter, 2006). Subsequently, I was a facilitator as well as a researcher on a large-scale family literacy intervention program to help parents support their young children's early language and literacy development. While working within the context of these projects, I observed how parents and their children enjoyed their time together in a learning environment that was new for both of them. Those families who were newcomers to Canada particularly seemed to like this kind of program that was both enjoyable for themselves and their children and that gave them knowledge about the development and learning of their children. However, I also noticed that some of these newcomers encountered language barriers while participating because the programs were delivered in English. Even though the programs offered extra opportunities for these parents to learn English, the parents nevertheless had difficulty in understanding the key messages. Some parents appeared to drop out of the program because of these language barriers. Since there was a high Chinese immigrant population in the region of Peel in Ontario, I met quite a few parents in the program who came from China. As a native of China myself, I was able to communicate with the Chinese parents in Mandarin. They expressed to me their worries about their children's education. These worries included their unfamiliarity with the school system in Canada, their inability to help their children's English development, and their children's adjustment to school in a new language. I began to think that family literacy programs could provide information and support to Chinese parent groups to relieve these worries. I then began to plan the implementation of a culturally relevant family program in

the Chinese community for Chinese immigrants and Chinese Canadians, and to evaluate the effects of providing both language and cultural supports. It was my hope that my thesis would focus attention on the benefits of culturally and linguistically relevant intervention programs for young immigrant children and their families. My long-term wish is to extend this program to other minority language groups.

The thesis is organized into the following chapters: Chapter 2 provides a review of the relevant literature. It begins with an overview of the concept of family literacy and a review of family literacy programs in Canada. Second, the concept of emergent literacy is presented in light of current research. Third, the contribution of the home environment in influencing children's literacy development provides a rationale for the implementation of a family literacy program. The chapter ends with a review of the characteristics of Chinese language and Chinese immigrants in Canada and their relevance to the family literacy implementation. Chapter 3 describes in detail the methodology used in the present study. The content, that is, the curriculum of the intervention program is also described in this chapter. Chapter 4 presents the results of the study. The shorter-term program effects are presented first in this chapter, followed by the growth curve of children's outcomes from pre-test to the delayed post-test. In Chapter 5, a general discussion of the results is provided from theoretical and educational perspectives. Limitations are presented and suggestions for future research are offered as a way to move forward based on the study's findings.

## **CHAPTER TWO: LITERATURE REVIEW**

In his bioecological model, Uri Bronfenbrenner (1979) suggested that the relationship between the home and school is integral to a cohesive and effective learning environment for children. Important to this relationship is parents' understanding of how their children are being educated in the school, and how they can be involved at home in supporting their children's education. This is particularly important for preschool children whose native language is not English, because the transition to school may be more stressful for young children learning in a new language. Having parental support and connection to the school may offset some of these challenges (Constantino, Cui, & Faltis, 1995; Swap, 1990). In a society in which literacy is highly valued, learning to read and write is one of the most important skills for young children to acquire. Early experiences with literacy occur through interactions with parents or siblings in everyday activities of family life. Research has demonstrated the importance of the family in the development of children's literacy (Bus, Van IJzendoorn, & Pellegrini, 1995; Phillips, Hayden, & Norris, 2006; Purcell-Gates, 1996; Snow, 1991; Whitehurst & Lonigan, 1998). In an effort to provide support to families for enhancing the home literacy environment, numerous programs have been developed and tested. They have shown that intervention programs may provide parents with much needed support in fostering effective home literacy environments (Baker, Piotrkowski, & Brooks-Gunn, 1998; Cairney & Munsie 1995; Fagan & Cronin 1998; Jordan, Snow, & Porche, 2000; Wagner, Spiker, & Linn, 2002).

This chapter examines how family settings can be enhanced to improve the quality of parent-child interactions that support the development of children's literacy. In order to do

this, some background research is provided. First, the concept of family literacy and a review of family literacy programs in Canada are presented. Next, the concept of emergent literacy is examined in light of the extant research. Then, the contribution of the home environment in influencing children's literacy development is presented. Finally, the literature on Chinese immigrants and Chinese language is discussed in order to provide an understanding of the social and cultural context of the present study.

### ***Family Literacy***

#### ***Definition of family literacy***

The term “family literacy” was coined by Taylor (1983) to describe the repertoire of literacy practices that take place within families. In later years the term “family literacy” became more closely associated with programs for enhancing the quality of literacy interactions between parents and their children. Numerous articles have attempted to define family literacy and family literacy programs (Harris & Hodges, 1995; Morrow, Tracey, & Maxwell, 1995; Taylor & Dorsey-Gaines, 1988; Tracey, 1995). The considerable variability in definitions suggests that it is not easily defined (Morrow et al., 1995; Purcell-Gates, 2000; Tracey, 1995).

Despite the issues of definition, Taylor (1983) and others (e.g., Auerbach, 1989, 1995) are critical of family literacy programs, suggesting that they typically assume that non-mainstream (low-income and/or minority) families do not value or practice literacy in their homes. These researchers consider such programs to be “deficit-model” approaches for supporting family literacy. To counter deficit models, Taylor & Dorsey-Gaines (1988) have shown through their ethnographic study of low-income, inner-city families that literacy does

mediate the level of success families achieve in their lives regardless of socioeconomic circumstances.

Others agree that literacy artifacts and practices are evident in almost all homes regardless of socioeconomic factors, but suggest that not all home literacy activities equally contribute to children's reading and writing development (Edwards, 1994). A third view in the literature posits that programs can proceed from a "wealth model," recognizing that families do value and use literacy, yet through participation in programs families may gain further knowledge (Hannon & Bird, 2004).

In practice, there is a wide array of program offerings that span these varied stances (Morrow et al., 1995; Nickse, 1993; Phillips, Hayden, & Norris, 2006; Thomas, 1998; Wasik & Herrmann, 2004). Auerbach (1989) argued that in order to be successful, family literacy program practitioners must recognize what it is that families want to learn, and work collaboratively with them to develop the kinds of programs that meet their needs. Auerbach's model is a sociocontextual approach that incorporates family, culture, and community. This approach is based on the proposition that children and parents learn best when the learning is meaningful to them and is situated in the context of their social environment. This model acknowledges the positive contributions of family members and takes into account the influence that cultural values and practices have on literacy development. However, it is notable that some parents might have difficulties to provide such supports, whether due to lack of literacy skills themselves, lack of knowledge about how to support their children's literacy development, or both (Wasik, Dobbins, & Herrmann, 2001). This drove the comprehensive model, which was the early model of family literacy programming (Wasik & Herrmann, 2004).

Comprehensive family literacy programs, which usually offer the following components—early childhood education, adult education, parenting education and support, and parent-child literacy interactions, have been widely advocated and well-funded in the past twenty years (Wasik & Herrmann, 2004) and continue to be prominent models in U.S. program delivery. Representative comprehensive programs include the Parent and Child Education Program (PACE) (Wasik & Herrmann, 2004), the Kenan model (Hannon & Bird, 2004), and the Even Start Family Literacy model (U.S. Department of Education, 2003). The Kentucky Parent and Child Education Program (PACE), which was established in 1986, is the first major family literacy initiative that included direct child and adult services. The PACE program was based on the belief that providing literacy services to parents and their children had advantages over providing just one of these services (Wasik & Herrmann, 2004). In 1989, PACE's success stimulated the Kenan Trust Family Literacy Project. The purpose of the Kenan project was to “break the cycle of illiteracy” for low-income families by coordinating adult education programs and preschool programs into one program (Darling & Hayes, 1989). This model is the foundation for the Even Start Family Literacy Program, which is one of the best known family literacy programs. Even Start provides direct literacy services for both adults and children from birth through age seven. Even Start allows other people who serve in the parenting role to participate when a child's parents cannot. This is important for families who have extended family members helping with their child care. Family literacy programs experienced widespread interest and expansion after Even Start. However, the effectiveness of the Even Start program has also received less favourable attention in the literature. Based on their national evaluation report (U.S. Department of Education, 2003), Even Start children performed as well as, but not better than, control group

children. The data showed that children in the control group made the same kinds of gains on literacy assessments as those seen for Even Start children. These findings showed that the goal of helping children “surpass” the control group was more difficult to achieve (U.S. Department of Education, 2003).

### ***Family literacy in Canada***

By the early 1980s family literacy programs began to appear in Canada. These programs have received special federal attention and support throughout their development. For example, the National Literacy Secretariat (NLS) has provided funding for several innovative projects that have moved the practice and study of family literacy forward (Thomas & Skage, 1998). Some of these include Early to Learn with the Community Service Council, Family literacy with the College of the North Atlantic, and Literacy Outreach Program with the Battle Harbour Regional Development Association (National Literacy Secretariat, 1998). In Canada, family literacy programs have typically developed as a response by local communities to local needs, and thus have operated with varying levels of financial support from provincial, federal, or private sources (Thomas, 1998). While the federal and provincial governments support literacy development through grants, governments do not mandate that specific early literacy programs exist or target particular groups in society. Instead, groups and individuals within communities develop or choose literacy programs to meet the needs that they have identified. Through the Office of Literacy and Essential Skills under the direction of Human Resources and Skills Development Canada, or through provincial funding mechanisms routed through ministries of education, social services, or other provincial government departments and agencies, community groups may seek funding to develop these programs.



Programs classified as “family literacy programs” across Canada may be affiliated with educational institutions, including universities, colleges, or research centres, but still maintain a high level of autonomous functioning. Thomas’s (1998) survey of family literacy programs across Canada illustrates several examples of local initiatives designed to address the family literacy needs of their particular communities. These programs operate from large urban to small rural communities, and may focus on one or more dimensions of family literacy: child education, parenting education, adult literacy education, and/or employability skills. The role of the community in family literacy programming in Canada is especially significant. It is largely the efforts of individuals and groups who live in these communities that bring about identification of the literacy needs of the local people and the initiation of action to bring people and programs together.

The sample of Canadian family literacy programs reported by Thomas reveals strong inter-group cooperation among community members where programs are offered. These members include literacy program facilitators, community centre staff, local business people, health services professionals, church leaders, and local school educators, all of whom provide varied kinds of support: funding or in-kind donations, space to operate, expertise in education or other human development areas, or avenues for public awareness about literacy programs available.

In Canada, many programs under the family literacy umbrella do not include adult literacy development in their goals, but rather focus on the parents as literacy mentors of their children. Canadian programs such as PRINTS (Fagan & Cronin, 1998), which focus on helping parents enhance their skills as the literacy mentors of their own children rather than focusing simultaneously on child and adult literacy, have been demonstrated to be effective.

As Hannon and Bird (2004) have pointed out, there needs to be room under the umbrella of “family literacy” for programs that allow parents to develop their capacity for mentoring their children’s literacy, while acknowledging that parents may not want or need to address their own literacy abilities. In the family literacy intervention program presented in this dissertation, the focus was on helping parents enhance their skills as literacy mentors.

### ***Family literacy programs for minority families***

Although family literacy programs have focused on providing opportunities for lower income parents and children to learn and practice strategies demonstrated to be successful for middle-class families (Sample Gosse & Phillips, 2006), most family literacy programs have taken native English speakers to be the norm for the target audience, and the programs were not specifically designed to address the needs of families from diverse cultural backgrounds. Like most other parents, lower income and racial minority parents want to learn how to help their children and may seek specific assistance to overcome the difficulties they have in supporting their children’s literacy development (Edwards, 1995; Newman & Beverstock, 1990; Sample Gosse & Phillips, 2006). The increasing diversity of the Canadian population is changing the face of family literacy programs offered in this country and thus requires program practitioners to rethink what it means to support parents in fostering their children’s literacy development. Sample Gosse & Philips (2006) suggest that a diverse population makes the implementation of family literacy programs more challenging because parents of different cultural backgrounds may hold perceptions of literacy learning that are inconsistent with a traditional emergent literacy perspective. In a study of Chinese-Canadian and Indo-Canadian families (Anderson, 1995), parents in both groups agreed that encouraging children to discuss what is read helps them learn to read; however, the Indo-Canadian parents did not

endorse the idea that children should be encouraged to engage in reading-like behaviour such as flipping books or pretending to read. These parents believe that these behaviours would not help a lot in children's reading. Such parental beliefs are important to be aware of and discussed amongst program participants and facilitators in order to forge better understandings of, and respect for, stances and practices within the homes. From such a context, parents may be willing to consider "western" literacy practices and incorporate some of these practices within their repertoire of interactions with their children. Unfortunately, most family literacy programs, which have taken native English speakers as the norm, cannot fully address the needs of families who are from other cultural and linguistic backgrounds.

Furthermore, a growing body of evidence suggests that cultural and economic differences exist as a result of the functions of literacy (Heath, 1983; Purcell-Gates, 1996; Teale, 1986), and the styles of literacy interactions (Hammer, 2000; Hammer, Nimmo, Cohen, Draheim, & Johnson, 2005; Heath, 1983; Phillips, Norris, & Anderson, 2008). According to the cultural or contextual perspective, socialization goals may vary across cultures because different specific qualities and outcomes in children may be valued and emphasized (Rogoff, 2003). Socialization beliefs and values may, in turn, affect the education system, parenting styles, and literacy practices and strategies at home, which constitute an important aspect of the social-cultural context for child development. Evidence has shown that immigrant children are among the most educationally vulnerable groups of children (Gibson & Bejinez, 2002; Gonzalez, Reid, Synhorst, O'Kane, & Tostado, 2006). Although the parents from these immigrant families value education, and have very high expectations for children's academic outcomes, some immigrant families do not, or cannot, provide adequate financial, intellectual and psychological support for children's transition to

school. Moving to a new country, immigrants are more likely to encounter difficulties such as underemployment or unemployment, social isolation, and barriers to accessing support services (Shimoni & Baxter, 2001; Yu & Chao, 2002). Undoubtedly, these stresses may affect immigrant families financially, emotionally and psychologically, resulting in parents' challenges in preparing children for successful school adaptation. This situation may be worsened if parents do not have proficient English- or French-speaking ability to enable them to adapt to their new environment in Canada. Bridges are greatly needed to enhance these parents' abilities. A family literacy program is one example of such a bridge.

According to the 2008 report card on child poverty in Canada, 49% of immigrant children live in poverty (Statistics Canada, 2008). Economic disadvantage limits these families' ability to purchase literacy materials, which in turn reduces the literacy activities that adults engage in at home, and the range and number of literacy materials available in the home. Furthermore, in English-speaking Canada, being unfamiliar with the English language and the education system, children from immigrant families need additional educational support. This will in turn require the involvement of the home. Yet cultural and linguistic differences may prevent effective involvement. Pelletier and Brent (2002) compared parent factors, parent involvement, parental self-efficacy and parenting style, between ESL and English-speaking groups who participated in preschool parenting and readiness centres; they investigated the interrelationship among these three factors as well as teacher strategies to promote parent involvement and children's school readiness. The study yielded two important results: 1) parents' self-efficacy significantly predicted their level of involvement in their children's early education; 2) language and cultural supports were crucial in facilitating parental involvement and self-efficacy. Therefore, it is imperative that family

literacy practitioners provide culturally relevant programming for minority communities in Canada, if the objective of supporting these parents in enhancing the home literacy environment is to be achieved. Delivery of appropriate programming is also integral to the issue of program evaluation. Unless a program is well matched to the cultural group(s) toward whom it is directed, it may be difficult to draw conclusions and implications from studies that are confounded by a poor fit between programs and their participants. The goal of the current study was to implement and evaluate a family literacy program for young children and their families from the Chinese communities in Toronto, Canada. The program focused on enhancing parents' skills in helping their children's emergent literacy development in both English and Chinese. In order to achieve this goal, the program drew from two areas of the literature: the concept of emergent literacy and the experience of Chinese immigrants in Canada. Reviews of these two topics are presented below.

### ***Emergent Literacy***

The term 'emergent literacy' was first coined by Marie Clay in 1975 (Teale & Sulzby, 1986). Clay believed that children come to the formal school setting with knowledge, skills and attitudes that set the stage for the eventual mastery of conventional forms of literacy. This pioneering work led to widespread acknowledgement among researchers and educators that children learn a great deal about literacy in their home environment, and that they are ready to apply this knowledge to their interactions with print when they come to school. The emergent literacy perspective places equal emphasis on the active engagement of the child in the learning process and the social-constructivist environment in which it occurs. In the research literature, emergent literacy is generally defined in terms of a set of specific behaviours and attitudes. Whitehurst and Lonigan (1998, 2001) presented five broad

categories: oral language skill, phonological awareness, print awareness, concept of print and print motivation. Sénéchal, LeFevre, Smith-Chant, and Colton (2001) proposed that emergent literacy knowledge can be classified as conceptual knowledge or as procedural knowledge; conceptual knowledge is knowledge about functions of print and the role of the reader, while procedural knowledge is knowledge of the mechanics of reading. They believed that children's conceptual knowledge facilitated the acquisition of procedural knowledge, which in turn would enable later conventional literacy acquisition.

The importance of print knowledge, letter knowledge, and phonological awareness in the early acquisition of reading skill, and the importance of vocabulary in reading comprehension, are widely recognized in the literature (Biemiller, 2006; Blachman, 2000; Scarborough, Dobrich, & Hager, 2001; Sénéchal et al., 2001; Spira, Bracken, & Fischel, 2005; Stanovich, 1984; Whitehurst & Lonigan, 1998, 2001). Research studies indicate that children who arrive in kindergarten with low levels of these skills are less likely to benefit from the instruction they will receive in the early elementary grades (Lonigan, Burgess, & Anthony, 2000; Storch & Whitehurst, 2002). These skills will also be fundamental for reading development (National Reading Panel, 2000). The following section will review the evidence on the important roles of these skills in children's reading development.

### ***Print Knowledge***

Young children are exposed to print for several years before they begin formal reading instruction in school. During this time, they form intuitive theories about print while their parents read books to them, and when they look at signs in the neighbourhood and other environmental print. These intuitive theories may represent “clever” misconceptions (Pelletier, 2002) that children may have about what print is, for example, the notion that a

long string of “letters” represents a long object, such as a train (Ferreiro & Teberosky, 1979/1996; Levin & Tolchinsky Landsman, 1989; Pelletier, 2002). Children learn to distinguish among symbol systems such as drawing, print, and number (Lee & Karmiloff-Smith, 1996). At a young age, children grasp the idea that one object or event may stand for another (Marzolf & DeLoache, 1994). For example, at age three most North American children recognize that golden arches “stand for” MacDonald’s. However, this does not mean that they can apply this recognition to all contexts or domains (Snow, Burns, & Griffin, 1998). Indeed, young readers of environmental print knowledge rely heavily on its contextualized logographic information, such as shape, colour and letter stylization, to “read” it, and have much less success reading the words contained in this print when the contextual supports are removed (Masonheimer, Drum, & Ehri, 1984).

In order to read, children must understand the correspondence between print and sound (Bialystok, 1997; Pelletier, 2002). However their early experiences with representational text-based systems are more direct than print-sound mapping. For example, when young children see a picture of a person, they extract the meaning of the picture very easily because the drawing maps directly onto an object in the world. However, in order to become conventional readers, young children need to understand how written letters and words are organized for reading, such as the order and direction of reading (Snow, Burns, & Griffin, 1998). This process is more difficult than the process of understanding a picture. At age three and four years, children begin to be able to identify alphabet letters, especially those from their own names, and may attempt to write them (Snow et al., 1998). Because they know that words need to be written with letters, many produce cursive-like scribbles that they believe can be read by others (Bialystok, 1997; Pelletier, 2002). Young children

may also note the difference between numbers and letters; for example, they can understand that they can use both slash marks and numerals to represent numerical information (Snow et al., 1998) whereas they can only use letters to represent words. Sulzby, Barnhart and Heishima (1989) observed that although children move through a fairly predictable stage-like process of learning to write, their written representations at any time may be influenced by the task at hand. While being able to use some letter knowledge in writing, for example, they may revert to a less mature stage such as scribbling when faced with a lengthy writing task. Further, while children may “reread” what they have written, their oral rendering of the text may show great variance from their written representations. Further, rereading may vary greatly, indicating a lack of understanding of the permanence of the written message. Studies suggest that children’s knowledge of concepts about print develops gradually through their experiences with reading and writing print in various forms (Pelletier, 2002; Snow et al., 1998; Sulzby et al., 1989; Zhang & Pelletier, 2009).

### ***Letter knowledge***

Children need letter knowledge in order to become readers of English because letters are the visual representations that map onto the sounds of words in the speech stream. Knowledge of the letter names and their associated sounds allows children to make sense of the connection between spoken words and their written representations (Ehri & Roberts, 2006). Letter knowledge is a strong predictor of reading success (Caravolas, Hulme, & Snowling, 2001; Lasgenberg, 2000; McBride-Chang, 1999; Share, Jorm, Maclean, & Matthews, 1984; Stevenson & Newman, 1986). Share et al. (1984) found that among 39 variables including IQ, vocabulary level, and home socio-economic status, children’s letter name knowledge at entry into kindergarten was the best predictor of kindergarten reading



achievement, and the second best predictor (after phoneme segmentation) of first-grade reading achievement. Stanovich, Cunningham, and Freeman (1984) also found that the strength of the relation of letter knowledge to reading success even exceeded that of IQ. Further research (Gallagher, Frith, & Snowling, 2000; Riley, 1996; Tunmer, Herriman, & Nesdale, 1988) substantiated the predictive relationship between preschool letter naming knowledge and school reading skills by combining letter name knowledge and letter-sound knowledge into one measure of letter knowledge. This is believed to provide more complete information about what children know about letters (Foulin, 2005). Children typically acquire knowledge about letter sounds after knowledge of letter names (Adams, 1990; Worden & Boettcher, 1990). However, these two different skills have been shown to predict reading achievement at different stages in literacy development. Upon school entry, letter name knowledge appears a better predictor of learning to read; letter-sound knowledge emerges as a stronger predictor of reading achievement once children's letter name knowledge reaches a ceiling point (Caravolas et al., 2001; McBride-Chang, 1999; Wagner, Torgesen, & Rashotte, 1999).

McBride-Chang and Treiman (2003) studied how letter name and letter sound knowledge correlated with early reading among Hong Kong kindergarteners when they learn English as their second language. They confirmed the importance of letter-name and letter-sound knowledge for learning to read English, although Chinese children may learn English through a different method such as "look and say," as they do in learning Chinese characters. The McBride-Chang and Treiman (2003) findings suggest that second-language learners of English are remarkably similar to native English learners in their acquisition of the alphabetic principle, despite great differences in curricula and language exposure. In other

words, whether children are English speaking or are learning English, the importance of letter knowledge remains prominent in learning to read.

### ***Vocabulary***

Early home literacy experiences have different relations with oral than with written language outcomes, and the importance of such literacy experiences for later reading skills is mediated by children's oral and written language skills (Biemiller, 2006; Bishop & Adams, 1990; Butler, Marsh, Sheppard, & Sheppard, 1985; Scarborough, 1989; Sénéchal, LeFevre, Thomas, & Daley, 1998; Share et al., 1984). Children who have larger vocabularies and greater understanding of spoken language have an easier time with reading. Despite the two different models of emergent literacy (Sénéchal et al., 2001; Whitehurst & Lonigan, 1998) researchers agree that oral language development is important in learning to read. Variations in the amount and type of conversations in which children are involved at home have been associated with their level of success with handling printed language (Heath, 1986; Tough, 1983). Children can learn different forms of language and expand their vocabulary if they are immersed in a wide variety of topics of conversation (Beals, DeTemple, & Dickenson, 1994; Snow, 1993). Research suggests that children who are included in conversations where they must carefully think about the language they will use to ask or answer questions in order to fully explain or understand the "subject" of discussion, are developing the skills needed to make sense of print (Davidson & Snow, 1995; Snow, 1991, 1993). Bishop and Adams (1990) studied a group of children who had impairments of language development that could not be attributed to low intelligence, physical defect or any other developmental delay, or bilingual background, and found that children's oral language development was highly correlated with later reading proficiency.

It is widely reported in the literature that vocabulary knowledge is a strong predictor of reading comprehension in the middle elementary years when children's attention shifts from a major focus on decoding to a focus on comprehension (Dickinson, McCabe, Anastasopolous, Peisner-Feinberg, & Poe, 2003; Sénéchal et al., 2001; Whitehurst & Lonigan, 1998). Some researchers also make the case for the importance of vocabulary in early reading development through its effects on phonological awareness (Foy & Mann, 2003; Walley, Metsala, & Garlock, 2003).

### ***Phonological awareness***

Phonological awareness is the awareness of the phonological structure of the words in one's language (Torgesen, Wagner, & Rashotte, 1994), and the ability to analyze and manipulate smaller units of sound within spoken words (Pullen & Justice, 2003).

Phonological awareness is a precursor to reading. Its importance has been widely recognized in the development of early reading competency among children who learn to read alphabetic languages (Adams, 1990; Bradley & Bryant, 1983; Goswami & Bryant, 1990; Treiman et al., 1998; Wagner & Torgesen, 1987). Blachman (2000) found that regular exposure to activities that promote phonological awareness skills enhanced reading development for all students. The reading research literature has shown that a child's performance on tasks assessing phonological awareness in kindergarten reliably predicts skill in word decoding in the early primary school years (Catts, Fey, Zhang, & Tomblin, 1999; Stanovich, 2000; Stanovich, Cunningham, & Cramer, 1984; Torgesen, 1999). In other words, kindergarten children with well-developed phonological awareness are more likely to succeed in learning to read than children with less developed phonological awareness. Further evidence of the importance of phonological awareness in early reading achievement comes from a number of studies that

involved the provision of explicit instruction in word attack strategies. It was shown that such instruction can be effective in promoting growth in word recognition skills in children identified in kindergarten as being at risk for reading failure (Cunningham & Stanovich, 1997; National Reading Panel, 2000; Torgesen et al., 1999).

In summary, the literature presents a constellation of components that comprise the construct of emergent literacy. These components are also posited to exert their influence in children's literacy development. The presumption in family literacy programs is that it is important to equip parents with this knowledge in a family literacy program so that they can better enhance their skills in helping their children with language and literacy development.

### ***Home Literacy Environment***

In the past 30 years, relatively strong associations have been noted between the home literacy environment and children's emergent literacy development (Griffin & Morrison, 1997; Roth, Speece, & Cooper, 2002; Sénéchal, et al., 1998; Snow, Tabors, Nicholson, & Kurland, 1995; Thompson, 1985; Whitehurst & Lonigan, 2001). Roskos and Twardosz (2004) defined three kinds of resources in home literacy environments: physical, social, and symbolic. Physical resources included time, space, and materials. Social resources included people, knowledge, and emotional relationships. Symbolic resources included literacy routines, and influences from the community, society, and culture. Other research defined different models describing the home literacy environment that typically focus on three broad aspects: the physical resources in the family, the family literacy interactions (frequency), and the quality of the relationships among family members (Leichter, 1984; Teale 1986). Snow et al. (1998) developed a framework of home literacy environments comprising four components: the press for achievement (parents' expectations), the value placed on literacy,

the availability and use of reading materials, and parent-child book reading. Among these three models, the common finding is that the availability of home literacy materials and the interaction between parent-child in book reading are important to the home literacy environment. The following section, therefore, will focus on these two components central to home literacy environment frameworks: materials available, and parent-child book reading.

***Materials in the household related to children's language and literacy development***

An important element of home literacy practices is the materials available for parents' book reading to children. Numerous studies have indicated that early readers come from homes where reading materials are available and their parents read to them regularly (Clark, 1976; Durkin, 1966). A number of studies have found that such children performed better on literacy measures than their peers who come from homes lacking in reading materials and reading experiences (Beck & McKeown, 1986; Bus et al., 1995). Early exposure to literacy experiences provides an important source of linguistic stimulation for children, which in turn promotes their successful literacy development (Bus, 2003). Literacy resources are necessary for parents to provide high quality reading to children, and thus, children's books are important sources of learning. Clark (1976) found that a print-rich home environment positively correlated with children's reading achievement. Research has shown that exposure to print can uniquely predict children's reading development (Cipielewski & Stanovich, 1992; McBride-Chang, Manis, Seidenberg, Custodio, & Doi, 1993; Sénéchal & LeFevre, 2002). Storybook reading typically provides the child with 50 percent more encounters with "rare words" than is found in conversations they hear or through language via television (Hayes & Ahrens, 1988). Exposure to text beyond the clausal/phrasal level is important for children in developing more than a general awareness or "big picture" level of understanding of printed

text. In order for children to understand exactly how print works, they need repeated experiences with connected text such as that found in children's storybooks (Purcell-Gates, 1996). Further, the language in storybooks is qualitatively different than that of spoken language. Snow (1991) has described the decontextualized nature of printed text in which the writer is removed from the reader, in which there may be no shared understandings about background knowledge between writer and reader, and in which the ideas in the text to be read are remotely located in relation to the reader's immediate environment. Therefore, in order to make sense of the text they hear, listeners need to build ideas from words alone (McKeown & Beck, 2006). Snow, Cancini, Gonzalez, and Shriberg (1989) suggested that shared storybook reading experiences in the home help children to develop understandings of decontextualized language and form a basis upon which children can learn to make sense of written language structures in their early reading instruction.

For children whose families speak a language other than the language that they learn at school, this element is more complex. For example, even if a family member speaks Chinese in a Canadian home, the family may not have many Chinese reading materials for children since such materials are not readily available. In contrast, newspapers and magazines are more available in English, although English is not the language they speak at home. In order for children to build both the print concept knowledge that facilitates learning to read, and the vocabulary/conceptual knowledge that contributes to reading comprehension in the later years, it is important for children to have rich and varied oral language and print literacy opportunities in both their first and second language (Chow, McBride-Chang, & Burgess, 2005; Durgunoglu, Nagy, & Hancin-Bhatt, 1993; Lindsey, Manis, & Bailey, 2003; Wade-Woolley & Geva, 2000).

Gonzalez and Uhing (2008) went beyond examining the reading materials available in the household by examining children's library use. Their study with preschool children from Hispanic Spanish-speaking families who enrolled in an Even Start program found that the English oral language skills of these children were related to library use, through which the children were exposed to the complex forms of written language in storybooks. Their interpretation was that the sources of books in languages other than English (e.g., Spanish) are relatively scarce compared to the availability of books for children whose native language is English. The Spanish oral language skills of these children were related to their oral language interactions with extended family, not the reading materials at home. However, in this study, the measure of availability of reading materials at home included only the "number of children's books in the home" and the "number of adult books in the home." It did not recognize the possibility of access to these materials in different languages. This raises the question of whether measures of home reading materials need to distinguish between minority and majority language materials in predicting minority or majority language development.

***Parent-child book reading and children's expressive and receptive vocabulary***

Vocabulary knowledge is a strong predictor of literacy development (Biemiller, 2006; Dickinson & Snow, 1987; Heath 1986; Sénéchal, Ouellette, & Rodney, 2006; Snow, 1991, 1993). Sénéchal, LeFevre, Hudson, and Lawson (1996) reported that storybook exposure accounted for unique variance in preschool children's expressive and receptive vocabulary after controlling for parents' education, parents' own level of literacy, and children's analytic intelligence. Whitehurst and his colleagues developed an intervention program called dialogic reading, designed to involve children actively during shared reading and to provide a

rich avenue for language development (Arnold, Lonigan, Whitehurst, & Epstein, 1994; Lonigan, 2004). The efficacy of dialogic reading for expressive language development was demonstrated in a series of studies. Whitehurst et al. (1988) reported a gain in expressive vocabulary in a group of 2-year-olds through a 4-week dialogic reading program implemented at home, and these gains were maintained at a 9-month follow-up assessment. Dale, Crain-Thoreson, Notari-Syverson, and Cole (1996) demonstrated that language-delayed children used a greater number of words after the dialogic reading intervention. In another study in which a similar type of intervention was offered, High and colleagues (2000) found significant increases in both receptive and expressive language for children over 18 months old, whose parents had received children's books, educational materials and advice about sharing books. Fung, Chow, and McBride-Chang (2005) extended the dialogic reading model to Chinese children, and found that it was effective in enhancing the Chinese receptive vocabulary development of hearing-impaired children in Hong Kong. However, the findings on receptive vocabulary have not been consistent across studies. For example, Whitehurst and Lonigan (1998) found no significant increases in receptive vocabulary as a result of dialogic reading.

### ***Home literacy environment and letter knowledge***

Sénéchal et al. (1998) reported that the frequency with which parents reported teaching their child to print and read words was related to early literacy measures such as alphabet knowledge, beginning reading, and invented spelling. Evans, Shaw, and Bell (2000) found that the frequency with which parents reported teaching the alphabet was related to their children's knowledge of letter names and sounds. Haney and Hill (2004) found that direct parent instruction to preschool children in writing words predicted later alphabet



knowledge and decoding skills. Each of these studies targeted children who were learning a language that had an alphabetic system.

It is important to note that for children whose first language is not an alphabetic system, parents' knowledge about letter names and sounds may be different. Because of the logographic characteristics of the Chinese writing system, Chinese children are taught to read Chinese by the "look and say" method (Holm & Dodd, 1996; Huang & Hanley, 1995). In this method, a character or a word is shown to children; the teacher then names this character and asks the children to repeat the name. Chinese children therefore may use the same method to learn English. Research has demonstrated that knowledge of letter names and letter sounds is as important for Chinese children in their English literacy development as for their English-speaking peers (McBride-Chang & Treiman, 2003). However, they may not be able to get this kind of help in their home environment because of parents' lack of knowledge of its importance. For example, letter-sound correspondence is not well recognized by Chinese immigrants even though some of them may speak English fairly well. Addressing the knowledge of letter-sound correspondence, therefore, would be an important component of a family literacy intervention study for Chinese families.

#### ***Age at which children are read to***

Bus and colleagues (1995) concluded that the age at which children are first involved in storybook reading predicts their language development. In their comparison of Chinese literacy development across Beijing, Hong Kong, and Singapore, Li and Rao (2000) found that the age of the children when parents started to read to them in Chinese significantly contributed to the prediction of early Chinese reading in all three societies. That is, children who were younger when their parents began reading to them scored higher in the Chinese

word reading tasks as measured at grade two. In addition, parents' utilization of a specific approach to teach literacy or not, and maternal education, were found to contribute significantly to the prediction of Chinese reading in Beijing and Singapore. That is, parents who specifically intended to teach literacy, and mothers with a higher level of education had children who were better readers in Chinese.

### ***Chinese immigrants in Canada***

Both the landing records from Citizenship and Immigration Canada and the 2007 census confirm that the Chinese have become the largest group of immigrants in Canada. Between 1998 and 2007, nearly 400,000 Chinese immigrants landed in Canada (Citizenship and Immigration Canada, 2007). They now account for almost 30 per cent of Canada's total immigration intake. Thus given the importance of language and culture to family literacy programs, a program for Chinese children and their parents must be adapted for their needs. A first step toward adapting family literacy programs for a specific cultural immigrant background is to understand the specific culture and language, in this case, Chinese, as well as the demographic characteristics of this population.

### ***Chinese cultural background***

Confucianism, the foundation of Chinese culture, determined that education had always been an extremely important means of personal success in China. From the seventh century until 1905, examinations were used as the only criterion for the government to select officials in the civil service. First, scholars had to pass examinations at local and provincial levels in order to be permitted to take the national examination, which was held every three years in the capital. Thousands of scholars, who exceeded their peers in the local and provincial exams, came from all over the country to take the examination. For both scholars

and their families, the opportunity to take these examinations and success in the exams were in all likelihood the most important events in their lives. The results of the examination could completely change their lives, potentially promoting them to the highest levels of the society. In contemporary China examinations remain the primary path of selecting persons with ability. Because of the vast population, significant urban-rural economic differences and the strict control of migration from countryside to the city, the only way that younger generations of farming families can move to the cities or towns is to pass the annual National College Entrance Examination, which is extremely competitive. Currently only 15 to 20 per cent of those taking the exam are admitted to college. Cross-cultural studies (Chao, 1996; Chen & Uttal, 1988; Dyson, 2001) have found that cognitive and academic achievement is emphasized the most in Chinese or eastern culture, while Canadian or western culture places a greater value on children's social and emotional development. Furthermore, Chinese parents believe in direct intervention and instruction in their children's learning, while the child-centred approach is generally practiced in Canada. Dyson (2001) also found that Chinese parents put emphasis on children's mathematics skills, while children's literacy development is a parental priority in Canada.

Chinese immigrants move to Canada for a variety of reasons that include the opportunity to obtain a better career, to enjoy a more peaceful life and to live in a cleaner environment (Wang & Lo, 2004). In addition to these reasons, moving to Canada and staying here for the purpose of enhancing their children's future was not uncommon among Chinese immigrants. More and more parents in China are aware of the stress their children will encounter and would like to emigrate to other countries so that their children can avoid the extensive stress of exams and lifelong competition in the workplace and physical

environment, even though they themselves would face a more challenging life in a new country (Wang & Lo, 2004).

Cross-cultural comparisons have demonstrated that Chinese parents have higher expectations for their children's academic achievements than Caucasian parents (Chao, 1996; Eaton & Dembo, 1997; Geary, 1996; Huntsinger, Jose, Larson, Balsink Kreig, & Shaligram, 2000; McBride-Chang & Chang, 1998). This is especially true for Chinese immigrant families since, "for the good of their children," is one of the main reasons, if not the only reason, cited by these parents for emigrating from their home country (Wrigley, 2004). In addition to knowledge of the culture, a brief understanding of the Chinese writing system is necessary to plan a family literacy program for Chinese immigrants in Canada because the language itself shapes people's beliefs on literacy and literacy behaviours.

### ***Background to the Chinese writing system***

Chinese is a so-called logographic writing system. For many Chinese characters, the visual form is closely associated with meaning. For example, the meaning of the character 人 /ren2/ (person) can be inferred from its visual form--- a simplified picture of a person. Chinese characters are assembled from unpronounceable strokes, based on a set of rules. Certain components, for example, can appear only in a specific position. For example, "扌" (meaning "hand" or "actions related to hand") must appear on the left side of a character. It is difficult for children who are beginning readers to master these rules and assemble the strokes into a character.

The mainstream approach to early Chinese reading instruction relies heavily on rote memorization, and children are encouraged to learn characters as holistic units (Cheung & Ng, 2003). Also, children are required to copy new characters several times to ensure that

they can recognize and reproduce them (Chan & Wang, 2003). This technique is also widely applied to learning English in China. Therefore, English words are not learned via letter and sound, but via each word as a whole picture.

Research has demonstrated that there are controversies inherent in describing writing systems and their potential impact on children's acquisition of literacy (Coulmas, 1989; Jaffré, 1997). Although all languages require some general principle of symbolic representation, each language requires some specific correspondence rules because of its particular characteristics (Bialystok, Shenfield, & Codd, 2000). Research has shown that adults and children who have achieved some proficiency in native-language literacy may apply what they know about first-language reading and writing to reading and writing in English (Cummins, 1984; Cummins, 2000; Edelsky, 1982). Even at very early ages, young bilingual children may import some principles from one language to the other (Bialystok, 1997; Hakuta, 1986). Bialystok (1997) believed that children whose early literacy experiences include a character-based written language should understand the specific symbolic function of a writing system more easily than children whose experience has been with alphabetic writing. In her study on the extent to which young children, ages four and five, understood the specific way in which writing systems encode the spoken word, Bialystok found that bilingual speakers of Chinese (Mandarin) and English performed better in both their first and second languages than the bilingual speakers of French and English, or the monolingual children. She suggested that a possible reason for this is that the richer experience with a different writing system enables children to apply their knowledge of sound-symbol matching to both languages.

### *Diverse demographic Chinese immigrants in Canada*

Although Chinese speakers make up the largest single language minority in Canada (Statistics Canada, 2008), the Chinese culture is diverse and represents not only a broad range of socioeconomic classes, but also a range of Chinese cultures with varied histories, cultural sensibilities, and social dilemmas (Yu & Chao, 2002). At the same time, it should be emphasized that recent Chinese immigrants to Canada have come from different parts of the world. These distinct places of origin have varying political, social, and economic conditions. Chinese immigrants, therefore, are by no means a uniform group, and significant internal differences are expected to exist among them. A large number of Chinese immigrants come from three main sources: Mainland China, Hong Kong, and Taiwan. They choose to settle in different areas. Taking the Greater Toronto Area (GTA) as an example, the diversity of its Chinese immigrants is reflected spatially. Businesses in Toronto's Central Chinatown are mostly owned and run by older immigrants from southern China; whereas business owners in Toronto's East Chinatown are predominantly Chinese from Vietnam. Those businesses owned by immigrants from Hong Kong are mostly located in newer suburban shopping centres. A shopping centre in suburban Markham (named Metro Square) is occupied exclusively by Taiwanese immigrants, providing Taiwanese-style products and catering mainly to Mandarin-speaking Chinese (Lo & Wang, 1997).

In North America, previous research on family literacy has generally been conducted in English, even if the program targets English for speakers of other languages (ESOL). However, the differences in English proficiency among parent participants may vary enormously in ways that are not easily predictable (Strucker, Snow, & Pan, 2004). Such differences in English skills are relevant for family literacy programs because level of proficiency in English has been found to relate to English-reading fluency and

comprehension (Devine, 1988), as well as to reading strategies (Cziko, 1980). It is expected that parents/adults who are more proficient in English are more capable of being involved and of benefiting from the program than those whose English is not as proficient.

Furthermore, parents may enter family literacy programs having diverse experiences with literacy instruction in their native language (McKay & Weinstein-Shr, 1993). These differences not only include the amount of explicit instruction, but also the nature of that instruction. These experiences influence the participants' expectations of what constitutes instruction (Cochran-Smith, 1984), and will also shape their literacy practices at home.

In addition to the differences in parent participants' English proficiency and their concept and experience of instruction, parents from diverse cultural backgrounds also have differences in parental beliefs, problems in understanding the unwritten rules of parental versus school responsibility, parental roles in supporting educational achievement and communicating with the school (Strucker et al., 2004). Children also bring differences in their emergent literacy experiences in their native languages, and the skills that they can transfer from their first language into English because of the differences across languages. All these differences make the provision of family literacy programs which target minority families as one group a challenging endeavor, both in program design and implementation.

Knowing these challenges in family literacy programs for ESOL families, one solution is to bring the family literacy program into the local community. Collaborating with the local ethnic community, the family literacy program can be bilingual. The parents' section can be conducted in the language that the community speaks, and the children's section can be bilingual to facilitate children's English literacy development as well as their first-language development.

### *Purpose of this study*

The goal of the present study was to provide a family literacy program in the Chinese community in Canada, providing for both language and cultural supports, and to evaluate this program's effectiveness. Some key elements were considered in order to provide a successful family literacy program adapted for the Chinese community. First of all, in order to avoid parents' cultural and language barriers, it was thought that programs in their first language would be most attractive to them. Facilitators who have a sound understanding of both the Chinese cultural background and the Canadian educational system would be the second key element in the provision of the program.

The overall objectives of my study were to provide a Chinese family literacy program in the Chinese community using Chinese as the language of instruction, and to evaluate the impact of this culturally related family literacy program in terms of children's gains in both languages.

My research questions asked:

- 1) What home literacy environment elements predict Chinese immigrant children's Chinese language and literacy development?
- 2) What home literacy environment elements predict Chinese immigrant children's English language and literacy development?
- 3) Will the family literacy program with cultural and linguistic supports have positive impacts on children's language and literacy development immediately after the intervention?
- 4) Will a family literacy program with cultural and linguistic supports have positive impacts on an individual child's *growth* in his/her language and literacy development?



## CHAPTER THREE: METHOD

### *Participants*

Participants were 80 children and their families who comprised the family literacy treatment ( $n=42$ ) and control ( $n=38$ ) groups from three Chinese community centres. The community centres provided space for the program and recruited the families. These community centres were non-profit and charitable organizations, providing various services to assist newcomers of Chinese origin to know about the social system of Canada, help them to strengthen their skills, and improve their quality of living. They offered settlement services for newcomers, education and language training services, and community and youth services.

The first site was located in downtown Toronto's Chinatown. Downtown Chinatown is the oldest Chinatown in the Greater Toronto Area (GTA), and currently comprises people who speak very little English. Many refugees who know little English choose to settle here because they can access almost every item and service they need in this Chinese-speaking neighbourhood. Family doctors, store and bank clerks, lawyers and other important service providers speak Chinese, thus making the initial transition to life in Canada much easier for them. As earlier noted, the Chinese community centres play an important role in supporting the families who live here, providing language and cultural supports in their daily life. Following the research design procedures explained by the principal researcher, the Chinese community centres recruited families through their newsletters and posters. Eleven children with a mean age of 49.93 months participated in the intervention program with their parents at this site. Ten children with a mean age of 47.21 months and their parents were recruited into the control group. The control families did not participate in the intervention program,

but attended a three-hour workshop after the post-test. The highest level of education achieved by the mothers at this site was high school completion.

The second site, referred to as Northtown, was about 11 kilometres north of the downtown core of Toronto. Most Chinese people who live in this neighbourhood are newly landed independent skilled immigrants, meaning that at least one of the family members in the household has university degree and years of work experience in their home country. This is the basic requirement for status as an independent skilled immigrant according to Citizenship and Immigration Canada (Citizenship and Immigration Canada, 2009). Chinese parents, therefore, can speak English well enough to be able to function in an English-speaking environment.

Fourteen children with a mean age of 48.82 months participated in the intervention program with their parents at this site. Fourteen children with a mean age of 53.30 months, and their parents, were recruited into the control group. The control families at this site did not participate in the intervention program, but instead took part in a three-hour workshop after the post-test. The highest education level obtained by the mothers at this site was a Master's Degree or other advanced degree.

The third site, referred to as Easttown, is the GTA's newest major Chinatown, a community about 25 kilometres east of downtown Toronto. Over 80 percent of the population in this neighbourhood has a Chinese background. People living here usually have their own house, which indicates they have established a relatively stable life in Canada. Seventeen children with a mean age of 52.17 months were randomly assigned to the intervention program with their parents. Fourteen children with a mean age of 49.29 months and their parents were randomly assigned to the control group at this site. The highest

education level achieved by the mothers at this site was undergraduate university degree, although the lowest level of mothers' educational achievement was middle school. Thus there was a greater range of maternal education levels at this site. Table 3.1 summarizes the information about children's ages across the three sites.

**Table 3.1.**

***Mean and Standard Deviation of Children's Age in months at Pre-test***

	Experimental group			Control group		
	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>
Downtown	11	49.93	7.18	10	47.21	7.09
Northtown	14	48.82	10.45	14	53.30	13.26
Easttown	17	52.17	8.57	14	49.29	7.77

The intention of the design was to randomly assign families to the experimental group and to the control group, at each of the three program sites. Only at Easttown, however, was the random assignment procedure implemented. At the other two sites, the site coordinators assigned families who registered first to the experimental group based on their space limitation. Families who registered later were assigned to the control group. Since there was such great demand by the parents for attendance in the programs, the sites filled very quickly. Thus there was no substantial delay in registering the control group families, and there was very little potential difference between the intervention and control groups in parents' motivation to be involved in the program. A series of chi-square test were conducted to assess whether mother's education level differed between the experimental group and the control group at each site. None of the tests was significant. These results suggested that

maternal education backgrounds were similar in the experimental group and the control group. Table 3.2 summarizes mothers' educational level across the three sites.

**Table 3.2.**

***Percentage of Mother's Educational Level at Each Site***

	Downtown		Northtown		Easttown	
	intervention	control	intervention	control	intervention	control
Middle school	35.74	28.60	9.09	10	17.64	21.42
High school	57.12	64.26	36.37	70	41.16	35.74
College	7.14	7.14	45.45	20	23.56	28.56
Undergraduate	0	0	9.09	0	11.76	14.28
Graduate	0	0	0	0	5.88	0
Total	100	100	100	100	100	100

***The Intervention***

***Overview of the Intervention***

The intervention was an eight-week, two hours per week, literacy program in each of the three sites. Parents, with their children, participated in the program. Parents' learning about children's early literacy development, and their roles as literacy mentors of their children were the main areas of focus for the program, although children's literacy development was fostered through the child activities and was a key variable in the analysis. Each workshop began with parents, children and facilitators sharing in the reading of a big book. Then, the parents and children met separately with trained facilitators. One facilitator led the parents' workshop on the topic for that session in Chinese, while the children worked

with the other facilitator on child-centred activities related to the topic both in Chinese and English. In the remaining part of the session, the parents engaged in joint activities with their children to “practice” the key messages that had been discussed with peers and the facilitator in the parent-only segment of the session. The parents were given take-home literacy materials (children’s books, writing materials, magnetic letters, etc.) each week to use with their children to assist them in various areas of literacy development.

The program topic started with an introduction of children’s literature to give parents some background knowledge of children’s literature and how to choose books for their young children. It covered children’s literature both in English and Chinese. The program then moved to oral language development and environmental print, to strengthen parents’ knowledge about the pre-reading stage. These two sessions targeted both English and Chinese. Weeks five and six featured phonological awareness and letter sound knowledge. These two sessions focused on improving parents’ knowledge and skills in reading in English. Week seven presented the importance of early writing. Week eight focused on morphological awareness and reading in Chinese. The content and activities for each of the eight sessions are described in the following section.

### ***The Intervention Program Content and Activities***

Workshop 1. *Children’s Literature for Enjoyment and Literacy Development*. This session included an overview of the program and the schedule of each session. Key messages included an introduction to children’s literature, a discussion of different types of children’s literature such as picture books, story books, wordless books, nursery rhymes and other poetry books, and suggestions for parents in choosing books for their young children. For example, things that parents need to consider when they choose books for their children

include: child's interests in the topic; length of the book to suit child's age; the illustrations or pictures; and the language suitable for child's age. Children's activities included singing songs like, "The Colour I See," and a hat-making activity.

Workshop 2. *Talking With your Child (Oral Language Development)*. This session provided an overview for parents regarding how children's language develops throughout their early years, and how their language development relates to their later reading and writing development. The key messages also included information on how children's first language development could support their second language development. Suggestions for supporting children's language development were also provided. These included: asking and answering questions to get the child using words; using correct words to talk about objects; reciting poems or rhymes; reading stories, etc. Children's activities included a "hungry creature guessing game," in which the facilitator showed a strange paper-bag puppet creature that will only eat things that share a common attribute. For example, it only eats things that are red, or things that are made out of wood, or something that has wheels. Children were encouraged to feed the creature by categorizing pre-prepared "food" cut from flyers. An animal guessing game asked a child to draw an animal card from a bag (or use one of the plastic animals found in the kit). The child was asked to peek inside the card to look at the animal inside but not to tell anyone what it was. Then every other child could ask the child a number of questions to try to guess the identity of the animal. Sample questions were: "Does it live in the water?" "Does it have fur?" "Is it grey?" "Is it big or small?" "Is it dangerous?" "What does it eat?" "What sound does it make?" Based on the child's answer to each question, children made a guess of what the animal is.

Workshop 3. *Environmental Print*. The key messages in this session included an introduction to environmental print and why it is important for children to be aware of it. Another important component of this session was the introduction of personalized photograph books based on children's home environments and neighbourhoods (e.g., Pelletier et al., 2006). Disposable cameras were sent home with each family. Parents were asked to take photographs with their children in order to make two books in the future sessions. Parents were asked to work with their children to look for an object whose name (spelling) began with each of the letters of the child's first name. For example, for the name James, they might take a photo of a jar of jam, an apple, a mouse, an elephant and a sailboat. This book would be made during the parent-child activity in a later session. With the unused photographs left from the name book, parents were asked to take pictures with their child of examples of environmental print that the child typically sees. A sample environmental print book was demonstrated to the parents during the session. Parents were also asked to bring the cameras back in two weeks for developing. Food Basic provided the disposal cameras, and Deutsche Bank supported the development of the photos. The children's activities included "silly grocery shopping", singing the song "In the Corner Grocery Store", and the "traffic light" game.

Workshop 4. *Numeracy is Literacy Too*. The key messages included a discussion of three important concepts that children can be taught about numbers in their preschool years: number sequences, one-to-one correspondence, and the concept of "quantity" of objects. A number of activities that provide opportunities for children to understand these concepts were also demonstrated. Examples were: different kinds of daily activities that could provide an opportunity for teaching their child to count; various counting finger plays and songs, and

mathematical language which includes words like more/less, bigger/smaller, older/younger, nearer/farther, longer/shorter, heavier/lighter, and higher/lower. During the children's session, they were helped to play the "The hungry caterpillar" game, in which children were asked to collect all five fruit cards (an apple, a pear, etc.) that the hungry caterpillar ate on each day. A number of materials/games suitable for counting and sorting could also be found in the material kit provided by the program.

Workshop 5. *Phonological Awareness*. The concept of phonological awareness, including phonemes and syllables, and why these are important for later reading development were discussed with the parents. Discussion also focused on the importance of teaching children to think about the features of the sounds of words, such as rhyming words, the number of beats (syllables) in a word, or the sound at the beginning or end of a word. Ways to help children learn about spoken words and their sounds were discussed. Examples were: counting the number of claps in their names; singing rhyming songs; playing "sounding" games. The feature song for the children's activity of this session was "Shake my Sillies Out". Children were also invited to make their own musical instruments. The instruments themselves were made by placing a handful of dried beans in the bottom of a paper plate, to which a second paper plate was taped in an inverted position. The children then glued squares of tissue paper or drew pictures to decorate their instruments.

Workshop 6. *Letters and Sounds*. The concept and the importance of English letter names is not new to many Chinese parents who have some experience with English, but the concept of letter-sound correspondence was unfamiliar to most of these Chinese parents because that is not the way they learn English. The key messages in the session focused on introducing the concept of letter-sound correspondence and how this skill supports children's



reading achievement in the early primary school grades. Different games and activities that help children understand letter-sound correspondence were introduced to the parents. Letter bingo games and letter construction games were demonstrated to the parents during the session. During the children's session, they were sent off around the room on a letter scavenger hunt to find the alphabet. Children were asked to bring the letters back to the facilitator and to order them from A to Z as they found them. The alphabet song was sung after all letters were found. An audio CD with the letter and sound recorded by a native English-speaking kindergarten teacher was also distributed to each family for use at home. Interestingly, many Chinese families used these recordings while driving in the car in order that their child could practice the sounds.

Workshop 7. *Reading and Writing with your Child*. The key messages for parents included the connection between reading and writing, the developmental stages of children's early writing, the value of helping children grow in understanding the symbolic nature and functions of print, and the importance of cultivating children's perceptions of themselves as developing readers and writers. A book entitled "The Letters in My Name," using some of the pictures that the families took during the camera project in the environmental print session, was made during the parent-child activity in this session. In this activity, the children and parents chose photographs from those they had taken, to represent the letters of the child's name, e.g. the name Min could be represented with pictures of markers, icicles, and noodles – one picture beginning with each letter of the child's name.

Workshop 8. *Chinese Character Reading and Morphological Awareness*. This session focused on the unique characteristics of Chinese characters, and the concept of morphological awareness. The parents were also shown how to use limited Chinese

resources to support their child's Chinese reading and writing in an English-speaking environment. For example, parents were shown how to "convert" English picture books into Chinese books by using sticky paper with the Chinese translation to cover the English text. They were also shown that introducing a group of Chinese characters, which share the same components, would be helpful for children. Other books and resources were also given to the parents. A series of Chinese children's books along with the parents' handbooks was distributed to these families.

### ***Other Features of the Program***

The program provided a lending library, which included a series of classic English-language books that were featured during the opening reading segment of each session, as well as other English children's books, and a series of Chinese children's books. The families were encouraged to borrow these books to take home to read.

Each week, families were given two rhyming stories that were printed from a web-based reading program entitled "Reading A-Z". The parents were shown how to make these rhyming books, and the children were encouraged to colour the book, making them feel like a participant in the book-making. The parents then were asked to read these books with their children. By the end of eight weeks, each family had a substantial collection of rhyming books.

The program also offered a lending game library, which included different kinds of activities and games that would foster children's language and literacy development. Use of these games was discussed during the session. Families were encouraged to borrow these games to take home to play with their children.

### ***Facilitator Background and Training***

All three facilitators from the research team were proficient in both Chinese and English. In order to reduce possible facilitator effects among sites, the same parent facilitator led the parent-only segment at all three sites. This facilitator held a Master of Education degree and had six years of experience in teaching. She also had experience facilitating in other family literacy programs. The main responsibilities of this facilitator were to deliver the key messages to the parents, facilitate the discussion among parents, and give feedback to the parents during the parent and child together sessions. One child segment facilitator held a Bachelor of Education and a Master of Education degree, and had ten years of experience in teaching. The other child segment facilitator was a university student on research placement who observed and volunteered as a facilitator assistant in a family literacy program before she became a lead child facilitator in one site. The main responsibilities of these child segment facilitators included organizing child activities, facilitating children's involvement in these activities, and modeling the adult's role in the interactions with children during the parent and child together sessions.

The facilitators were given an extensive 8-hour training session before the program started. In this training, the researcher introduced the program goals, content, format, and roles of the facilitators in the program. The facilitators also thoroughly studied the Chinese Family Literacy Curriculum manual in order to fully familiarize themselves with every aspect of the program. Before each session, the facilitators met for a half hour to one hour to review the key messages of that session, the methods to best convey these key messages, how to organize the parents' discussion, and how to organize the children's activities. At each site, the local community centres provided two more child-facilitator assistants to help the lead child facilitator with the child activities.

### ***Procedure***

Although participation in the research was not mandatory in order to participate in the family literacy program, all of the families in both the intervention group and the control group consented to participate in the research. Data were collected from both parents and their children. The parents' data included three measures—the Parents' Questionnaire, the Home Literacy Activity Log for each week, and the focus group discussion after the program. The Parents' Questionnaires were collected before the intervention program started, and the focus group discussions were conducted after the intervention program ended. Children's data were collected three times: before the intervention program started, right after the intervention program ended, and six months after that. Each of these measures is described in this section.

### ***Parent Measures***

#### ***The Parents' Questionnaire***

A questionnaire in Chinese was sent to parents before the program began, to obtain family-demographic information and information about the home literacy environment, as well as to gauge the level of parents' confidence about their own literacy skills, their confidence in helping to support their children's literacy development, and their evaluation of their children's literacy interests/motivation. The parents' questionnaire was organized into five sections: 1) background information about the family (e.g., parents' educational background, children's daycare experience, and/or other parenting program experience); 2) the parents' interest and learning goals while attending the program; 3) information about the home literacy environment (e.g., how many different kinds of literacy materials were in the household, how old the children were when the family started to read books to them, how

often they go to the library, how often the parents read books to the children in Chinese and in English, and how much TV children watch every week); 4) information about the child in which parents indicated, on a five-point scale, the degree to which each of 12 statements accurately reflected their children; and 5) information about the parents' own reading interests and their confidence in supporting their child's literacy development. In this section the parents indicated, on a five-point scale, the degree to which each of six statements accurately reflected themselves. Reliability analysis yielded a Cronbach's alpha of .72 for the parents' rating of their children's literacy interests and motivation measure. The Cronbach's alpha was .47 for the measure of parents' rating of their own literacy interests and activities, and confidence in helping their children to learn. A copy of the Parent Questionnaire in English is included in Appendix A, and a copy of the Parent Questionnaire in Chinese is included in Appendix B.

#### *The Home Literacy Activity Log*

The Home Literacy Activity Log was distributed to the families every week after the session. The log was used to track their family literacy activities during each week. Designed with a simple structure by which home activities could be categorized, and supported with pictures depicting different kinds of language or literacy activities that parents could engage in with their children, the log could easily be filled in by both parents and children. Families simply needed to keep a tally of the frequency with which they engaged in the various types of activities. Families were asked to submit the log during the following week's session. The total number of activities was coded for each family for each week. A copy of the Home Literacy Activity Log in English is included in Appendix C, and a Chinese version of Home Literacy Activity Log is included in Appendix D.

### *Focus-Group Discussion*

All of the parents were invited to a group discussion when the program ended. An outside researcher, who was experienced in conducting focus group discussions, organized the group discussion. The questions were based on the areas of interest of the principal researcher. The discussion questions included asking parents' opinions about the process and outcomes of participation in the program, whether their own understanding of children's language and literacy development changed over time, their children's changes over time, and their suggestions for future programs. A copy of the group discussion questions is included in Appendix E.

### *The Child Measures*

The child data were collected at three times: pre-test, post-test, and delayed post-test. The pre-test was carried out before the intervention program started, and the post-test was carried out immediately after the intervention ended. The delayed post-test was administered 6 months after the intervention was concluded. A series of measures was administered individually to each child. The researchers were fluent English and Mandarin bilingual speakers. Some measures were administered in English and Chinese, while others were administered only in Chinese. The language used is noted in the description of each measure.

*Peabody Picture Vocabulary Test, Third Edition (PPVT-III)* (Dunn & Dunn, 1997).

This is an individually administered measure of receptive vocabulary for Standard English and a screening test of verbal ability. The child was asked to point to the picture corresponding to the vocabulary word spoken by the researcher. Only raw scores were used in this study since the PPVT normative sample is not representative of the children in the study sample, whose first language was not English.

*Peabody Picture Vocabulary Test*, Third Edition (Chinese version). The English version (PPVT-III) was translated into Chinese by the researchers. All the original items in the English PPVT were retained in the Chinese version. All children were asked to start from the first item on the list. The task was discontinued when the child made eight consecutive errors. One point was given for each correct response. The total number of correct answers that the child gave was credited in calculating the final score for this measure.

*The Test of Early Reading Ability*, Third Edition (Reid, Hresko, & Hammill, 2001). This test measures three aspects of early reading skills: alphabet knowledge, conventions of print, and meaning (print comprehension). It is an individually administered, norm-referenced instrument. The alphabet knowledge subtest contains 29 items including items that ask children to identify letters, to identify words spoken by pointing to certain words among four choices, and to count the number of syllables and sounds in words. According to the test manual, the internal reliability of Cronbach's alpha exceeds .92 for this subtest for all ages. The conventions of print subtest includes 21 items. Children are asked to demonstrate their knowledge of print concepts by examining some pictures of pages from a book and answering questions related to book-handling procedures, the direction in which text is read, and other related aspects of print knowledge. The internal reliability of Cronbach's alpha is above .90 for this subtest for all ages. The meaning (print comprehension) subtest includes 29 items. Children are asked to identify logos, match words with pictures, and demonstrate comprehension of relational constructs, words, sentences and paragraphs. The internal reliability of Cronbach's alpha is above .82 for this subtest for all ages. For all three subtests, testing was discontinued when children made three consecutive errors.

*Expressive Vocabulary Test* (EVT, Williams, 1997). This is a measure of expressive vocabulary for Standard American English as well as a screening test of verbal ability. It is administered individually. It contains two types of items—labeling and synonym production. For labeling task items, children are asked to name the object represented by each picture. For the synonym task items, children are asked to provide a synonym for a word spoken by the tester that was also depicted in a picture. For example, a picture of a stone is shown to the child and the researcher says, “This is a stone. Could you give me another word for stone?” The children are expected to say the word “rock.” The test is discontinued when a child misses six consecutive items. According to the manual, the internal reliability of Cronbach’s alpha is over .90 for this test for all ages.

*Expressive Vocabulary Test* (EVT, Chinese version). The EVT was translated into Chinese by the researcher. The labeling task was consistent with the English version. Three items in the synonym-production task were deleted because of language barriers in translating these items. For example, “lamp” is the synonym of “light” in English. However, there is only one character deng/1/ that can describe the object “灯 lamp” in Chinese; there is no synonym for this character. One point was given for each correct response. The test was discontinued when a child made six consecutive errors. The total number of correct answers was recorded as the final score for this test.

*Letter Recognition and Sound Production.* The children were asked to name 26 letters (upper and lower case presented simultaneously), randomly arranged, and to produce the sounds that these letters make. The children received a score of one for each correct response and a score of zero for each incorrect response or no response. For the letter sound production task, the child received a score of one for each letter sound correctly produced,



and a score of zero for each incorrect letter sound response or no response. If, however, the child could not produce the sound of the letter, but could give a word that started with the letter, he/she still received a score of one for this item. The total number of correct responses was recorded as the final score.

## CHAPTER FOUR: RESULTS

Several sections report the data analysis. In the first section, a series of descriptive statistics and correlation analyses were conducted with the pre-test data. Also at pre-test, a series of t-tests was used to determine whether differences existed between children in the intervention group and children in the control group in each outcome variable. A series of ANOVAs was also conducted to determine if differences existed among children from the three sites. In the second section, using only pre-test data and combining the experimental group with the control group, a series of multiple regressions were conducted to determine what kind of home literacy environment elements would affect children's language and literacy performance before the intervention program for the whole sample. In the third section, using only pre-test and post-test data, a series of repeated measure ANOVAs were conducted in order to determine if any differences existed among different groups at the post-test time point. Finally, a Hierarchal Linear Model was used to detect the children's language and literacy growth trajectory. In this model, pre-test, post-test, and delayed post-test data were all used.

### *Descriptive data for pre-test*

As described in the last chapter, mother's educational level varied significantly across the three sites. Therefore a series of ANOVAs were conducted to determine whether there were any differences in children's performance on each measure at pre-test across sites. The ANOVA results showed no significant differences across the three sites on each variable. Therefore, it was a fair decision to combine the three sites into a whole sample when the intention was to detect the program effects across the three sites. Table 4.1 presents the descriptive data for all outcome variables at pre-test across the three sites.

**Table 4.1.*****Means and SDs for All Outcome Variables at the Pre-test across Different Sites.***

Measures	Downtown Site		Northtown Site		Easttown Site	
	N=21		N=28		N=31	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
TERA_Pre	16.93	11.83	23.90	15.59	24.61	15.50
PPVT_English_Pre	31.96	17.80	44.60	31.03	36.77	22.75
PPVT_Chinese_Pre	36.39	16.35	50.38	22.27	27.29	26.19
EVT_English_Pre	29.36	14.87	34.43	20.45	31.64	14.79
EVT_Chinese_Pre	32.96	12.00	39.81	12.69	21.58	20.48
Letter recognition_Pre	12.11	7.67	16.14	9.44	12.97	8.69
Sound production_Pre	1.90	3.62	5.95	8.07	3.58	6.73

Correlation coefficients were computed among the seven different measures for the pre-test. Using the Bonferroni approach to control Type 1 error across 21 correlations, a  $p$  value of less than .001 ( $.05/21=.002$ ) was required for significance. The results of the correlational analyses are presented in Table 4.3, and showed that 13 out of the 21 correlations were statistically significant. The letter recognition task showed significant correlations with other tasks (except the two Chinese tasks),  $r(78) > .530$ ,  $p < .001$ . The correlation between the English PPVT and English EVT was also significant,  $r(78) = .728$ ,  $p < .001$ . The two Chinese tasks were highly correlated,  $r(78) = .817$ ,  $p < .001$ . Furthermore, the number sense task was significantly correlated with the majority of other tasks, with values greater than or equal to .477. In general, the results suggest that if a child scored high

in one task in a certain language, s/he tended to score high in other tasks in this language as well.

**Table 4.2.**

***Correlation Matrix for Outcome Pre-test Variables.***

	1	2	3	4	5	6	7
1.TERA	—						
2.PPVT_English	.756*	—					
3.PPVT_Chinese	.171	.126	—				
4.EVT_English	.751*	.853*	.167	—			
5.EVT_Chinese	.055	.048	.817*	.078	—		
6.Letter Recognition	.658*	.595*	.260	.707*	.153	—	
7.Sound Production	.674*	.690*	.103	.657*	-.007	.595*	—

Note. \* $p < .001$

Descriptive data of all the children's measures for pre-test by group (the intervention group vs. the control group) are presented in Table 4.3. A series of two-tailed t-tests were conducted on each child's outcome variable by group. No significant group differences on the pre-test were found in each child's outcome variable.

**Table 4.3.*****Raw Scores for All Outcome Variables at Pre-test by Group.***

	Intervention group (N=42)		Control group (N=38)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
TERA_Pre	22.36	15.90	21.05	13.20
PPVT_English_Pre	41.36	23.74	32.16	23.26
PPVT_Chinese_Pre	34.13	24.99	39.74	21.88
EVT_English_Pre	33.79	16.84	29.13	15.72
EVT_Chinese_Pre	26.86	18.39	34.21	15.77
Letter recognition_Pre	13.10	8.92	13.95	8.33
Sound production_Pre	3.76	5.77	3.45	7.06
Number sense_Pre	8.26	4.28	7.95	3.62

***Regression on outcome variables***

A series of regression analyses was conducted to predict children's language and literacy performance at pre-test from home literacy environment elements. The purpose of this analysis was to examine the relationship between home literacy environment and children's language and literacy performance. This analysis used the whole sample as one group, and used only pre-test data. Children's receptive vocabulary and expressive vocabulary in both languages were examined as dependent variables. Letter recognition and letter-sound production tasks were also examined. Home literacy environment elements included: English materials in the household, Chinese materials in the household, child's age when a family member started to read in English to the child, child's age when a family

member started to read in Chinese to the child, parents' comments on themselves as a reader, and parents' beliefs about their child as a reader. Therefore, two sets of predictors were included in all of these regression models. Mother's educational level was the only predictor in the first set of predictors because of the important role that it played in children's language and literacy performance (Edwards, 1995; Saint-Laurent & Gaisson, 2005). English materials in the household, Chinese materials in the household, child's age when a family member started to read in English to the child, and child's age when a family member started to read in Chinese to the child were in the second set of predictors.

**English Receptive Vocabulary.** Children's English PPVT score was the dependent variable.

The regression equation with the mother's educational level was significant,  $R^2=.188$ , adjusted  $R^2=.166$ ,  $F(1,39)=8.568$ ,  $p<.01$ . Furthermore, the regression equation with the second set of predictors was also significant,  $R^2=.344$ , adjusted  $R^2=.245$ ,  $F(5,35)=3.460$ ,  $p<.05$ . Of the second set of predictors, child's age when a family member started to read in English to the child was a significant contribution to the prediction equation ( $\beta = -.386$ ,  $p<.05$ ). It indicated that the earlier the child was read to in English, the greater receptive English vocabulary s/he had.

**English Expressive Vocabulary.** In this regression model, children's English EVT score was the dependent variable. The regression equation was not significant. None of the predictors showed a significant contribution.

**Chinese Receptive Vocabulary.** In this regression model, children's Chinese PPVT score was the dependent variable. Of the second set of predictors, Chinese materials in the household was a significant contributor to the prediction equation ( $\beta = .506$ ,  $p<.05$ ). It indicated that the more Chinese materials that the household had, the greater Chinese receptive vocabulary the child had.

**Chinese Expressive Vocabulary.** In this regression model, children's Chinese EVT score was the dependent variable. The regression equation with the mother's educational level was not significant. However, the regression equation with the second set of predictors was significant,  $R^2=.356$ , adjusted  $R^2=.259$ ,  $F(5,35)=3.460$ ,  $p<.05$ . Of the second set of predictors, Chinese materials in the household made a significant contribution to the prediction equation ( $\beta = .574$ ,  $p<.05$ ). Thus the more Chinese reading materials that the household had, the greater Chinese expressive vocabulary the child had.

**Letter Recognition Task.** In this regression model, children's scores on the letter recognition task was the dependent variable. The regression equation was not significant. None of the predictors showed significant contributions.

**Letter-Sound Production Task.** In this regression model, children's scores on Sound Production Task was the dependent variable. The regression equation using mother's education was not significant. However, in the second set of predictors, child's age when s/he was read English to made a significant contribution to the prediction equation ( $\beta = -.424$ ,  $p<.05$ ). The earlier the child was read to in English, the more letter-sounds s/he produced.

**The Early Reading Ability Test.** In this regression model, children's total score on TERA was the dependent variable. Mother's educational background was the only significant predictor ( $\beta = .418$ ,  $p<.05$ ). The higher the educational level of the mother, the higher was her child's score on TERA at pre-test.

In summary, the regression analyses indicated that for this sample, children's English language and literacy performance were predicted by the age when they were first read to, while children's Chinese literacy performance was predicted by the Chinese materials in the household and mother's education level.

### ***Immediate program effect evaluation***

A series of 2 (time: pre-test vs. post-test) x 2 (group: experimental vs. control) repeated-measure ANCOVAs were computed to examine whether there were differences in children's learning outcomes between groups across time, using mothers' education as the covariate. The purpose of this analysis was to examine the program effect immediately after the intervention. Detailed explanations of the analyses are given below.

**English Expressive Vocabulary.** The interaction between time and group was significant,  $F(1, 77) = 30.84, p < .001$ , indicating that the two groups followed different trends from pre-test to post-test. Paired comparisons were conducted to follow up the significant interaction. The results showed that the experimental group made significantly higher gains after the program than the control group. The main effect of time was not significant.

**Chinese Expressive Vocabulary.** The interaction was significant  $F(1, 77) = 16.47, p < .001$ . Paired comparisons showed that the experimental group made significantly higher gains,  $F(1, 77) = 50.01, p < .001$ , in Chinese expressive vocabulary from the pre-test to the post-test while the control group did not made such gains.

**Letter Recognition Task.** The time and group interaction was significant,  $F(1, 76) = 13.85, p < .001$ . Paired comparisons showed that the experimental group made significantly greater gains in letter recognition from pre-test to post-test than the control group.

**Letter-Sound Production Task.** The interaction between time and group was also significant for letter-sound production  $F(1, 77) = 59.38, p < .001$ . Paired comparisons showed that the experimental group made significantly greater gains than the control group in letter-sound production after the program ended. The main effect of time was not significant for letter-sound production.



**The Early Reading Ability Test.** The time and group interaction was significant,  $F(1, 77) = 32.56, p < .001$ , for this test. Paired comparisons showed that children from the experimental group made significant gains in this test while children from the control group did not.

**English Receptive Vocabulary.** The main effect of time was significant,  $F(1, 77) = 5.74, p < .05$ , which indicated that children's English receptive vocabulary increased significantly from pre-test to post-test. The interaction was not significant, suggesting that children's English receptive vocabulary did not increase differently across the two groups. The main effect of group was not significant either, indicating that children from both groups performed similar in English receptive vocabulary at both pre-test and post-test.

**Chinese Receptive Vocabulary.** The main effect of time was significant,  $F(1, 74) = 6.54, p < .05$ , which indicated that children performed significantly higher at post-test than at pre-test. The interaction was not significant, suggesting that children's Chinese receptive vocabulary did not increase differently across the two groups. The main effect of group was not significant either, indicating that children from both groups performed similarly in Chinese receptive vocabulary at both pre-test and post-test.

To summarize the repeated-measure ANCOVA results, the study found that children's expressive vocabulary (both in English and in Chinese) significantly improved as a result of the intervention. Children's knowledge of the alphabet and their ability to produce letter-sounds improved significantly more if their parents participated in the intervention. The results also showed that children's concept of print improved after the intervention.

## *Growth Curve Analysis*

### *Analytic Plan*

In order to examine children's overall outcome changes over time, the Hierarchical Linear Model (HLM, Raudenbush & Bryk, 1992; Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2004) was employed. HLM has two advantages: the first is that it allows for the control of nonindependence of observation due to the same individual being measured over time; the second is that it also accounts for missing-at-random outcome data, allowing the use of all available data for outcome interests. For the present study, HLM analyses included two levels. At level-1 (called intraindividual or growth level) the pattern of changes in children's outcomes was examined. Through this process, the repeated measure model among individuals was examined. Level-2 data in HLM is called the interindividual level because it examines the person-level model (between-groups model, i.e., between-participants). In this case, the assumption was that growth varies across individuals. Predictors that account for this variation included group (experimental vs. control), and site (two dummy variables site1 and site2 to distinguish three sites).

*Level 1.* The level 1 data were centred at post-test, with the result that the intercept represents the estimated child's outcome at post-test. The centred time is designated as TIME\_c. In order to be able to use the quadratic model, a new variable, designated as TIME\_c<sup>2</sup>, is added into the model. First, an intercept-only model was fitted, then a linear model, and then a quadratic model. With three points of data, quadratic change is the most complex form of change that can be modeled with HLM. The relative fit of each model was assessed using the chi-square test of deviance (Bryk & Raudenbush, 1992). To illustrate, the

outcome measure designated as  $Y_{ti}$  is written as a function of an intercept  $\pi_{0i}$  plus the multiplication of a slope parameter  $\pi_{1i}$  plus a residual  $e_{ti}$ :

Level 1 model:

$$Y_{ti} = \pi_{0i} + \pi_{1i} * (\text{TIME\_c}) + e_{ti} \quad e_{ti} \sim N(0, \sigma^2)$$

The Level 1 model can be expanded to include quadratic growth form, in which case the level 1 model would be rewritten as

$$Y_{ti} = \pi_{0i} + \pi_{1i} * (\text{TIME\_c}) + \pi_{2i} * (\text{TIME\_c}^2) + e_{ti} \quad e_{ti} \sim N(0, \sigma^2)$$

The Level 1 analysis provides information regarding the linear and/or quadratic growth trajectory (slope) for the group as a whole and indicates whether there is a significant variability in these slopes across individuals.

*Level 2.* At level 2, each level-1 coefficient  $\pi_{1i}$ ,  $\pi_{2i}$  becomes an outcome variable to be predicted by the child's treatment group membership, and the site membership. Here (DM\_Site1) and (DM\_Site2) are two dummy indicators to distinguish three sites. The Downtown site is designed as (DM\_Site1=1) AND (DM\_Site2=0). The Northtown site is designed as (DM\_Site2=1) AND (DM\_Site1=0). The Easttown site is designed as (DM\_Site1=0) AND (DM\_Site2=0). The reason for adding site membership was that although there were no differences in children's performance at the pre-test on all outcome variables, there were significant differences in mother's educational level across the three sites. Therefore, these three sites could not be treated together without controlling the variances that were contributed by mother's educational level. However, five dummy variables would be needed if mother's educational level were added into the model because of the six different values of this variable. Therefore, adding mother's education into the model would greatly increase the unfitness of the model because of the large number of

predictors. Therefore, using site membership indicators was a fair decision to address this variance. The binary treatment group membership and the site membership indicators are all grand-mean centred.

Level 2 model:

$$\pi_{0i} = \beta_{00} + \beta_{01} * (\text{GROUP}) + \beta_{02} * (\text{DM\_Site1}) + \beta_{03} * (\text{DM\_Site2}) + r_{0i} \quad r_{0i} \sim N(0, \tau_{00})$$

$$\pi_{1i} = \beta_{10} + \beta_{11} * (\text{GROUP}) + \beta_{12} * (\text{DM\_Site1}) + \beta_{13} * (\text{DM\_Site2}) + r_{1i} \quad r_{1i} \sim N(0, \tau_{11})$$

$$\text{Cov}(r_{0i}, r_{1i}) = \tau_{10}$$

This model can be expanded to include a quadratic component, if justified. In this case, the Level 2 model would be rewritten as

$$\pi_{0i} = \beta_{00} + \beta_{01} * (\text{GROUP}) + \beta_{02} * (\text{DM\_Site1}) + \beta_{03} * (\text{DM\_Site2}) + r_{0i} \quad r_{0i} \sim N(0, \tau_{00})$$

$$\pi_{1i} = \beta_{10} + \beta_{11} * (\text{GROUP}) + \beta_{12} * (\text{DM\_Site1}) + \beta_{13} * (\text{DM\_Site2}) + r_{1i} \quad r_{1i} \sim N(0, \tau_{11})$$

$$\pi_{2i} = \beta_{20} + \beta_{21} * (\text{GROUP}) + \beta_{22} * (\text{DM\_Site1}) + \beta_{23} * (\text{DM\_Site2}) + r_{2i} \quad r_{2i} \sim N(0, \tau_{22})$$

$$\text{Cov}(r_{0i}, r_{1i}) = \tau_{10}; \text{Cov}(r_{0i}, r_{2i}) = \tau_{20}; \text{Cov}(r_{1i}, r_{2i}) = \tau_{21}$$

Through the slope residuals, the Level 2 analysis provides separate values for the growth trajectory of each individual in the group. Thus, the Level 2 residuals may show that some individuals increase more than others, which may be related to variables of interest.

To summarize the analytic plan, the unconditional model was able to determine the pattern that best represents the mean change (fixed model) and whether the rate of change differed across individuals (random effect) for each outcome variable. Level-2 predictors then were added to all slopes that randomly varied (i.e., slopes with rate of change that varied across participants). The predictors then would help explain the differences in growth across

individuals. For instance, the growth in one outcome variable was greater for one group than for the other group.

In each of the following sessions, a comparison of the quadratic model with the linear growth model on each child's outcome variable first was conducted. Once the model was decided, the detailed analysis was followed. If it was a quadratic model, the intercept, the growth rate, and the acceleration would be examined. If it was a linear model, only the intercept and the growth rate would be examined. The intercept here was comprised of the post-test scores for each measure.

### ***Statistical Modeling of Children's Outcomes***

**English Expressive Vocabulary.** For English expressive vocabulary, a comparison of the quadratic model with the linear growth model indicated a significant improved fit for the quadratic growth model,  $\lambda^2(2) = 33.255, p < .001$ . Thus, the quadratic model was retained. The results of HLM (see Table 4.4) revealed that children from the experimental group scored significantly higher in English EVT than children from the control group at the post test (mean difference = 11.114,  $t(76) = 2.96, p < .01$ ) after controlling for site membership. The results also indicated that the average growth rate was significantly higher for the experimental group than for the control group by 2.616 in English EVT score per month,  $t(76) = 6.52, p < .001$ . The negative quadratic slope ( $-.18, p < .001$ ) indicated that, on average, all children's growth would slow down gradually. The average acceleration was significantly lower for the experimental group than the control group by  $-.324$  in English EVT score per month<sup>2</sup>,  $t(76) = -4.04, p < .001$ , which means that the experimental group's advantage in growth rate would disappear gradually. There was no evidence that children's site membership

effects varied in the intercept, growth rate, and the acceleration after controlling for group membership.

**Table 4.4.****HLM Results for English Expressive Vocabulary**

<i>Fixed Effects</i>	<i>Coefficient</i>	<i>Se</i>	<i>T ratio</i>	<i>p Value</i>
Models for English_EVT				
Intercept, $\beta_{00}$	37.062	1.891	19.60	<0.001
Group, $\beta_{01}$	11.114	3.760	2.96	0.005
Site1, $\beta_{02}$	-3.946	3.990	-0.99	0.326
Site2, $\beta_{03}$	4.646	5.33	0.87	0.386
Models for TIME_c slope				
Intercept, $\beta_{10}$	2.392	0.21	11.61	<0.001
Group, $\beta_{11}$	2.616	0.40	6.52	<0.001
Site1, $\beta_{12}$	-0.726	0.38	-1.93	0.056
Site2, $\beta_{13}$	0.714	0.64	1.12	0.266
Models for TIME_cS slope				
Intercept, $\beta_{20}$	-0.176	0.04	-4.29	<0.001
Group, $\beta_{21}$	-0.324	0.08	-4.04	<0.001
Site1, $\beta_{22}$	0.107	0.08	1.37	0.172
Site2, $\beta_{23}$	-0.081	0.12	-0.65	0.514
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	$\chi^2$	<i>p Value</i>
English_EVT intercept, $r_{0i}$	270.781	76	5913.202	0.000
Growth rate, $r_{1i}$	0.867	76	260.798	0.000
Level-1 effect, $e$	8.878			

**Chinese Expressive Vocabulary.** For Chinese expressive vocabulary, a comparison of the quadratic model with the linear growth model indicated a significant improved fit for the quadratic growth model,  $\lambda^2(2) = 46.063$ ,  $p < .001$ . Thus, the quadratic model was retained. The results of HLM (see Table 4.5) revealed no significant differences in Chinese EVT across two groups at the post test. However, there were significant differences across sites after controlling for group membership. The Downtown site group scored significantly higher than the Easttown site, with mean difference = 12.366,  $t(76) = 2.711$ ,  $p < .01$ . The Northtown site also scored significantly higher than the Easttown site with mean difference = 20.689,  $t(76) = 4.357$ ,  $p < .001$ . The results also indicated that the average growth rate was significantly higher for the experimental group than for the control group by 1.606 in Chinese EVT score per month,  $t(76) = 4.479$ ,  $p < .001$ . The average growth rate was also significantly higher for the Northtown site than the Easttown site by 1.071 in Chinese EVT score per month,  $t(76) = 2.250$ ,  $p < .005$ . The negative quadratic slope ( $-.18$ ,  $p < .001$ ) indicated that, on average, children's growth would slow down gradually. The average acceleration was significantly lower for the experimental group than for the control group by  $-.285$  in Chinese EVT score per month squared. There was no evidence that children's site membership effects varied in the intercept and the acceleration after controlling for group membership.



**Table 4.5.*****HLM results for Chinese Expressive Vocabulary***

<i>Fixed Effects</i>	<i>Coefficient</i>	<i>Se</i>	<i>T ratio</i>	<i>p Value</i>
Models for Chinese_EVT				
Intercept, $\beta_{00}$	33.400	1.880	17.77	<0.001
Group, $\beta_{01}$	-2.588	3.737	-.692	0.491
Site1, $\beta_{02}$	12.366	4.561	2.711	0.009
Site2, $\beta_{03}$	20.689	4.748	4.357	<0.001
Models for TIME_c slope				
Intercept, $\beta_{10}$	1.378	0.181	7.591	<0.001
Group, $\beta_{11}$	1.606	0.358	4.479	<0.001
Site1, $\beta_{12}$	0.498	0.406	1.225	0.225
Site2, $\beta_{13}$	1.071	0.476	2.250	0.027
Models for TIME_cS slope				
Intercept, $\beta_{20}$	-0.074	0.040	-1.859	0.064
Group, $\beta_{21}$	-0.285	0.079	-3.636	0.001
Site1, $\beta_{22}$	-0.081	0.093	-0.866	0.388
Site2, $\beta_{23}$	1.071	0.476	2.250	0.192
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	$\chi^2$	<i>p Value</i>
Chinese_EVT intercept, $r_{0i}$	278.297	76	6449.959	0.000
Growth rate, $r_{1i}$	0.835	76	235.384	0.000
Level-1 effect, $e$	8.234			

**Letter Recognition Task.** For the Letter Recognition Task, a comparison of the quadratic model with the linear growth model indicated a significant improved fit for the quadratic growth model,  $\lambda^2(2) = 39.4226$ ,  $p < .001$ . Thus, the quadratic model was retained. Table 4.6 summarizes the statistical finding for this model. The results of HLM revealed that although there were no differences in letter recognition from two groups at the post-test after controlling for site membership, the average growth rate was significantly higher for the experimental group than for the control group by 1.322 more letters per month,  $t(76) = 4.10$ ,  $p < .001$ . The negative quadratic slope ( $-.255$ ,  $p < .001$ ) indicated that, on average, children's acceleration rate in letter recognition would slow down gradually. The average acceleration was significantly lower for the experimental group than the control group,  $t(76) = -3.280$ ,  $p < .005$ , which means that the experimental group's advantage of growth rate would disappear gradually.

**Table 4.6.****HLM Results for Letter Recognition Task**

<i>Fixed Effects</i>	<i>Coefficient</i>	<i>Se</i>	<i>T ratio</i>	<i>p Value</i>
Models for Letter Recognition				
Intercept, $\beta_{00}$	17.833	0.864	20.636	<0.001
Group, $\beta_{01}$	2.640	1.712	1.536	0.128
Site1, $\beta_{02}$	-0.136	1.993	-0.068	0.946
Site2, $\beta_{03}$	4.082	2.247	1.817	0.073
Models for TIME_c slope				
Intercept, $\beta_{10}$	1.656	0.165	10.037	<0.001
Group, $\beta_{11}$	1.322	0.322	4.099	<0.001
Site1, $\beta_{12}$	0.302	0.366	0.825	0.412
Site2, $\beta_{13}$	0.258	0.433	0.596	0.553
Models for TIME_cS slope				
Intercept, $\beta_{20}$	-0.255	0.034	-7.494	<0.001
Group, $\beta_{21}$	-0.219	0.067	-3.280	0.002
Site1, $\beta_{22}$	-0.041	0.075	-0.544	0.586
Site2, $\beta_{23}$	-0.103	0.091	-1.132	0.259
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	$\chi^2$	<i>p Value</i>
English_EVT intercept, $r_{0i}$	57.833	76	1957.616	0.000
Growth rate, $r_{1i}$	0.295	76	168.994	0.000
Level-1 effect, $e$	6.016			

**Letter-Sound Production Task.** For the Letter-Sound Production Task, a comparison of the quadratic model with the linear growth model indicated a significant improved fit for the quadratic growth model,  $\lambda^2(2) = 70.555$ ,  $p < .001$ . Thus, the quadratic model was retained. See Table 4.7 for statistical summary for this model. The results of HLM revealed that children from the experimental group produced significantly more letter-sounds than children from the control group with the mean difference = 7.597,  $t(76) = 4.314$ ,  $p < .001$  at the post test after controlling for site membership. The results also indicated that the average growth rate was significantly higher for the experimental group than for the control group by 2.780 more letter-sounds per month,  $t(76) = 8.535$ ,  $p < .001$ . The negative quadratic slope ( $-.274$ ,  $t(225) = -8.209$ ,  $p < .001$ ) indicated that, on average, children's acceleration rate in sound production would slow down gradually. The average acceleration was significantly lower for the experimental group than for the control group by  $-.444$  letter-sounds per month<sup>2</sup>,  $t(225) = -7.032$ ,  $p < .001$ . There was no evidence that children's site membership effects varied in the intercept, the growth rate, and the acceleration after controlling for group membership.

**Table 4.7.****HLM results for Letter-Sound Production Task**

<i>Fixed Effects</i>	<i>Coefficient</i>	<i>Se</i>	<i>T ratio</i>	<i>p Value</i>
Models for Sound				
Intercept, $\beta_{00}$	8.350	0.893	9.353	<0.001
Group, $\beta_{01}$	7.597	1.761	4.314	<0.001
Site1, $\beta_{02}$	-2.582	1.915	-1.348	0.182
Site2, $\beta_{03}$	2.380	2.564	0.928	0.357
Models for TIME_c slope				
Intercept, $\beta_{10}$	1.821	0.171	10.615	<0.001
Group, $\beta_{11}$	2.780	0.326	8.535	<0.001
Site1, $\beta_{12}$	-0.317	0.411	-0.772	0.443
Site2, $\beta_{13}$	0.072	0.434	0.165	0.869
Models for TIME_cS slope				
Intercept, $\beta_{20}$	-0.274	0.033	-8.209	<0.001
Group, $\beta_{21}$	-0.444	0.063	-7.032	<0.001
Site1, $\beta_{22}$	0.068	0.078	0.867	0.387
Site2, $\beta_{23}$	0.035	0.087	0.408	0.683
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	$\chi^2$	<i>p Value</i>
Letter_sound intercept, $r_{0i}$	48.020	76	1692.888	0.000
Growth rate, $r_{1i}$	0.352	76	187.692	0.000
Level-1 effect, $e$	5.924			

**English Receptive Vocabulary.** For English receptive vocabulary, a comparison of the quadratic model with the linear growth model did not indicate a significant improved fit for the quadratic growth model,  $\lambda^2(2) = 5.027$ ,  $p > .05$ . Thus, the linear model was retained. See Table 4.8 for a statistical summary for this model. The results of HLM revealed that neither children's group membership nor their site membership affected their performance at post test and the acceleration. These memberships also did not affect their growth rate.

**Table 4.8.****HLM Results for English Receptive Vocabulary**

<i>Fixed Effects</i>	<i>Coefficient</i>	<i>Se</i>	<i>T ratio</i>	<i>p Value</i>
Models for English_PPVT				
Intercept, $\beta_{00}$	40.298	2.545	15.836	<0.001
Group, $\beta_{01}$	9.734	5.028	1.936	0.056
Site1, $\beta_{02}$	-5.189	5.154	-1.007	0.318
Site2, $\beta_{03}$	5.922	7.512	0.788	0.433
Models for TIME_c slope				
Intercept, $\beta_{10}$	1.149	0.123	9.338	<0.001
Group, $\beta_{11}$	0.124	0.247	0.502	0.616
Site1, $\beta_{12}$	-0.292	0.280	-1.045	0.298
Site2, $\beta_{13}$	-0.515	0.334	-1.539	0.125
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	$\chi^2$	<i>p Value</i>
English_EVT intercept, $r_{0i}$	523.186		4359.504	0.000
Growth rate, $r_{1i}$				0.000
Level-1 effect, $e$	27.128			

**Chinese Receptive Vocabulary.** For Chinese receptive vocabulary, a comparison of the quadratic model with the linear growth model indicated a significant improved fit for the quadratic growth model,  $\lambda^2(2) = 7.806$ ,  $p < .05$ . Thus, the quadratic model was retained. See Table 4.9 for a statistical summary for this model. The results of HLM revealed that children's group membership did not affect their Chinese receptive vocabulary at post-test.

Children from the two groups also showed no difference in growth rate after controlling for their site membership. However, children from the Northtown site performed significantly better on the Chinese PPVT than children from the other two sites after controlling for their group membership, with the mean difference = 25.322,  $t(73)=3.686$ ,  $p<.005$ . The growth rate for this group also approached a significant level of difference compared to the other groups.



**Table 4.9.*****HLM results for Chinese Receptive Vocabulary***

<i>Fixed Effects</i>	<i>Coefficient</i>	<i>Se</i>	<i>T ratio</i>	<i>p Value</i>
Models for Chinese_PPVT				
Intercept, $\beta_{00}$	39.126	2.546	15.369	<0.001
Group, $\beta_{01}$	-5.545	4.969	-1.116	0.269
Site1, $\beta_{02}$	9.929	5.818	1.707	0.092
Site2, $\beta_{03}$	25.322	6.869	3.686	0.001
Models for TIME_c slope				
Intercept, $\beta_{10}$	1.250	0.158	7.911	<0.001
Group, $\beta_{11}$	0.047	0.317	0.149	0.883
Site1, $\beta_{12}$	0.282	0.324	0.868	0.389
Site2, $\beta_{13}$	0.840	0.446	1.884	0.063
Models for TIME_cS slope				
Intercept, $\beta_{20}$	-0.051	0.037	-1.356	0.177
Group, $\beta_{21}$	-0.081	0.075	-1.072	0.285
Site1, $\beta_{22}$	-0.065	0.075	-0.862	0.390
Site2, $\beta_{23}$	-0.101	0.109	-0.929	0.354
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	$\chi^2$	<i>p Value</i>
Sound intercept, $r_{0i}$	484.039	73	11443.312	0.000
Growth rate, $r_{1i}$	0.457	73	186.412	0.000
Level-1 effect, $e$	7.259			

**The Early Reading Ability Test.** For this test, a comparison of the quadratic model with the linear growth model indicated a significant improved fit for the quadratic growth model,  $\lambda^2(2) = 90.632, p < .001$ . Thus, the quadratic model was retained. See Table 4.11 for a statistical summary for this model. The HLM results indicated that children from the Downtown site scored significantly lower at the post-test than children from the other two sites with the mean difference = -8.895,  $t(72) = -2.378, p < .05$ . The results revealed no significant group difference at the post-test after controlling for site membership. Furthermore, the results indicated that the experimental group showed significantly higher growth rate than the control group after controlling for the site membership, with the average growth rate 1.204 per month higher than the control group,  $t(72) = 3.406, p < .005$ . There was no evidence that children's site membership effects varied in the average growth rate. The negative quadratic slope ( $-.229, p < .001$ ) indicated that, on average, children's growth would slow down gradually. The average acceleration was significantly lower for the experimental group than for the control group by  $-.191$  in this subtest score per month squared, which indicated that the advantage of growth rate in the experimental group would gradually disappear. There was no evidence that children's site membership effects varied in the average growth rate, and in the acceleration rate, after controlling for site membership.

**Table 4. 10.****HLM Results for TERA**

<i>Fixed Effects</i>	<i>Coefficient</i>	<i>Se</i>	<i>T ratio</i>	<i>p Value</i>
Models for TERA				
Intercept, $\beta_{00}$	26.588	1.596	16.661	<0.001
Group, $\beta_{01}$	3.682	3.183	1.157	0.252
Site1, $\beta_{02}$	-8.895	3.740	-2.378	0.020
Site2, $\beta_{03}$	0.740	4.331	0.171	0.865
Models for TIME_c slope				
Intercept, $\beta_{10}$	1.893	0.175	10.805	<0.001
Group, $\beta_{11}$	1.204	0.353	3.406	0.001
Site1, $\beta_{12}$	-0.182	0.379	-0.480	0.632
Site2, $\beta_{13}$	0.723	0.529	1.366	0.176
Models for TIME_cS slope				
Intercept, $\beta_{20}$	-0.229	0.039	-5.863	<0.001
Group, $\beta_{21}$	-0.191	0.079	-2.419	0.017
Site1, $\beta_{22}$	0.078	0.086	0.913	0.363
Site2, $\beta_{23}$	-0.128	0.117	-1.100	0.273
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	$\chi^2$	<i>p Value</i>
TERA intercept, $r_{0i}$	201.373	71	5133.346	0.000
Growth rate, $r_{1i}$	0.065	71		0.113
Level-1 effect, $e$	7.648			

To summarize the HLM results, the experimental group outperformed the control group at the post-test in the English expressive vocabulary test, Chinese expressive vocabulary test, and Letter-sound production task. The growth rate was significantly higher for the experimental group in the following tasks: the English EVT, Chinese EVT, Letter Recognition Task, Letter-sound Production Task, Number sense task, and TERA. However, children's receptive vocabulary in both languages did not differ across groups at the post-test. Their growth rates in receptive vocabulary in both languages were not different either.

## CHAPTER FIVE: DISCUSSION

### *Overview*

The present study has revealed important findings with respect to the predictive power of the home literacy environment on young Chinese children's first and second language and literacy development. Using a pre-test, post-test, and delayed post-test design, the growth curve models demonstrated positive program effects of the Chinese family literacy intervention with linguistic and cultural supports. Children's expressive vocabulary in both Chinese and English showed significant growth when compared to the control group. In contrast there were no intervention effects on receptive vocabulary in either language. Children in the family literacy intervention group not only made significantly greater gains on the letter recognition task and the letter-sound production task in English, but also showed significant higher growth rate in the English letter-sound production task. For the Test of Early Reading Ability, Children from the site with lower maternal education levels showed lower gains than children from the other two sites with higher maternal educational levels.

### *The home literacy environment and children's literacy development*

As expected, family demographic variables, especially mother's education level, played a role in predicting children's early literacy skills in both languages. This study also revealed that the relation between the home literacy environment and children's language and literacy skills persisted in both languages. Both reading resources in the home and children's age when their parents started to read to them significantly predicted children's literacy skills, findings that are consistent with previous research (Bus et al., 1995; Clark, 1976; McBride-Chang et al., 1993; Morrow, 1983; Sénéchal & LeFevre, 2002). A unique contribution of this study is that it demonstrates how different aspects of the home literacy

environment affect children's Chinese and English literacy skills differently. Children whose parents began to read English books to them at an early age performed better on the English receptive vocabulary test and the letter-sound production test than children whose parents began to read English books to them at a later age. One possible explanation is that parents who start to read to their children in English have higher proficiency in English. Therefore, they are more capable of reading in English to their children, and more likely to be using a greater number and variety of English words in their interactions with their children. Another possible explanation is that the language environment of the family, inside and outside the home, is more English intensive. This may also explain the finding that the number of English reading materials in the household did not predict children's English vocabulary. Children and their families can access intensive English reading materials outside of the household in places such as the public library, community centre and daycare centre, which in turn may have decreased the power of the number of English reading materials in the household.

However, this finding for English vocabulary is not consistent with results obtained on the Chinese measures. It was the number of Chinese reading materials in the home that significantly predicted children's performance on the Chinese measures: Chinese expressive vocabulary and Chinese receptive vocabulary. Children's age when their parents started to read to them in Chinese did not predict children's performance on these two Chinese measures. This finding may not be surprising if we consider language attrition research. For example, it has been shown that one of the intralinguistic factors attributed to L1 attrition in the L2 environment is the amount of contact with the L1 (Cook, 2003; de Bot, Gommans, & Rossing, 1991; Isurin, 2000; Jaspaert & Kroon, 1989). This factor is one of the most

important causes of deterioration of L1 skills in individuals who no longer live in their native country. Families with more Chinese reading materials in their household may place more value on Chinese culture and language in an English-speaking country, and therefore, these children have greater ongoing direct contact with Chinese. At the same time, due to the reason that the spoken language outside the home is more English intensive, the contribution of the age when the child is read to in Chinese might be decreased. This may explain the result that the child's age when he or she was read to in Chinese did not predict the child's Chinese vocabulary.

Access to Chinese reading materials is limited for families who live in Toronto and who speak Chinese as a first language. There are very few Chinese reading materials available outside of the family. In the parents' focus group, parents talked about their excitement at "seeing so many Chinese children's books in the program." One mother said:

I like this program because I can choose from so many Chinese children's books for my child. We have been in Canada for three years and never been back to China. When we came, she [was] only about one year old, and we did not bring any books for her. Now when I want to teach her Chinese, I found no suitable Chinese books for her.

Children from homes with more Chinese materials had increased exposure to Chinese literacy experiences as compared to children who had fewer materials. The availability of Chinese reading resources in the home determines children's exposure to literacy materials and activities, which in turn is the element of the home literacy environment that most affects children's performance. When English reading resources are more prevalent in the environment, the age at which children's parents start to read to them becomes an important predictor of children's exposure to literacy materials and activities, which in turn affects children's English literacy development. This study also found that children's age when they were first read to in English predicted their performance in letter-sound production. This

finding is consistent with the literature and supports the idea that children's exposure to print and their experiences with print itself contribute to growth in language and literacy (Evans et al., 2000; Sénéchal et al., 1998). However, it is important to keep in mind that different elements of the home literacy environment relate in different ways to children's literacy development in each of their two languages. This provides much needed evidence in family literacy practice to support children from multi-language groups, and is a potentially important contribution to the literature.

The growth curve models demonstrated that children from the intervention group made significantly higher gains in expressive vocabulary in both languages than children from the control group. Both the performance at the post-test and the growth rate from the pre-test to delayed post-test favored the experimental group over the control group. Detailed discussions are presented below.

### ***Intervention effects on children's expressive vocabulary***

One of the many goals of the current study was to examine the effects of this Chinese family literacy intervention on children's expressive vocabulary. The study found that children from the intervention group made significantly greater gains in English expressive vocabulary scores than did their counterparts from the control group, immediately following the intervention. Furthermore, the average growth rate of their English expressive vocabulary from pre-test to the delayed post-test was significantly higher than their counterparts in the control group. The average growth rate of children's Chinese expressive vocabulary from pre-test to the delayed post-test was also significantly higher for the intervention group than for the control group. The positive intervention effect on children's expressive vocabulary in both languages is encouraging. A core tenet of this family literacy intervention program was



to encourage parents to actively engage with their children in literacy-focused interactions. Parents were encouraged to use dialogic techniques during their interactions with their children. Adult questioning provides children with more opportunities to use language, to structure responses, and thus to improve expressive vocabulary. The positive intervention effect also indicates that when language and cultural supports are provided, parents are likely to “digest” the key messages in the intervention program. They learn to understand how to read to their children no matter which language they use. They know why the letter-sound correspondence, which does not exist in the Chinese language, is important in English literacy development. They also know that the quality of the input in first language can be transferred to their second language development. This is encouraging because in this study it led to progressive learning results when the key messages were linked to parents’ specific language and cultural background.

### ***Intervention effects on letter-name recognition and letter-sound production***

One very important finding of the current study was the positive effects of the intervention on children’s letter-sound production. The average growth rate for letter-name recognition from the pre-test to the delayed post-test was significantly greater for the experimental group. These children also knew more letter-sounds than children in the control group after the intervention. The average growth rate for the number of letter-sounds from the pre-test to the delayed post-test was also significantly higher than the growth rate of their counterparts from the control group. The research literature has demonstrated the importance of letter-name knowledge in learning to read English (Chall, 1967; Levin, Patel, Margalit, & Barad, 2002; Treiman, 1993) either as a first language or English as a second language (McBride-Chang & Treiman, 2003; Share et al., 1984). Although letter-name knowledge has

a significant impact on letter-sound learning (Share, 2004), skill in letter-sound correspondence is more important in reading (Goswami & Bryant, 1990; Treiman, 1992). The findings of the current study demonstrated that children's knowledge of letter-sound correspondence can be greatly enhanced if their parents understand the importance of this knowledge. Most parents in the current study believed that teaching children letter names helps prepare them for school. However, due to differences in instructional practices in teaching English and Chinese, many Chinese parents do not know the importance of letter-sound correspondence in early reading and writing. This was reflected in the parents' focus group discussion. One mother said:

I really like the CD. It really helps my girl and myself.... We listen to it while we are in the car. Before coming here, one day when I was teaching her letter p. She said /p/. I was surprised that where she learned Pinyin /p/ (Note: the sound that letter p makes in English is same as it is in Chinese Pinyin). Now I know that she is making the sound of that letter! I never know that there is such a thing (Note: she meant the correspondence between letter-name and letter-sound)....

This finding is very important to consider in designing a family literacy curriculum for a specific language and cultural group. For families whose first language is not represented by an alphabetic system, the knowledge of English letter-sound correspondence, and the importance of this correspondence in later reading, need to be emphasized in the intervention. This finding points to an important direction in designing family literacy curricula for minority groups from certain language and cultural backgrounds.

### ***Intervention effects on children's receptive vocabulary***

The present study failed to find significant effects with respect to receptive language development for children in either language. Neither the performance on the receptive vocabulary tests after the intervention, nor the growth rates in receptive vocabulary for these

two languages were different across the intervention group and the control group.

Interestingly, findings related to increases in receptive vocabulary following intervention programs are not consistent in the literature. For example, Whitehurst (Whitehurst & Lonigan, 1998; Whitehurst, & Lonigan, 2001; Whitehurst et al., 1988) found no significant increases in receptive vocabulary using PPVT as the measure of receptive vocabulary. Others (Hargrave & Sénéchal, 2000; Jordan, et al., 2000) also did not find significant increases in receptive vocabulary. However, other experimental studies (Sénéchal, 1997; Sénéchal et al., 1995; Sharif, Ozuah, Dinkevich, & Mulvihill, 2003) did find significant receptive vocabulary increases with different measures other than PPVT. There are two possible interpretations of this finding. One is that significant increases in receptive vocabulary are hard to achieve in the short span of time covered by this intervention. The other is that the measure that we used for receptive vocabulary (the standardized Peabody Picture Vocabulary Test) was not sensitive enough to capture children's development. More sensitive measures may be required to appraise the efficacy of the intervention on receptive vocabulary. However, it is encouraging to note that there was a trend toward greater receptive vocabulary growth in the experimental group as compared to the control group. This suggests that if we use more sensitive measures or we allow longer time for children to develop, we might be able to see significant growth in receptive vocabulary favouring the experimental group children.

### ***Intervention effects on children's early reading ability in English***

The current study also examined the growth trajectory of children's English early reading skills, and the results demonstrated that the average growth rate for performance on the Test of Early Reading Ability was significantly higher for the intervention group than for the control group. Although children from the intervention group did not outperform children

from the control group immediately following the intervention, their faster growth rate indicated a promising trend in this direction. This pattern of findings is consistent with a series of studies that showed that family intervention programs produce significant positive gains in children's early reading skills (Campbell & Ramey, 1994; Jordan et al., 2000; Ramey & Campbell, 1991). Interestingly, the children from the Downtown site scored lower at the post-test than children from the other two sites, which indicates that children from a more socio-economically disadvantaged group (with lower average mother's educational level) made fewer gains than those whose mothers had attained a higher educational level. This gap-widening effect of the intervention programs is a not uncommon finding in the domain of early reading (Nicholson, 1999; Shaywitz et al., 1995; Stanovich, 1986). Ceci and Papierno (2005) suggested that interventions will be most effective if they are both targeted *and* targeted to the right subgroups. They argued that the reason that universal interventions widen the gap is because they are directed toward the middle- or upper-level individual. Although the current family literacy program targeted Chinese immigrants in Canada, cautions are needed because of the diverse characteristics of this group. This group of mothers from the Downtown site may need extra help in order to fully benefit from the key messages delivered during the workshop. One possible solution to remediate this situation is to invest more time and resources, and provide a more extensive intervention to this group.

In summary, participation in this family literacy program by members of the Chinese-Canadian community had considerable impact on children's language and literacy scores in both English and Chinese. First, children's expressive vocabulary in both Chinese and English showed large positive program effects not only in terms of post-intervention performance but also in terms of growth rate. Second, receiving this intervention had a

particularly powerful impact on children's performance in letter-sound production. This is critically important for families who speak a home language that is not represented by an alphabetic script and for whom the concept of letter-sound correspondence is acquired in a second language. Third, children's early English reading skills also showed a positive rate of growth. Furthermore, this study also revealed that children's first- and second-language and literacy abilities were predicted by different elements of the home literacy environment. In an environment where English is the language of formal education, and where English reading materials are more available in or outside of the home, the age at which children begin to be read to predicts their English language and literacy skills. The presence of Chinese reading materials in the home predicts children's Chinese language and literacy skills. This study also found that the higher the mother's education level, the greater the gains made by the child.

### ***Beyond the numbers***

The high level of attendance suggests that families enjoyed the workshops where they could use their first language to discuss topics related to their children's literacy development in their two languages. In fact, comments in the parents' focus group discussions confirm this impression. Parents expressed that they felt comfortable in an environment where they could understand one another without the barrier of language; they were comfortable being actively involved in the activities with their children and the discussions with other parents. Parents said they enjoyed meeting with other parents to discuss similar interests in parenting. One mother said:

Both my child and I like to come to the program. Not like in China, you can talk to other parents when you pick your kid up from the daycare. I don't know how to talk to other parents about parenting, and I really need to talk

with people about this. Here is good. We all have children at same age, and we can talk in Chinese. I don't feel lonely.

Parents said they felt more comfortable about coming to the program knowing that they could understand and communicate with facilitators because they speak the same language and share the same cultural background. Topics of discussion were not limited to language and literacy development. They also included school readiness and school rules.

One parent said:

My English is not good; therefore I am scared to talk to his teacher. I am afraid that they will laugh at my English. I have lots of questions, but I don't know where to start. I am glad that I can ask questions here. The teachers [author note, here she meant the facilitators] understand my concerns, and they also know the school's rules. They explained these to me. This is very helpful.

They were fascinated by the parent-child activities and believed that they could carry out these activities at home, too. Many parents said that they did not know how to help their children with their English, nor did they think they could because they do not speak English well enough. After participating in the program, they realized that there were many things that they can do. Many parents said they were learning new ideas; they especially liked the letter-sound CD that they brought home.

I really like the letter-sound CD. I also made some copies for my friends. It really helps my child; it also helps me and my husband to learn English.

The extremely high attendance rate (with 92% attendance in all sessions across three sites) also explained the positive program effects on children's outcomes. Timmons (2007) reported that maintaining a high retention rate has been one of the biggest challenges in family literacy implementation. The extremely high attendance rate in this study demonstrated that it is feasible to keep recruited families in the program. One important condition is that both parents and children feel comfortable in the program. Parents felt that

they could learn something new from this program. The facilitators in the current study telephoned the participating families once a week before the program day. They talked with parents about the literacy activities that they did in the past week, and reminded them about the program the next day. This was found to be very helpful. The high attendance in the program is a key element of demonstrated program success. The successful attendance rate and the positive program effect in most measures of children's outcomes indicate that the family literacy program works well when cultural and linguistic supports are provided.

Of course, the enthusiastic reception of this intervention with these participants does not ensure its feasibility with a different population. Chinese immigrant parents are very motivated to be involved into children's education. This can be reflected in the rapid sign up for the program . It also can be seen through the high retention rate. Replicating this sort of intervention may require similar conditions. For example, that an intervention like this one may require collaboration with members of the local ethnic community; in this case, they provided the cultural and linguistic resources and materials. This program relied on the ethnic community to train facilitators, recruit families, and to provide space. Modifications may be needed to meet the needs of other ethnic groups.

The findings of the current study are important for families who participated in the program because these families directly benefited from the program not only in children's outcomes but also in parents' knowledge. The findings of the current study bridge the gap in the literature of family literacy programs for minority groups and point to a promising direction for family literacy implementation among diverse cultural and linguistic groups.

### *Limitations and future research*

As with any study, the present study has some limitations. First, the homogeneous ethnic and linguistic sample in the current study limits the generalizability of the findings. While the families in the study represented a wide range of income and parental education levels, generally, these families represented the Chinese immigrants in the Greater Toronto Area in Canada. Further investigation is needed to determine if the program effects found in this study can be generalized to immigrant families who choose to locate in a small town or rural area. It is also worthwhile investigating how to make the program more effective for low SES parents even within this ethnic group. In addition, while the families in this study are representative of the population from one specific ethnic and linguistic group, further investigation is needed to determine if the program effects found in this study can be generalized to populations with other minority groups.

The second limitation concerns the measures used in the study. Because there is a very limited number of standardized measures on early language and literacy development available for this age group, the current study did not have enough measures to examine all potential children's outcomes such as their phonological awareness skills. Although the improvements in letter-sound knowledge are more likely to improve their performance in the phonological skills, specific measures in phonological awareness would better examine the intervention effects. Further investigation should include measures that examine more specific skills such as phonological awareness measures and morphological awareness measures.

Finally, the small number of subjects in each site is a cause for concern. It may limit the power of the findings and the representativeness of a larger population of Chinese



immigrant families in Canada. A replication of the findings with larger samples is definitely worthwhile.

### *Conclusion*

This study has shown that a family literacy intervention, adapted for use with Chinese preschoolers and their parents, can have significant and positive impact on children's literacy development in both English and Chinese. Further, it has shown that specific home literacy environments in Chinese and in English are related to children's literacy development in both languages. In Chinese, the number of Chinese materials in the home had the greatest impact on children's Chinese receptive and expressive vocabularies. In English, the age at which the child was first read to in English had the greatest impact on children's English expressive vocabularies, and their letter-sound production knowledge, and their early reading ability. Parents found that the culturally and linguistically relevant adaptation of the family literacy program was key to their enjoyment of the program and to their degree of learning about early literacy development. The study has shown that the provision of culturally and linguistically appropriate family literacy support goes a long way in helping diverse families to foster optimal literacy experiences for their young children at home.

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## APPENDIXES

### Appendix A Parent Questionnaire English

#### Family Information Survey

This survey includes questions on your personal background and your home literacy environment. Any information you provide will be treated confidentially. Please return the survey to the facilitator. Thank you for participating.

#### SECTION A: BACKGROUND

**A1.**

Parents name \_\_\_\_\_

Home phone number \_\_\_\_\_

Mailing address \_\_\_\_\_ Postal code \_\_\_\_\_

E-mail address \_\_\_\_\_  
—

**A5.** Name and birth date of your child(ren), please check boy or girl

**Child 1:** Birth date: \_\_\_\_\_ Name: \_\_\_\_\_ ☐ boy ☐ girl  
(date/month/year)

**Child 2:** Birth date: \_\_\_\_\_ Name: \_\_\_\_\_ ☐ boy ☐ girl  
(date/month/year)

**Child 3:** Birth date: \_\_\_\_\_ Name: \_\_\_\_\_ ☐ boy ☐ girl  
(date/month/year)

**Child 4:** Birth date: \_\_\_\_\_ Name: \_\_\_\_\_ ☐ boy ☐ girl  
(date/month/year)

**A6. Mother's highest level of education.**

**Please check one of the following:**

- ☐ Completed junior high school
- ☐ Completed secondary/high school
- ☐ Completed community college or technical college
- ☐ Completed undergraduate university degree
- ☐ Completed graduate/advanced university degree

**A7. Father's highest level of education. Please**

**check one of the following:**

- ☐ Completed junior high school
- ☐ Completed secondary/high school
- ☐ Completed community college or technical college
- ☐ Completed undergraduate university degree
- ☐ Completed graduate/advanced university degree

**A8. If your 3-5 year-old child has attended or currently attends daycare, please complete the following information:**

**Child 1:** First name: \_\_\_\_\_

How long has s/he attend daycare \_\_\_\_\_ How many hours/week \_\_\_\_\_

**Child 2:** First name: \_\_\_\_\_

How long has s/he attend daycare \_\_\_\_\_ How many hours/week \_\_\_\_\_

**Child 3:** First name: \_\_\_\_\_

How long has s/he attend daycare \_\_\_\_\_ How many hours/week \_\_\_\_\_

**A9. If your child has attended or currently attends other programs such as a Family Resource Centre program, please describe below:**

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How many hours per week? \_\_\_\_\_

#### **SECTION B: About this program**

**B1. Why did you decide to register for this program?**

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**B2. Is there something in particular that you are hoping to learn about in the program?**

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**SECTION C: Home Environment**

<b>C1. Which of the following items are used in your home?</b> <input type="checkbox"/> Magazines/Newspapers <input type="checkbox"/> Children's music <input type="checkbox"/> Writing materials <input type="checkbox"/> Computer <input type="checkbox"/> Adult Novels <input type="checkbox"/> Children's books/Magazines <input type="checkbox"/> Religious books	<b>Please check all that apply:</b> <input type="checkbox"/> Board games/card games <input type="checkbox"/> Calendar or day-planner <input type="checkbox"/> Address book <input type="checkbox"/> Cookbooks <input type="checkbox"/> How-to manuals <input type="checkbox"/> Reference materials/encyclopedias <input type="checkbox"/> Other kind of books/written materials (please specify) <hr/>
<b>C2. What kinds of things do you do to help your child learn about reading and writing?</b> <hr/> <hr/>	
<b>C3. Does your child show interest in reading and writing? _____ If yes, please explain how.</b> <hr/> <hr/>	

<b>C4. At what age did you or another family member begin to read to your child?</b> <hr/>	<b>C5. How much time did your child spend watching television yesterday?</b> <hr/>	<b>C6. how much time did your child spend playing computer or video games last week?</b> <hr/>
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<b>C7. How often ...</b>	Hardly ever	Once or twice a month	Once or twice a week	Almost daily
a) ...do you or another family member read a picture book with your child?				
b) ...does your child watch "educational television" programs like Sesame Street?				
c) ...does your child ask to be read to?				
d) ...does your child look at books by himself or herself?				
e) ...do you or another family member go to the library with your child?				

**SECTION D: ABOUT YOUR CHILD**

How would you describe your child according to the following statements:	Not at all	Seldom	Sometime	Often	Very much/often
<b>My Child...</b>					
<b>D1. ... enjoys being read to</b>					
<b>D2. ... likes to look at books on her/his own</b>					
<b>D3. ... pretends to read familiar books.</b>					
<b>D4. ... is interested in learning letter names</b>					
<b>D5. ... likes to draw and scribble.</b>					
<b>D6. ... asks about word meanings</b>					
<b>D7. ... asks about what words</b>					

**SECTION E: ABOUT YOURSELF**

<b>E1. How confident do you feel ...</b>	Not at all	A little confident	Somehow confident	confident	Very confident
<b>in helping your child learn the knowledge and skills needed for successful reading and writing development</b>					

<b>E2. How much do you enjoy ...</b>	Not at all	Some	Moderately	Most of time	Very much
<b>... reading yourself?</b>					
<b>... reading to your child?</b>					
<b>... watching TV?</b>					

## Appendix B Parent Questionnaire Chinese

### 家庭信息问卷调查

该问卷包括一些您个人的背景及您家庭识字读书环境的问题.您所提供的信息都将被保密. 请把您的问卷交给“家庭快乐阅读”的辅导员.

感谢您的热心参与.

#### SECTION A: 基本背景

##### A1.

家长姓名 \_\_\_\_\_

家庭电话号码 \_\_\_\_\_

通信地址 \_\_\_\_\_ 邮政编码 \_\_\_\_\_

E-mail 地址 \_\_\_\_\_

##### A2. 孩子的姓名及他们的生日, 并请选择男,女

第一个孩子: 出生日期: \_\_\_\_\_ 姓名: \_\_\_\_\_ ☐ 男 ☐ 女  
(日/月/年)

第二个孩子: 出生日期: \_\_\_\_\_ 姓名: \_\_\_\_\_ ☐ 男 ☐ 女  
(日/月/年)

第三个孩子: 出生日期: \_\_\_\_\_ 姓名: \_\_\_\_\_ ☐ 男 ☐ 女  
(日/月/年)

第四个孩子: 出生日期: \_\_\_\_\_ 姓名: \_\_\_\_\_ ☐ 男 ☐ 女  
(日/月/年)

##### A3. 母亲的最高教育程度. 请在下列选项选择一个:

- ☐ 初中毕业
- ☐ 高中/中专毕业
- ☐ 大专毕业
- ☐ 本科毕业
- ☐ 硕士或以上学历毕业

##### A4. 父亲的最高教育程度, 请在下列选项选择一个:

- ☐ 初中毕业
- ☐ 高中/中专毕业
- ☐ 大专毕业
- ☐ 本科毕业
- ☐ 硕士或以上学历毕业

##### A5. 如果您 3-5 岁的孩子曾经或正在参加任何托儿服务, 请填写以下的信息:

第一个孩子: 名字: \_\_\_\_\_

参加托儿所或幼稚园多久? \_\_\_\_\_ 每周几个小时? \_\_\_\_\_

第二个孩子: 名字: \_\_\_\_\_

参加托儿所或幼稚园多久? \_\_\_\_\_ 每周几个小时? \_\_\_\_\_

第三个孩子: 名字: \_\_\_\_\_

参加托儿所或幼稚园多久? \_\_\_\_\_ 每周几个小时? \_\_\_\_\_

**A9.** 如果您的孩子参加过其它的类似亲子活动的项目,请注明:

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每周多少小时?\_\_\_\_\_

### **SECTION B: 关于这个活动**

**B1.** 您希望从这个活动中学到什么?

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**B2.** 您认为学习阅读最重要的原因是什么?

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### **SECTION C: 家庭环境**

**C1.** 您的家庭中拥有下面何种材料? 请选择所有适合的选项

- |                                      |  |
|--------------------------------------|--|
| <input type="checkbox"/> 书写材料        | <input type="checkbox"/> 拼图游戏/卡片游戏         |
| <input type="checkbox"/> 计算机         | <input type="checkbox"/> 日历或日志             |
| <input type="checkbox"/> 地址簿         | <input type="checkbox"/> 中文杂志/报纸           |
| <input type="checkbox"/> 英文杂志/报纸     | <input type="checkbox"/> 中文儿童音乐            |
| <input type="checkbox"/> 英文儿童音乐      | <input type="checkbox"/> 中文小说              |
| <input type="checkbox"/> 英文小说        | <input type="checkbox"/> 中文儿童读物/杂志         |
| <input type="checkbox"/> 英文儿童读物/杂志   | <input type="checkbox"/> 中文宗教读物            |
| <input type="checkbox"/> 英文宗教读物      | <input type="checkbox"/> 中文菜谱              |
| <input type="checkbox"/> 英文菜谱        | <input type="checkbox"/> 中文的各类使用手册         |
| <input type="checkbox"/> 英文的各类使用手册   | <input type="checkbox"/> 中文参考资料/百科全书       |
| <input type="checkbox"/> 英文参考资料/百科全书 | <input type="checkbox"/> 其它种类图书/书写材料 (请注明) |

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**C2a.** 为了帮助孩子学习读写英文,您都做过什么?

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**C2b.** 为了帮助孩子学习读写中文,您都做过什么?

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**C3a.** 从孩子多大开始,您或其它的家庭成员开始教孩子读英文书?

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**C3b.** 从孩子多大开始,您或其它的家庭成员开始教孩子读中文书?

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**C4.** 您孩子上一周看电视或者录像带,DVD 大约看了多长时间? \_\_\_\_\_ 其中,英文  
\_\_\_\_\_, 中文\_\_\_\_\_

孩子对喜欢的电视节目有哪些?请分别注明中,英文的节目名称

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**C5.** 您孩子上周大概花多少时间在玩电脑或电子游戏? \_\_\_\_\_

孩子最喜欢的游戏有哪些?

---

<b>C6.</b> 请对下面的陈述做出您认为最合适的选择...	从不	一次/ 每周	几次 / 每周	每天
a) ... 您或其它的家庭成员多久会和孩子一起读书?				
b) ... 您或其它的家庭成员多久会给孩子讲故事?				
c) ... 孩子多久会看见你读书或写字?				
d) ... 您或其它的家庭成员多久会和孩子一起唱儿歌或童谣?				

<b>C7.</b> 请对下面的陈述做出您认为最合适的选择 ...	从不	一年几 次	每月一 次	每月两 次以上
a) ... 您或其它的家庭成员多久会带孩子出去做户外活动?				
b) ...您或其它的家庭成员多久会和孩子一起去图书馆?				

**SECTION D: 关于您的孩子**

针对下面的说法,您认为何种程度最能准确描述您的孩子?请选择:	完全不同意	不同意	即不同意也不反对	同意	完全同意
我的孩子...					
D1. ... 常常要求我们给她念书.					
D2. ... 喜欢自己看书.					
D3. ... 常常能装模作样读一些她熟悉的书.					
D4. ... 对学习字母很有兴趣.					
D5. ... 喜欢画画和写字.					
D6. ... 对于在电视上,听故事中,或日常会话中听到的一些不明白的词,孩子会追问这些词的意思.					
D7. ... 会指着字母,单词,图标以及汉字等,问这是什么意思.					
D8. ... 愿意把他/她白天所发生的事情告诉我,讲给我听.					
D9. ... 自己编故事,然后讲给我听.					
D10. ... 喜欢听我给她/他讲故事.					
D11. ... 喜欢学习数字游戏或查数.					
D12. ... 相对于读书来说,更爱看电视.					





**SECTION E: 关于您自己**

针对下面的说法,您认为何种程度最能准确描述能您自己?请选择:	完全不同意	不同意	即不同意也不反对	同意	完全同意
E1. 我自己很喜欢读书.					
E2. 我是一个很好的读者.					
E3. 我可以帮助孩子成为一个好的读者.					
E4. 对于孩子的阅读能力,我有很大的影响力.					
E5. 我很喜欢和孩子一起读书.					
E6. 我很喜欢和孩子一起画画和写字.					

## Appendix C Home Literacy Activity Log English

Name: \_\_\_\_\_ Week of: \_\_\_\_\_ to \_\_\_\_\_

*Below are various types of **home activities**. It is not expected that you will do all of these things at home each week, but for each activity that you do with your child, please make a mark (✓) in the block for EACH TIME you do that activity. You may find the best time to do this is at the end of each day when you can reflect on the kinds of activities you have engaged in that day.*

Looked at and talked about print.... 	... in the world around us (street sign, store signs, food labels)	... for following directions/instructions (e.g. T.V guide, recipes)	...“grown up” writing (writing letters, lists, email, etc.)	... print during printing (e.g. what letters to spell names or other words, how to print, etc.)
Writing Activities 	writing together (e.g. on a birthday card, a list)	writing or scribbling in pretend play (play secretary, doctor, etc.)	writing to practice letters, familiar words (e.g. names)	writing with play/craft materials (play dough, pipe cleaners, etc.)
Games and outings 	play games about letters or words	play other board games	play word games (I Spy, Guess what I’m thinking of, etc.)	visit the library or bookstore
Sharing songs, stories, words, and rhymes 	read storybooks and talk about them	talk about the meanings of words (from T.V., conversations, stories)	sing songs, recite nursery rhymes	play with words (make up rhymes, silly words, etc.)

Other Activities: (if not in chart above)

Describe and (✓)	Describe and (✓)
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Please write your thoughts about activities you have done with your child this week. Have you noticed anything particular about your child’s learning and/or interest? Have you learned or noticed something during this week that helps you to help your child? Do you have other comments?

## Appendix D Home Literacy Activity Log Chinese

姓名: \_\_\_\_\_

时间: \_\_\_\_\_

下面是您可能会和孩子在家里所做的和早期语言文字发展相关的各种家庭活动。您无须每周都要把所有的活动做过,但是凡是您和孩子一起做过的活动,请您标记下来。每做一次,请您标一次,一周结束之后,请把这个表格交给“快乐阅读”的辅导员。对于我们没有提及的任何活动,如果您愿意,请您添加进来。非常感谢您的热心参与

看看说说... 	... 我们周围的世界 (街道上的图标,商店图标,食品标签)	... 谈谈如何看实用文字(如: 电视清单, 菜谱)	...谈论如何写字	... 边写边说
写写画画... 	一起写写 (例如生日卡,或者是列清单)	写写画画做游戏 (做秘书或者医生游戏.)	一起联系写字母或熟悉的单词,汉字 (例如名字)	边玩边写(用橡皮泥)
游戏... 	玩填字或填词的游戏	拼图游戏	玩单词游戏 (I Spy, 猜猜我在想什么等等.)	去图书馆或书店
唱歌,讲故事,背童谣... 	读故事书并一起谈论故事中的人和事	一起谈论字或单词的意思 (在电视,谈话或故事中出现的话)	唱歌或背童谣	一起创作童谣

其它的活动

描述并标记次数 (√)	描述并标记次数(√)
-------------	------------

请记录下你这周和孩子一起活动后的感想,您是否注意到孩子有没有对特别的事情或活动感兴趣?您这个星期在我们的活动中是否学到了什么有价值的知识?请您列出来.

## **Appendix E Focus-Group Discussion Questions for Parents**

Q1. What are the reasons that you chose to participate in the program?

Q2. Did you have concerns about attending the program? Were there things that might have prevented you from being able to attend the program? If so, how did you work around these?

Q3. What kind of responses / reactions did you receive from family, friends, and/or co-workers about your participation in this program? How did they feel about it?

Q4. What kinds of questions did you have concerning the literacy development of your child? Has participation addressed these concerns/issues and/or raised new ones?

Q5. Are there things that make it difficult at times in helping your child to learn at home? Has participation in the program helped address these things?

Q6. How did you feel about the program in terms of?

- the way the sessions were organized,
- the learning activities for parents and,
- the way the facilitators worked with you
- the way the facilitators worked with the children

Did your feelings about any of the above change over time? How?

Q7. Has the way that you think about your child's literacy development changed because of the program? How?

Q8. Has what you do at home to help your child learn changed because of the program? How?

Q9. In what kind of setting and with what assistance do you feel you best learn?

Q10. Are there other ways that this program can be improved?