A SINGING APPROACH TO SHARED READING: THE EFFECTS UPON U.S. KINDERGARTENERS' CHINESE VOCABULARY ACQUISITION AND RETENTION

By

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ABSTRACT

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The present study investigated the effects that the use of songs in Shared Reading had on the Chinese vocabulary acquisition and retention of young bilingual learners in Chinese immersion programs using an experimental study design. One hundred and six immersion kindergarteners from three different school districts in Michigan participated in the study. They were assigned to the experimental group (n=53) and the control group (n=53) at the class level. The experimental group listened to a story song and shared singing it, while the control group heard the same story read aloud and shared reading it. Three types of instruments were used for assessing children's acquisition and retention of vocabulary targeted in the read aloud and shared reading/singing for the pre- and post-tests: (1) Chinese picture naming, (2) Chinese word recognition, and (3) spoken vocabulary recall in the story. An independent t-test was used to examine the vocabulary growth between the experimental and the control groups on the immediate posttests; and a one-way ANOVA analysis was employed to look for significant differences between the two groups in vocabulary retention. The results showed that there was a statistically significant difference between the two groups on the acquisition and retention of the spoken recall test, but no differences were detected on the other two measures. This finding implies that singing can be an effective pedagogical tool for spoken vocabulary acquisition and retention in the story, but not for vocabulary acquisition and retention of picture naming or word recognition.

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INTRODUCTION

Over the past decade, there has been a rapid growth of Chinese language learners in the United States. According to the reports of Asia Society, while in 2004 there were 263 Chinese programs in the United States, in 2008, the number increased to 779 (Asia Society, 2011). There is also a rapid increase in the number of Chinese immersion programs at the elementary level. According to Mandarin Immersion Parents Council, before 2000 there were only 13 Chinese immersion schools at the elementary level in the U.S. In 2012, the number increased to 99.

Research shows that language learning is most effective in elementary school (Ellis, 2008; Larsen-Freeman, 2008). For students learning Chinese, elementary programs would be particularly useful. However, with the fast expansion of the elementary Chinese programs in the U.S., many are facing instructional challenges to address students' language learning and development needs. These include lack of rich vocabulary exposure and lack of systematic vocabulary instruction, which lead to students' insufficient vocabulary knowledge (Belisle, 1997; Cheng, 2000; Fu, 2005). As Belisle (1997) noted, vocabulary development is "a top priority and an on-going challenge" (p. 1) for immersion students. As Chinese as a second/foreign language (CSL/CFL) programs in general and early Chinese immersion programs in particular are a recent phenomenon, there is a great demand for researchers to inform teachers of effective practices in instruction.

While research has paid some attention to reading comprehension, listening and speaking, the area of vocabulary acquisition has not received as much attention (Coady & Huckin, 1997). This is mainly caused by the language instructional trend in the past few decades in favor of syntactic development rather than vocabulary acquisition (Cheng, 2000). Under this influence,

teachers and researchers tend to view teaching vocabulary as a low-level intellectual activity

unworthy of their full attention, with grammar being the main challenge. Consequently,

vocabulary instruction and research is neglected (Fu, 2005). Recent years have witnessed

increasing interest in second language (L2) vocabulary research; however, in the field of Chinese

as a foreign/second language, research on vocabulary instruction is still very scarce, especially

for young Chinese immersion learners (Belisle, 1997; Everson, 2008).

Vocabulary is important for Chinese immersion students because they begin their

Chinese language learning from scratch but are required to acquire a much larger vocabulary

than students in traditional one-period foreign language classes in order to communicate in the

target language in an immersion environment (Lo & Murphy, 2010; Swain & Lapkin, 1991).

Lack of Chinese vocabulary will negatively impact their development of listening

comprehension, speaking fluency, reading automaticity, and ultimately their overall language

proficiency. For example, if young Chinese immersion learners lack skills in picture or object

naming (concept-sound mapping), or word recognition (script-sound association), which are two

basic building blocks in the process of Chinese language production in young children (Bates,

Camaioni, & Volterra, 1975), they will have difficulty achieving age-appropriate Chinese

reading proficiency. In this regard, "… learning a second language means learning its vocabulary"

(Gass, 1999, p. 325).

Given the importance of vocabulary learning to effective Chinese communication and

higher level communicative skill development, many researchers share the view that vocabulary

teaching should be the focus of Chinese language education for young learners (Li & Yang,

2004; Xu, 2005; Yang, H. Y., 2003; Yang, J. C., 2011) and it should start early in elementary

schools because it helps them achieve near-native listening and speaking skills (Ellis, 2008;

Larsen-Freeman, 2008). As Lin (2000) noted, "Good vocabulary acquisition is achieved through balanced learning activities between spoken and written Chinese begun from the early stages of learning" (p. 85).

While much research on effective Chinese vocabulary teaching and learning strategies for older learners has been explored (Fu, 2005; Shen, 2010; Zhang, 1990), there is lack of attention to younger learners in the field. Research on older learners have identified several key effective strategies that include visual learning (provide visual images such as pictures and visual actions accompanying the word) in addition to verbal explanations, key word imagination (relate a key word with other related words or images or meanings), context technique (to teach words in sentences and contexts), compare and contrast (compare and contrast meanings and shapes of the words), and word structure (analyze word structure to help students distinguish similar words). However, research on these strategies has been limited to Chinese native speakers or college level CFL/CSL learners. There is very little discussion about what strategies are effective for young CFL/CSL learners and how they can be applied to classroom teaching. Moreover, the vocabulary strategies that are effective for Chinese native speakers may not be applicable to CFL/CSL learners.

As a result, many CFL/CSL teachers struggle with how to teach Chinese vocabulary effectively to young learners. As Cheng (2000) noted, "vocabulary is the main difficulty of all CFL learners at different levels, and it is also the main problem in all the learning processes of Chinese speaking, listening, reading and writing" (p. 8). This difficulty is due to a number of linguistic and pedagogical factors. One major factor is related to the non-alphabetic nature of the Chinese script (Everson, 2008; Hu, 2010; Thompson, 2008). Unlike the Indo-European languages in which each letter represents a sound, Chinese characters usually do not indicate

pronunciation. Thus, learning Chinese involves a great deal of memorization—remembering and making associations of the pronunciation, form, and meaning of each Chinese character. This creates challenges for young CFL/CSL learners who are used to the sound-out strategy in learning their alphabetic first language (L1). This unique linguistic factor also requires that CFL/CSL teachers use more strategies to motivate their students to learn Chinese vocabulary. The traditional methods of teaching Chinese vocabulary out of context through a grammar translation or an audio-lingual approach will apparently not interest the young CFL/CSL learners (Chu, 1990; Jiang, 2006). Nor will the study of core vocabulary lists from textbooks work for them because it is boring and ineffective for young language learners (Fischer, 1994; Rodríguez & Sadowki, 2000). Therefore, it is necessary to seek effective vocabulary instruction approaches that meet the needs of the young CFL/CSL learners.

The researcher has observed the CFL teachers' challenges in real classrooms when she was a field instructor for the Chinese Immersion Program at Michigan State University. While observing the Chinese immersion teachers in the classrooms, she found that they tended to rely merely on flashcards to expose and teach concept-sound mapping and word lists to practice script-sound association. Even though the majority of the classroom activities the teachers designed were to teach the target vocabulary, and a significant amount of time was devoted to vocabulary reinforcement through flashcards and wordlists, as a result, their students were not motivated and they were still struggling with acquisition and retention of the new vocabulary. Lack of insufficient vocabulary knowledge often posed great challenges for them to achieve "quality, age-appropriate expression and literary development in the upper elementary and secondary levels (Belisle, 1997, p. 1)." A question then arose: How can we help the immersion students learn and remember the Chinese words more effectively? This question lingered in the

researcher's mind and motivated her to further pursue research on Chinese vocabulary acquisition and retention.

Vocabulary acquisition is "a gradual process of one meeting with a word adding to or strengthening the small amounts of knowledge gained from previous meetings" (Nation, 2001, p. 155) and any meaningful encounter with a target word could contribute to its acquisition (Nagy, Anderson & Herman, 1987). To make the encounters multiple and meaningful, a language teacher's job is not only to expose and teach the vocabulary, but also to make the vocabulary instruction as interesting as possible to engage students to participate in meaningful language learning. As well, teachers need to provide students with effective memory aids for short- and long- term memory in order to aid vocabulary retention, "a sub-stage of the acquisition process that occurs when language input is no longer available" (Ludwig, Fu, Bardovi-Harlig & Stringer, 2009, p. 3). Mechanical memorization of individual words or memorization out of context tends to bore young language learners and eventually kill their motivation to further the learning. Thus, it is necessary for teachers to work on both affective aspects and intellectual facets of the instructional process.

How can we make Chinese vocabulary instruction fun and effective? Research suggests that vocabulary instruction done through meaningful contexts is more effective than the isolated memorizing or defining of predetermined, targeted words, and that contextual learning better facilitates the retention of these words (Fischer, 1994; Martin-Chang et al., 2007; Prince, 1996; Rodríguez & Sadowki, 2000). Shared Singing, a combination of use of singing and Shared Reading in learning story songs, might be a possible solution for young CFL/CSL learners. As most children love songs and good stories, Shared Singing might enable them to learn another language, in particular, vocabulary, in a contextual, pleasant, natural and interactive way. The

familiar vocabulary and syntax contained in the story song may provide meaningful context for learners to acquire the vocabulary incidentally and clarify the unfamiliar words through negotiation of meaning (Medina, 1990). The adult-child interactions with the text before, during, and after story-singing might enable the children to see, hear and follow the teacher's use of the target language in a meaningful way. The researcher's personal experiences of using songs in teaching English as a foreign language (EFL) in China also showed that songs were beneficial to language learning. When she incorporated English songs in teaching EFL to her K-12 students, their motivation was enhanced and their pronunciation was improved through collective singing and pleasurable practice. Meanwhile, a meaningful context for both explicit and incidental vocabulary learning was created. Given the above benefits, the use of songs may be a promising approach to help CFL/CSL students with the acquisition and retention of new vocabulary words.

While research on the use of music and songs in Chinese teaching is very rare, there are a number of studies on the use of singing in teaching languages other than Chinese, such as English (Brett et al., 1996; Zimmerman, 1997), Spanish (Pressley, et al., 1980), French (Abrate, 1983), and Italian (Nuessel & Cicogna, 1991). This body of research, however, has produced inconclusive findings. While a few studies (Ayotte, 2004; Recette & Perretz, 2007) suggest that the use of songs in language instruction does not facilitate the learning of new vocabulary (such as transitive/intransitive verbs), the majority of the studies report its positive effects on language learning in a number of different ways (Murphey, 1992; Willis & Mason, 1994; Schoepp, 2001; Slattery & Willis, 2001). Ayotte (2004) reported that songs might not serve as an effective pedagogical tool for teaching verb forms, and Walton, Canaday and Dixon (2010) found similar results with the learning of new words.

In terms of the positive impact of songs on language learning, research has found that songs are effective motivational tools and memory aids in promoting students' language development, and they are great for alleviating learning stress and anxiety. As Butzlaff (2000) indicates, the pleasurable nature of songs, the melodious music and patterned song lyrics help create a relaxed, affective and low-pressure learning environment, and therefore foster a positive emotional state in the learners. The use of songs and music also exposes children to the idea that L2 learning can be fun, which in turn serves as a springboard to their enjoyment of later independent learning. Thus, music and songs can work directly on motivating the learners to learn L2, lower the "affective filter" and bring about maximum stimulation and effective language acquisition (Butzlaff, 2000; Johnson & Memmott, 2006).

Furthermore, researchers (Ara, 2009; Butzlaff, 2000; Jalongo & Bromley, 1984; Johnson & Memmott, 2006; Martin, 1983; McCarthey, 1985) have documented the pedagogical benefits of the use of songs and music in enhancing students' word recall ability, improving spelling, and shortening their language study time. Murphey (1990) described what he called the Song-Stuck-in-my-Head-Phenomenon. He found that this phenomenon reinforced the idea that songs worked on our short- and long- term memory. To test the effect, Salcedo (2002) investigated the use of music in text recall among 94 college Spanish learners by counting the total number of words that were correctly written in the blanks that replaced deleted words after an intervention of three Spanish songs. The cloze test found that text recall was better in the song condition than in the spoken condition. In a study of the effects of background music on elementary students' English word spelling, Anderson, Henke, McLaughlin, Ripp and Tuffs (2000) found that music enabled the students to concentrate, relax and re-visualize the spelling words. And the post-intervention

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data of spelling test scores and report card grades indicated an improvement in their spelling word retention.

The above studies of the affective and pedagogical benefits suggest that the use of songs can be an effective tool to enhance CFL/CSL acquisition and retention. However, very little information can be found in the literature except one study that addressed the relationship between the use of music and Chinese language learning (Liu, 2007). Liu examined the effects of music/songs on 17 Amis ethnic third graders' Chinese learning by comparing five learning conditions: word-rhyme, word-riddle, read-aloud, songs, and background music. It was found that read-aloud, songs and background music increased students' learning motivation and interest, but they couldn't help students comprehend the content. This study confirmed the effects of singing on language learners' motivation, but it didn't show that music/songs could promote Chinese vocabulary acquisition and retention. The scarcity of research in this area suggests further investigation is needed to examine the effects of songs on Chinese language learning.

Statement of the Problem

Although the use of songs in the foreign language classroom has long been valued, "except for anecdotal articles advocating the incorporation of songs to increase students' involvement, there was little published until the late 50s and 60s when the popularity of audio-lingual methodology became evident" (Salcedo, 2002, p. 19).

As described above, an overview of studies on L2 vocabulary suggests that very few empirical studies have been conducted about how the use of songs affects young CFL/CSL learners' vocabulary acquisition and retention, with the majority of the studies focusing on Indo-European languages as first languages. Specifically, in CFL/CSL classrooms, there is little

information on whether and how singing facilitates CFL/CSL learners' vocabulary acquisition and retention. It is, therefore, unclear whether the same benefits of the use of songs will apply in CFL/CSL learning. This information is needed to understand the extent to which singing can be used in L2 vocabulary instruction and its role in L2 vocabulary acquisition and retention.

To address this gap, the present study examines the effects of singing on Chinese immersion kindergarteners' CFL/CSL vocabulary acquisition and retention. Given that picture naming, word recognition and vocabulary recall are essential skills of young children's language learning, the researcher is interested in finding out possible roles that the use of songs may play in CSL language instruction by examining U.S. kindergarteners' CSL vocabulary acquisition and retention in the areas of picture naming, Chinese word recognition and vocabulary recall in the story. In order to enhance the learning of Chinese vocabulary within a meaningful context, the use of songs was situated in learning a Chinese story. The story song lyrics provide predictable elements such as repetitive phrases, rhymes, refrains, and sentences for the children to negotiate the meaning and remember the information. The familiarity and predictability of the story help the children develop their ability to learn how to read (Barclay & Walwer, 1992). These facilitate the development of their vocabulary knowledge and pre-reading skills which they use as they begin to learn to read in Chinese.

Further, since vocabulary must be learned in meaningful contexts, to better understand the effects of singing, Shared Singing was created as one of the two learning conditions for this study (Shared Singing and Shared Reading). Shared Reading has long been recognized as having a positive impact on young children's literacy development, and has been shown to be associated with vocabulary development and literacy skills in second language learners as well (Combs, 1987; Crain-Thoreson, et al., 2001; Koskinen et al., 1999). However, little research has been

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conducted on Shared Singing, an integration of singing in Shared Reading. Given the combined benefits of both singing and Shared Reading for vocabulary development, it might be interesting to see the potential benefits of Shared Singing in the CFL classrooms.

Theoretical Framework

Several theories provide the basis for this study. First, the use of songs in L2 instruction fits into Howard Gardner's (1998) "Theory of Multiple Intelligences," which argues that human beings know the world through at least seven ways: language, logic-mathematic analysis, visual-spatial representations, musical thinking, use of body, an interpersonal understanding of others, and an intrapersonal understanding of self. Out of all the intelligences, musical intelligence develops first. By a very young age, children have become aware of pitch, melody, rhythm and rhyme, which are all components of reading, and thus, the use of music in language learning may have the potential to meet different intelligences. This theory of multiple intelligences encourages teachers to expand their repertoire of techniques, tools, and strategies beyond the typical linguistic and logical ones predominantly used in classrooms. In addition, music, by nature, allows task sharing and cooperation and promotes the use of all the other intelligences, thereby giving it the potential to maximize the impact of the instruction for the students (Arnold & Fonseca, 2004; Christison, 1995; Gardner, 1998). In singing a song, to keep the flow of the language going, learners have the opportunity to use verbal-linguistic intelligence; reading the lyrics, they use visual-spatial intelligence; clapping or dancing to the rhythm, they use kinesthetic intelligence; and chanting as a whole group, they use interpersonal intelligence. This process is facilitative of second language acquisition because the playfulness in songs helps the children develop a love of linguistic features of the target language through singing (Christison,

1995; Wiggins, 2007), and the teacher's explicit instruction during singing helps students deliberately notice the target sentence forms and meanings, thus enhancing their vocabulary acquisition and retention. Anderson (1998) investigated the effect of the use of the multiple intelligence approach on L2 vocabulary learning of 100 seventh- and eighth-grade Latin students. He found that the multiple intelligence approach was favored by the teacher and students, and the post-intervention data showed students increased scores on bi-weekly vocabulary quizzes and increased awareness of memory techniques for L2 vocabulary mastery. Therefore, it is reasonable to say that when children's language learning is combined with multiple intelligences activities, they can better respond to the language in a richer context and develop their linguistic intelligence more effectively.

This study is also supported by Krashen's two hypotheses. One is Comprehensible Input Hypothesis (2003), which suggests that L2 learners acquire a language by hearing and understanding messages that are slightly above their current L2 language level (i.e., the concept of "i+1"). That is, if learners understand input, they progress from stage i (their current level) to stage i+1 (a bit beyond their current level). In addition, the hypothesis claims that learners are capable of understanding language including new, unfamiliar vocabulary with the aid of extra-linguistic support such as illustrations, actions, photos, objects, and realia, that is, contextual clues. Based on the latter claim of this hypothesis, familiar vocabulary and syntax contained in the songs provide meaningful context clues to clarify the meaning of the unfamiliar words, which will efficiently enhance learners' negotiation of meaning and acquisition of target language, thus accelerating the progression from stage i to stage i+1 (Medina, 1990).

For many children, singing songs represents one potential source of exposure to vocabulary learning. Songs, like languages, contain lyrics that convey messages. And these

messages are featured with pitch, volume, intonation, stress, tone, rhythm, and pauses (Chang, 2000). So when children hear songs, they are actually being exposed to native speakers' modeling using correct pronunciation; and when they sing songs, they are actually using the language. In addition, the rhythm and melodies of the songs greatly help learners pronounce the vocabulary in a natural way (Farrug, 2008).

Krashen's (2003) other hypothesis that is relevant here is the "Affective Filter Hypothesis," which states that when learners are bored, angry, frustrated, nervous, unmotivated or stressed, they may be unsuccessful at learning a second language. However, when they have low anxiety, they are eager to learn and they learn best. According to this hypothesis, songs can be a great source of alleviating learning stresses and anxieties because the melodious music and patterned lyrics in songs may be able to create a happy and low pressure environment that helps lower the "affective filter" and bring about effective language acquisition (Butzlaff, 2000; Johnson & Memmott, 2006; Shen, 2009). The use of songs makes it possible to create an affective environment that enhances the language learning capability of the students. For example, when children sing the target language songs as a whole group, it tends to create a non-competitive and non-threatening language learning environment where students are willing to join in. Due to the pleasurable nature of songs, singing also helps produce a sense of bonding and increases student interest, enjoyment and confidence in language learning.

Purpose of the Study

Motivated by the researcher's observations in the Chinese immersion classrooms and the existing research gaps in the literature, the overarching question addressed in this study is whether the use of singing affects CFL/CSL vocabulary acquisition and retention in the Shared

Singing setting. This study was designed to broaden our understanding of the application of singing in Chinese immersion environment to CFL/CSL vocabulary acquisition and retention. It examined the ways in which the use of Shared Singing affected young Chinese immersion learners' picture naming, Chinese word recognition and spoken vocabulary recall.

Research Questions

The questions guiding this research included: (1) Do the Shared Singing group acquire more vocabulary of picture naming, Chinese word recognition and spoken vocabulary in the story than the Shared Reading group? (2) Do the Shared Singing kindergarteners retain more vocabulary of picture naming, Chinese word recognition and spoken vocabulary in the story than the Shared Reading group? The following research hypotheses were investigated in order to address the above two research questions. Specifically, hypotheses 1 to 3 were examined to answer the first research question and hypotheses 4 to 6 were used to answer the second one:

Hypothesis 1: The Shared Singing group will score higher than the Shared Reading group in the immediate posttest of Chinese picture naming.

Hypothesis 2: The Shared Singing group will score higher than the Shared Reading group in the immediate posttest of Chinese word recognition.

Hypothesis 3: The Shared Singing group will score higher than the Shared Reading group in the immediate recall of spoken vocabulary in the story.

Hypothesis 4: The Shared Singing group will retain more picture naming vocabulary than the Shared Reading group.

Hypothesis 5: The Shared Singing group will retain more Chinese words than the Shared Reading group.

Hypothesis 6: The Shared Singing group will retain more spoken vocabulary in the story than the Shared Reading group.

Significance of the Study

This dissertation was conducted for both theoretical and practical reasons. At the theoretical level, the study aimed at contributing to the growing body of CFL/CSL language studies. First, it provides much-needed information on the use of singing on CFL/CSL vocabulary acquisition and retention. Second, it explores the potential benefits of the Shared Singing approach. Third, it sheds light on effective CFL/CSL vocabulary instruction, particularly, at the elementary level.

This study provides practical information for L2 curriculum material designers in integrating the use of songs in the development of the materials targeted at young CFL/CSL learners because CFL/CSL curriculum design has traditionally focused on the serious learning of individual characters and memorization of vocabulary lists at the pre-college and college levels (Liu, Wang & Perfetti, 2007). Little attention has been paid to the use of meaningful context in CFL/CSL vocabulary acquisition at the elementary level. It also informs CFL/CSL teachers who need to make instructional decisions about effective strategies to enhance Chinese vocabulary acquisition and retention.

Definition of Terms

1. Chinese as a Foreign Language (CFL) – Chinese being studied by non-native speakers as a foreign language in an environment where Chinese is not spoken as the first language.

2. Chinese as a Second Language (CSL) – Chinese being studied/spoken as a second language within Chinese-speaking countries such as Singapore.

3. L1 (first language) – a person's native language or mother tongue that he/she has learned from birth to puberty, or that he/she speaks the best. It is often the person's sociolinguistic identify.

4. L2 (second language) – any language a person learns after the first language or mother tongue.

5. Acquisition— the process by which humans acquire the capacity to perceive and comprehend a language, as well as to produce and use words and sentences to communicate. Krashen (2003) differentiates acquisition from learning. To him, "acquisition" is the product of a subconscious process very similar to the process children undergo when they acquire their first language, while "learning" is the product of formal instruction and comprises a conscious process which results in conscious knowledge "about" the language. This study adopted Krashen's (2003) definition of acquisition, which refers to the process by which humans acquire the capacity to perceive and comprehend a language, as well as to produce and use words and sentences to communicate. Acquisition will be assessed through immediate posttest scores in this study.

6. Picture naming— visual picture recognition. To name a picture can be considered an elementary process in the use of a language.

7. Word recognition— the ability of a reader to recognize written words correctly. In this study isolated word recognition was employed because contextual help was not provided when the participants' ability to recognize individual Chinese words was tested.

8. Chinese word— A Chinese word may be composed of one or multiple Chinese characters. Almost all Chinese words are single- or double-character words. In this research, the Chinese words used in the pre- and post- tests of Chinese word recognition are all double-character words.

9. Retention– the retrieval of information from memory without a cue. Retention can be considered to have occurred in terms either of competence being preserved or of performance that persists over time. In both cases, a time interval must pass after a learning experience before retention can be measured.

10. Spoken vocabulary recall in the story—the ability of a person to retrieve the target speaking words in a story after hearing the story told. In this study, to test the participants' spoken vocabulary recall in the story, the researcher retold the story with the target vocabulary left blank and the participants were required to recall the target word and fill in the blanks orally.

11. Shared Reading–This term was first used by Holdaway (1979), and was described as a way to teach children beginning literacy skills such as one-to-one tracking of text through reading books with enlarged texts. It focuses on adult-child interactions with the text before, during, and after the reading of a story. Before Shared Reading, the teacher uses enlarged print to attract all the learners' attention. It starts with the teacher presenting the story, the title and the characters, then reading the story. During Shared Reading, the teacher re-reads the story while drawing students' attention to text features such as new vocabulary or grammar. She models skilled reading behaviors, focuses on some words or involves students in a discussion of the events in the text, pauses and asks students to predict, and invites students to read along when they can. After Shared Reading, the students can re-read the text without much

of the teacher's help or do written activities such as sequencing the events or retelling the text or acting it out in groups.

12. Shared Singing— the use of singing integrated into Shared Reading. It follows the same procedures and techniques as Shared Reading. However, it is different from reading along in Shared Reading; rather, it allows the children to sing along when they learn the story song using the Shared Reading techniques.

Limitation and Delimitations

There are some limitations and delimitations to this research. The study is limited in its findings in the following ways: First, this study focused on the use of singing in CFL/CSL vocabulary acquisition and retention; therefore, other aspects of CFL/CSL learning such as grammar and writing were excluded. Second, the subjects of this study were limited to the young CFL/CSL learners who were enrolled in the Chinese Immersion Programs through Confucius Institute at Michigan State University; thus CFL/CSL learners beyond this level were excluded. Third, the Chinese version "Little Red Hen" was created specifically for this study and fifteen vocabulary words were chosen from the story, catering to the kindergarteners' Chinese proficiency level. Other kindergarten level books and vocabulary words were excluded.

Both external and internal validity limited the findings of this study. There was one possible threat to internal validity, which was the lack of rotation of the control and experimental groups between the morning and the afternoon hours during the research. Although there was the same number of participants in the experimental group as in the control group, kindergarteners tended to learn better in the mornings than in the afternoons due to their short concentration

spans. Lack of rotation of the groups might favor one group's performance over the other, which would probably cause a threat to internal validity.

With regard to external validity, population validity is a possible threat. In this study, the young CFL/CSL learners were conveniently chosen from the Chinese Immersion Programs throughout Michigan. Therefore, the findings cannot be generalized to other Chinese programs. Also the participants in this study were young CFL learners and their Chinese proficiency level was low, so the findings cannot be generalized to those at the higher levels.

The internal validity threat could be minimized first by assuring that the subjects from the two groups had similar Chinese learning background and Chinese proficiency level before the study was conducted. It could also be alleviated by balancing the assignment of the control and experimental groups to morning and afternoon hours across the participating classes. In terms of the external validity threat, the participants in this study were a unique group of students, but they were representative of the larger population of young CFL/CSL learners in terms of the beginning Chinese proficiency level, thus allowing for some generalizations to be made about the population.

Organization of the Dissertation

The present dissertation is organized in five chapters. Chapter one introduces the study and states the main reasons for conducting the study. The significance of the study is outlined and research questions are presented along with hypotheses. The theoretical framework is discussed and definitions of the terms used in this study are provided. Chapter 2 reviews previous studies on the use of music/songs in language education in general and its relationship to vocabulary learning in particular. This is then followed by a detailed review of literature on

the role of music/songs in the three vocabulary measures in this study: picture naming, word recognition and vocabulary recall in the story. Chapter 3 discusses the design of this study. It provides an overview of the research design, participants, materials, procedures, instruments, variables, data collection and data analysis of the main study. Chapter 4 presents the results of data analysis and answers each of the two research questions accordingly. Chapter 5 discusses the findings based on the research questions. It also presents pedagogical recommendations in the field of L2 vocabulary instruction. Implications for future research are also provided.

CHAPTER 2

LITERATURE REVIEW

Vocabulary is considered to be the fundamentals of learning a second language. However, L2 vocabulary research has been historically neglected (Chen, 2006; Coady & Huckin, 1997). Although research on Chinese as second/foreign language is on the rise and gaining growing attention, it is still an emerging field, and there is, in particular, scarce research concerning young CFL/CSL learners' vocabulary acquisition and retention.

Traditionally, CFL/CSL vocabulary has been taught out of context through a grammar translation approach or an audio-lingual approach (Chu, 1990; Jiang, 2006), with a heavy emphasis on drilled practice, repeated reading, and labor- and time-consuming memorization of individual characters (Han & Chen, 2010). As well, Chinese vocabulary instruction is found to be text-bound, with teachers relying heavily on core vocabulary lists from textbooks for instruction and practice (Jiang, 2006). And in many K-12 classrooms, flashcards are a popular tool for vocabulary reinforcement. Although the use of vocabulary lists is oftentimes accompanied by the analysis of morphological structure, semantic radicals, compound lexical extension, and/or with the aid of technology, vocabulary instruction is still limited to memorizing individual characters (Chen et al., 2008; Shen, 2005; Tao, 2003; Tsoua, Wang & Li, 2002; Zhang et al., 2011). The isolated memorizing through word lists and reinforcement through flashcards is not only boring, but also very ineffective to Chinese immersion language learners (Fischer, 1994; Rodríguez & Sadowki, 2000). Given the potential benefits of songs/music in language learning, it is worthwhile to explore how they can be applied to Chinese vocabulary instruction to make CFL/CSL learning more effective, fun and meaningful.

This chapter contains three parts. The first part presents an overview of the relationship between music/songs and language learning in general. It is then followed by an introduction of singing as an instructional intervention to facilitate language learning. The second part reviews studies on the use of singing in vocabulary learning related to three main measures of this study, in particular, picture naming, word recognition and vocabulary recall. The third part summarizes this chapter.

Connections between Songs and Language

Recent research has shown strong connections between singing in tune and vocal use with language (Mang, 2006; Patel, 2003; Trollinger, 2003, 2004). According to Aiello (1994), music and language share similarities in (1) acquisition process—when learning language and music, people abstract rules and then utilize them to create their own; (2) cognitive characteristics—they both involve meaningful uses of sound patterns; and (3) essential acoustic features—both of them are composed of rhythm, melody, pitch, intensity, and accentuation. Jolly (1975) states that songs may be regarded as "occupying the middle ground between the disciplines of linguistics and musicology, possessing both the communicative aspect of language and the entertainment aspect of music" (p. 11). And Madaule (1997) considered music as a "pre-linguistic" language because it has all the characteristics of language except for semantic value and it prepares the child's ear, voice, and body to listen to, integrate, and produce language sounds.

Using songs is one of the marvelous ways of introducing a foreign language to students in a meaningful context, and songs are also "especially good at introducing vocabulary because they provide a meaningful context for the vocabulary" (Griffee, 1995, p. 5). Songs, like

languages, contain lyrics that convey messages. And these messages are featured with pitch, volume, intonation, stress, tone, rhythm, and pauses (Chang, 2000). As young children are naturally wired for sound and rhythm, the playfulness in songs helps them develop a love of linguistic features of the target language (Christison, 1995). When they hear a song sung, they are actually being exposed to native speakers' modeling using correct pronunciation, intonation, and segmentation of phrases; when they sing the song, they are actually repeating and practicing using the language. The rhythmicality of songs, together with the teacher's guidance, helps the students reinforce sounds and intonation of the target language in a more enjoyable way than doing boring, repetitious drill (Guglielmino, 1986), and the rhythm and melodies of the songs ensure that the learners pronounce the target vocabulary in a natural way (Farrug, 2008). When they are used with illustrations of the story song, they are not only fun, but also have a visible effect on story comprehension and incidental vocabulary acquisition.

Singing in Language Instruction

Many people believe in the pedagogical benefits of the use of songs in language instruction because it helps create good language learning atmosphere in the classroom, enhances students' word recall ability, and thus shortens their language study time (Ara, 2009; Jolly, 1975; Mitchell, 1983). It has been reported that the use of songs helps second language learners acquire vocabulary and grammar, improve spelling and develop the linguistic skills of reading, writing, speaking and listening (Jalongo & Bromley, 1984; Martin, 1983; McCarthey, 1985). For this reason, since the 1970s, many researchers have proposed various methods to incorporate songs as a pedagogical tool for language learning and many programs have been designed to teach children through songs. For example, in 1978, Georgi Lozanov developed a musical method

called Suggestopedie which used classical music to help learners tap into subconscious resources to aid in acquisition and greater retention of vocabulary and language structures. In 1980, Kind developed the Audio-Singual Method to help foreign language learners overcome fear and resistance that a learner may experience. Anton (1990) proposed the Contemporary Music Approach (CMA) to teach various grammatical structures of the language through different styles of music and rhythms.

Existing studies show that the use of music/songs has a positive effect on the development of students' language skills (Anvari et al., 2002; Hurwitz et al., 1975; Register, 2001; Wallace, 1994). Anvari et al. (2002) examined 100 preschoolers and found that children who began learning musical instruments early on were more likely to have better phonological awareness and reading development. In a quasi-experimental study on the effects of music training on reading, Hurwitz, Wolff, Bortnick and Koka (1975) reported that music training improved reading tests in first grade children after the experimental group (n=20) received musical instruction including listening to folk songs and the control group (n=20) received no special treatment. In a similar study, Li and Brand (2009) examined the effectiveness of varying the use of songs (lyrics and music) on vocabulary acquisition, language usage, and meaning for university ESL graduate students in China (n=105). Results showed that varying the degree of use of songs produced differential English language achievements. Specifically, the subjects who were exposed to the most music obtained higher achievement and attitude scores on both the immediate and delayed post-tests. In a study on the effect of a music software program "Carry-a-Tune" (CAT) on 48 struggling middle school readers, Biggs et al. (2008) had the experimental group (n=24) use CAT to work on songs progressing from lower to higher readability levels three times a week lasting 30 minutes each time for nine weeks, while the control group (n=24)

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not use it during the study. The pre- and post- tests results showed that the experimental group increased their reading level by nearly two years, while the control group had no significant reading gains during the same time period.

In addition, the use of songs is found to be effective in facilitating grammar learning. In a quasi-experimental study, Hashim & Abd Rahman (2010) investigated the use of songs on 35 fifth grade Malaysian students in teaching subject-verb agreement (SVA). A pretest was administered for group assignment. Twenty-two students who scored eighty percent and above formed the control group and the other 13 students were in the experimental group. The experimental group went through the song-based tasks in three different sessions while the control group continued with their normal lessons. Qualitative and quantitative data were collected through post-test, observation of a recorded tape, and students' reflections. The researcher's observation revealed not only that the students found the lessons fun, but they seemed to become more active and confident as they learned. The findings showed that song-based activities were useful tools to reinforce the learning of SVA. Beaton (1995) reported a study that compared two groups of children who learned a grammatical concept in French with one group using the traditional methods of teacher lecturing and the other using a song. After three months, only the children who learned through song could remember the grammar rule and continued to sing the song after the initial class. Beaton concluded that the use of songs helped ingrain the grammar concept through repetition along with the lyrics and melody.

Furthermore, songs have powerful motivational effects for language learners. Researchers (Anderson, 1998; Arnold & Fonseca, 2004; Christison, 1995; Lazear, 1991) have found that the use of songs/music not only helps reduce the boredom of language drills through multiple ways of meaning-making, but also motivates students by stimulating the different

intelligences, thus resulting in better learning. Botwinick (1997) reported that listening to classical music immediately before receiving spelling instruction enhanced first graders' motivation and interest for spelling. In a study that investigated the impact of English popular songs on ESL learning by Chen and Chen (2009), questionnaires given to five classes of six grade Chinese students indicated that the students' learning motivation increased after engaging in learning the English songs. Zhou and Huang (2009) found the same results after they surveyed 127 third grade Chinese elementary students for their attitudes towards the use of English songs in their class. The results showed that the use of songs in ESL language teaching could arouse their learning interests. In a study involving younger learners of English, Hazel-Obarow (2004) examined both the short-term and long-term effects of music on vocabulary acquisition using a pretest/posttest/delayed-posttest experimental design. The treatment conditions involved the use of music versus no-music during instruction on vocabulary acquisition and retention of story vocabulary for kindergarten and first-grade subjects. The qualitative data revealed that treatments that included music appeared to be more motivating for students and engaged them deeper in the learning of vocabulary.

As shown above, there are quite a number of studies considering different positive aspects songs can have for the process of language learning. They help create a pleasant learning environment, enhance students' language development, increase their motivation, and facilitate grammar learning. However, the studies in this area predominantly focus on Indo-European languages, in particular, English as a first and second language. The question of whether the use of songs influences CFL/CSL learning has hardly been addressed in the literature. Therefore, the issue of singing-based instruction seems to be a promising topic for further investigation. Language may have been gained during the above-mentioned studies, but this may not be

applicable to CFL/CSL learning because Chinese is a tonal and logographic language vastly different from alphabetic languages.

Singing and Vocabulary Learning

Researchers (Medina, 1993; Murphey, 1992; Willis & Mason, 1994) have argued for the benefits of using songs in vocabulary teaching and learning. The benefits include: (1) attracting students' attention and motivating them intrinsically: students relate to songs as part of entertainment rather than work, and they find learning vocabulary through songs amusing rather than boring; (2) providing contextual cues: in song lyrics, words usually appear in context and it helps students understand the language exposed; (3) facilitating vocabulary fast-mapping: the sound of new words is easily remembered along with the melody of the song, by listening to the song and through practicing singing the song; and (4) enhancing vocabulary recall and retention: songs allow learners to repeat and memorize chunks of language.

Researchers (Forster, 2006; Orlova, 1997; Schunk, MME, MT-BC, 1999) have also identified some additional benefits of songs in foreign/second language vocabulary learning. First, song lyrics provide a source of new vocabulary that language learners acquire incidentally. Second, songs can encourage learners to use the target vocabulary through singing. Producing L2 output can be threatening to L2 beginners; however, when they sing as a whole group, a non-threatening language learning environment is created where individual errors are covered and self-confidence is increased, thus students are willing to join in. Finally, songs can stimulate a positive emotional attitude towards vocabulary learning.

However, research that investigates the use of songs/music in vocabulary teaching and learning reports inconclusive results. The majority of the existing studies have identified positive

effects. In a study that examined the effects of music upon the acquisition of English vocabulary in a group of 48 second grade children with limited English proficiency, Medina (1993) found that vocabulary gain scores were consistently statistically higher for the groups in which music was used. Lewis (2002) conducted a six-week study with first graders and found that listening to classical music seemed to have made a substantial difference in the reading comprehension levels and letter/sound recognition of these students. In analysis of the cause, Stansell (2005) claimed that the learning of a song could be awakened by listening to it to familiarize the musicality and rhythm, learning the lyrics that follow, and then humming the song. "This effective, gradual method could lead to the out-of-class associations that are crucial to language learning" (Stansell, 2005, p. 22). Songs could thus be an effective method of helping children learn lexical patterns that would be stored in their minds and could be naturally recalled during oral communication (Murphey, 1992). In other words, songs can be used to help the development of automaticity – the ability to use a language naturally and without conscious effort. This, according to Schoepp (2001), is the main cognitive reason for using songs in L2 learning. In addition, through singing songs, children can also repeat words and phrases spontaneously even if they do not initially understand the lyrics (Slattery & Willis, 2001).

Studies also show that the positive effect of the use of songs on vocabulary learning tends to be maximized when it is paired with other means. Medina (1990) investigated the effectiveness of music and use of story illustrations on English vocabulary acquisition in a group of 48 second grade limited-English-proficient children by comparing four groups: the no-music group who listened to an oral story; the music group who heard a song version of the same story; the illustration group who were shown pictures of target vocabulary words while listening to the story; and the no-illustration group who listened to the story without the pictures. The pre- and

post- results indicated that more words were acquired when they were sung rather than spoken. However, vocabulary gain scores were the highest for the groups in which both were used. Schunk et al. (1999) found similar results by examining the effect of singing paired with signing on receptive vocabulary skills of 80 elementary ESL students who attended language sessions in one of the following conditions: sung text paired with signs, spoken text paired with signs, sung text, and a control group of spoken text only. Pretest and posttest data were analyzed to determine gains in receptive vocabulary identification. Results indicated that all four groups made significant gains. However, children in the sung text paired with sign and the spoken text paired with sign conditions made significantly greater gains in vocabulary recognition than those in the control condition of spoken text only. The condition yielding the highest mean gain score was a combination of singing and signing.

Despite the above positive affects, a couple of researchers report that the use of songs neither facilitates nor undermines vocabulary learning. Medina (1990) investigated the effectiveness of music and use of story illustrations on English vocabulary acquisition and the results of pre- and post- tests indicated no statistically significant differences between groups having music and not having music. In a similar study, Winter (2010) explored how using songs during ESL instruction could lead to productive vocabulary gains in second grade English language learners. The control group (n=7) was given traditional vocabulary instruction, and the experimental group (n=8) was exposed to vocabulary instruction incorporating songs. Pretests (self-assessment and cloze tests), end-of-story oral retells of the stories, and post-tests (a replica of pretests) were administered. The findings showed that there was not a significant difference in production of vocabulary between the two groups, indicating songs did not facilitate or inhibit the acquisition of new vocabulary. In a study that examined the effects of singing on the

acquisition of transitive and intransitive verbs on 33 Japanese as foreign language university students, Mouri (2011) found similar results. The experimental group (n=15) was taught the vocabulary along with a melody, whereas the control group (n=18) was not exposed to the melody. The pre- post- test results showed no statistically significant differences between the two groups on their immediate recognition, indicating that the use of songs did not help with transitive and intransitive verb learning.

Moreover, a few studies suggest that presenting songs as a form of authentic information has no advantage, compared to other forms of input in terms of learning verb forms or new words. Omari (2001) examined the impact of songs on children's vocabulary recognition by having 20 kindergarten students first participate in Total Physical Response (TPR) intervention and then learn through songs/chants. The study found that the use of songs was no more effective than TPR. In a study to examine the role of songs in the acquisition of verb tense forms on 46 college learners of French: present, compound past, imperfect, future, and conditional, Ayotte (2004) divided the students into two groups and exposed them to the same language input through two different means: with music and without music. Five songs were selected and each focused on one of the selected verb forms. Immediate and delayed post-tests (three weeks intervals) were compared on grammatical accuracy. The results did not demonstrate statistical significance for the three verb forms–present, compound past, and imperfect. Ayotte concluded that songs might not serve as an effective pedagogical tool for teaching verb forms. Walton, Canaday & Dixon (2010) found similar results with the learning of new words. They examined 32 aboriginal kindergarteners in Australia to see whether songs could enhance the learning of key pre-reading skills (i.e., phonological awareness, letter-sound knowledge) and word reading. The control group (n=16) received their regular classroom literacy teaching, and the treatment

group (n=16) received the song and movement program. Tests of eight learned words and four new words were administered. The results showed that the children in the treatment group read significantly more of the eight learned words than those in the control group. However, there were no significant differences in reading the four new words between the two groups, indicating the reading skill was not transferred to reading new words.

Compared with the aforementioned studies in alphabetic vocabulary, CFL/CSL vocabulary instruction and acquisition studies are very scant. They are limited to the phonological and morphological areas, and the discussions are focused on the linguistic description of Chinese words and analysis of word structure (Cheng, 2000). Specifically, the available research on CSL/CFL vocabulary acquisition in the past decade mainly focuses on investigating effective use of Chinese phonetic pinyin in CSL/CFL instruction (Chung, 2002), Chinese vocabulary learning strategies that native English speakers use (Fu, 2005; Winke & Abbuhl, 2007), word structure, semantic radical processing in Chinese character reading and writing (Bassetti, 2005), computer-assisted Chinese vocabulary acquisition (Wilberschied & Berman, 2004) and some unique Chinese vocabulary phenomena such as numeral-classifiers, "bei (an indicator of passive voice)", and "ba" structure. As vocabulary is the main difficulty of all CFL/CSL learners at different levels (Gao, Li & Guo, 1993), more vocabulary research is needed to help and inform CFL/CSL teachers to make instructional decisions as to how to help students enhance their students' vocabulary acquisition and retention.

In addition, most of the existing studies (e.g., Mouri, 2011; Winter, 2010) focus on college level students. There is an obvious lack of experimental studies investigating how the use of songs influences young CFL/CSL learners' vocabulary acquisition and retention, especially in the areas of their first fundamental linguistic functions such as picture naming, Chinese word

recognition and vocabulary recall. As more and more U.S. young children start to learn Chinese, it has become urgent for researchers to target at this group of students' vocabulary development to prevent them from experiencing Chinese vocabulary learning difficulties as they learn this logographic language in a less-intimidating way.

Furthermore, studies (e.g., Mouri, 2011; Salcedo, 2010) suggest that the use of singing may enhance learners' vocabulary learning in general; however, as these studies did not distinguish between different types of vocabulary learning, the results could not be assumed for productive vocabulary development such as picture naming or Chinese word recognition at the beginning stage of Chinese vocabulary learning. This study was designed to fill in this research gap. In the following section, a brief literature review was conducted in this regard.

Picture naming.

Picture naming in alphabetic languages has been intensely studied in recent years (Besner, Waller & MacKinnon, 1985; Coltheart, 1987). Research in this area mainly focuses on understanding how people retrieve and produce names for things (Cattell, 1886; Dromi, 1987), and what variables affect picture naming (Barry, Morrison & Ellis, 1997; Brysbaert, 1996; Liu, Hao, Li and Shu, 2011).

To understand what the picture naming process is, several theoretical models have been proposed, among which two are very popular. One model proposes that picture naming consists of discrete two stages—conceptual processing and a word form processing of the intended name that can be subdivided into semantic and phonological stages of processing (Caramazza, 1997; Starreveld & La Heij, 1996). However, Humphreys and Riddoch (1987) propose the "Cascade Model," which explains that the picture naming process proceeds through a series of stages—from recognition of the

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image, to semantic representation, to a phonological level, and finally to actual production of the name.

Researchers are also interested in identifying the factor(s) that determines the picture naming process (Barry, Morrison & Ellis, 1997; Brysbaert, 1996; Liu, Hao, Li and Shu, 2011). Factors such as word frequency (the frequency that a word appears), concept familiarity (the familiarity of the concept depicted by the picture) and age of acquisition (the age at which learning occurs and significantly affects the outcome) have been identified. And their relationship with naming latency (the interval between the onset of target presentation and speech onset) has been widely studied. It was reported that age of acquisition determined picture naming speed universally across languages, but other variables were more language specific and influenced naming latencies differently in different languages (Barry, Morrison & Ellis, 1997; Juhasz, 2005). For example, Bates et al. (2003) found that word length was a significant predictor of naming latencies in English, Bulgarian and Hungarian, but not in German, Spanish and Italian.

Studies in Chinese picture naming are very rare. Existing studies mainly focus on investigating the possible variables affecting picture naming in Mandarin Chinese. Bates et al. (2003) reported the significance of name agreement (the extent to which different people agree on a name for a particular picture) and word frequency on the naming of 520 object names in Mandarin Chinese used in Taiwan. In a similar study, Weekes, Shu, Hao, Liu and Tan (2007) found that name agreement, concept familiarity, and age of acquisition had significant impact on naming latency. After collecting data from children's naming and adult ratings of 435 object pictures in Mandarin Chinese, Liu, Hao, Li and Shu (2011) found that concept familiarity, age of acquisition, concept agreement, name agreement and image agreement (the degree of similarity

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between the mental image generated by a participant to a given picture's name and the actual picture displayed) all made significant independent contributions to naming latencies.

In the area of foreign and second language research, very few studies have been conducted on the use of songs in picture naming. The only empirical study available was implemented by Hyland (1995), who investigated 150 Arabic kindergarteners' picture naming of 15 English words after an intervention of one-week singing in an English-Arabic immersion program. The children were divided into the control group (n=75) and experimental group (n=75). The control group (n=75) shared reading the story without music while the experimental group (n=75) heard a sung version of the same story and simultaneously viewed the printed text for 15 minutes every day. The pre- and post- tests were administered to individual students. They were asked to recognize the item in the picture and give the correct response orally. Mean scores of the two groups in the pre- post- tests were compared and the results showed that the music group outperformed the no-music group. Given the fact that Chinese is a tonal and logographic language, the effectiveness of the use of songs on picture naming in alphabetic languages may not be applicable to the Chinese language. Therefore, the effectiveness on CFL/CSL learning needs to be tested and confirmed.

Word recognition.

In alphabetic languages, word recognition refers to the ability to sound out words. It involves segmenting a multisyllabic word into components and deciphering the word. Therefore, word recognition studies in alphabetic languages focus a lot on phonological decoding. Many studies (e.g., Ehri & Wilce, 1983; Perfetti, 1985; Siegel, 1989) have been conducted using pseudo-words as a phonological decoding measure, and it has been found that good phonological

decoding skills result in satisfactory performance in pseudo-word reading, while deficiencies in basic phonological processing usually leads to difficulty in reading pseudo-words.

Singing songs helps build phonological awareness and facilitate word recognition, rhyming word generation and new word creation (Bennett-Armistead, Duke & Moses, 2005). Moritz (2007) reported that six months of Kodály music instruction (45 minutes daily) improved rhyming and phonemic segmentation in a group of five-year-olds. To investigate whether music could improve certain reading abilities of slow learners, Nicholson (1972) assigned fifty elementary school students between the age of six and eight to either the control or the experimental group. Results on the pre- and post- tests showed that music improved the ability of slow learners in the recognition of letters of the alphabet and reading readiness skills. Similarly, Gromko (2005) investigated the influence of music instruction on phonemic awareness or, more specifically, phonemic segmentation ability in kindergarten children. They were divided into the treatment and control groups, and in both groups the same amount of reading instruction was used. The only difference was that the treatment group every week had an additional 30 minutes of music lessons. Music instruction included singing songs from different cultures and some advanced music methods, like using percussion and kinesthetic movement. All participants were post-tested after four months. Results showed a significant gain in letter-naming fluency, phoneme segmentation fluency and nonsense-word phoneme segmentation fluency for the group with music instruction.

Unlike alphabetic languages, in which phonemes are represented by a writing system, the Chinese writing system represents morphemes, and there is no direct sound-symbol correspondence. Therefore, Chinese children have to memorize many characters in order to learn to read.   Due to this unique feature of the Chinese language, research on Chinese word

recognition focuses mainly on morphological awareness and orthographic knowledge. Researchers have claimed that morphological awareness is particularly important for learning to read Chinese because of its unique morphological features (Packard, 2000). For example, Li, Anderson, Nagy and Zhang (2002) found that morphological awareness in young Chinese readers had the strongest relationship to overall Chinese reading ability. It helped them figure out the pronunciation and meaning of characters that they encountered in text and, thereby, to connect the character to words they had learned. Studies on Chinese orthographic awareness showed that children's understanding of the conventions used in the Chinese writing system was closely related to their Chinese character reading and it was important for Chinese character reading and writing acquisition (Li, Peng & Shu, 2006; Li, Shu, McBride-Chang, Liu & Peng, 2010).

However, there is an obvious lack of research studying the influence of songs on word recognition, in particular, Chinese word recognition which is a challenge for CFL/CSL students (Everson & Ke, 1997). Given the potential benefits of songs in language education, Frith (1985) suggests that music seems to facilitate the sound-symbol phonemic correspondence for the language being taught and ease the learning process of word recognition. However, little research has been conducted on whether the use of songs promotes Chinese word recognition where there is no sound-script correspondence. This study is an attempt to add to this literature.

Vocabulary recall.

Research reports mixed results of both positive and negative effects of music/songs on vocabulary recall. De Groot (2006) found that studying a foreign language with music playing in the background could increase word recall by up to eleven point six percent with an average of

eight point seven percent. Mouri (2011) had similar findings by examining the effects of singing on the acquisition of Japanese as foreign language vocabulary on 33 university students. The experimental group (n=15) was taught vocabulary along with a melody, whereas the control group (n=18) was not exposed to the melody. The pre- post- test results showed statistically significant differences between the two groups on their delayed recognition, which suggested that the use of melody facilitated language recall. Salcedo (2010) investigated the effect of music on text recall and involuntary mental rehearsal with students from four college-level beginning Spanish classes (n=94) by comparing the group who heard texts as songs with the group who heard the same texts as speech. The overall results indicated that the use of songs aided memory of text and involuntary mental rehearsal.

While the above studies found positive language recall effect, Recette and Perretz (2007) found different results. They conducted two experiments on 36 French-speaking university students, 18 musicians and 18 non-musicians. Each participant learned an unfamiliar song in three conditions, for a total of three different songs. In the sung–sung condition, they listened to the sung version of the lyrics and sang them back. In the sung–spoken condition, they listened to the sung version of the lines and their recall was spoken. In the divided–spoken condition, they listened to the divided version of the lines and provided spoken responses. Repeated measures ANOVA with both groups was performed on the percentage of words recalled. Results showed that fewer words were recalled when singing than when speaking. Furthermore, the mode of presentation, whether sung or spoken, had no influence on either short- or long-term lyric recall. The results indicated that music was of little help for text recall in either encoding or response. In analysis of the results, the researchers stated that the text and the melody of a song had separate

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representations in memory, making singing a dual task to perform, at least in the first steps of learning.

Studies on vocabulary retention have also been conducted on picture naming and word recognition. Many studies (e.g., McBirde & Dosher, 2002; Tonzar, Lotto & Job, 2009) have shown increased memory performance for picture stimuli over word stimuli. Tonzar et al. (2009) compared two learning methods (picture and word mediated learning) in order to evaluate the vocabulary acquisition of two foreign languages in children. The results showed that the picture-based method led to a better performance than the word-based method. The reason was because the picture naming process engaged a deeper level of processing. Pictures represented features of objects; as a result, information and meaning could be directly gained from the pictures even if one had little or no experience with the objects illustrated (McBirde and Dosher, 2002). In contrast, words were arbitrary symbols and processing them semantically took a long time (Whitehouse, Maybery & Durkin, 2006). The same two learning methods were compared by Chen and Leung (1989). In their study, they contrasted children (aged about seven) and adults in learning L2 vocabulary when they were at the beginning level. The results showed that children named pictures in the L2 faster than they translated words from the L1 into the L2. On the other hand, adults translated L1 words into L2 faster than naming pictures in L2.

The above literature has revealed inconclusive findings regarding the use of songs in vocabulary retention. Therefore, the topic of singing-based instruction needs further investigation. In addition, Chinese learners' vocabulary retention has not been sufficiently addressed in the literature. There is, therefore, a clear need for classroom studies to confirm the effectiveness of singing on vocabulary learning in order to better support young CFL/CSL learners' language retention. This study is an attempt to strengthen the research base related to

the use of songs on vocabulary retention by testing its long-term effects on U.S. kindergarteners in Chinese Immersion Programs.

Chapter Summary

This chapter provides a review of the literature that is important in guiding this research project on the use of songs to foster language development, specifically vocabulary growth. Both positive and negative effects of the use of songs on language learning have been found. Some argue that music has played an important role in human beings' language development. It alleviates language learners' stress and anxiety, motivates their language learning, provides effective memory aids, and facilitates vocabulary acquisition and recall. Others report that the use of songs does not affect language learning, particularly new vocabulary learning.

While the above studies suggest a number of important aspects for considering the effects of the use of singing in L2 instruction, there are some questions that need further investigation and validation. First, an overview of the studies on vocabulary acquisition, particularly L2 vocabulary acquisition, suggests that there is little information about how the use of songs affects CFL/CSL vocabulary learning and retention. This information is needed to understand the extent to which the use of songs can be used in young CFL/CSL reading instruction and the role of songs in CFL/CSL vocabulary acquisition and retention. The effects are still an unresolved question. In addition, there has been no empirical study to investigate young CFL/CSL learners' vocabulary acquisition and retention in a classroom setting.

Second, studies of the use of songs in vocabulary learning across languages are inconsistent; therefore, the question of whether singing-based instruction could affect learners' vocabulary acquisition needs to be further researched. As the review shows, while the majority

of the research results (e.g., Medina, 1990; Mouri, 2011; Winter, 2010) did not provide support for the effect of the use of songs on vocabulary acquisition, Hyland's research (1995) yielded results indicating the superiority of singing over reading instruction for vocabulary acquisition. These mixed findings, therefore, demand further information.

Third, it is important to point out that the aforementioned studies did not differentiate between picture-naming, word reading and spoken vocabulary recall. Several studies (e.g., Mouri, 2011; Salcedo, 2010) suggest that the use of singing may enhance learners' vocabulary learning in general, but this cannot be assumed for productive vocabulary such as picture naming, word reading and spoken word recall. Only one study has addressed the relationship between the use of songs and vocabulary acquisition in a second/foreign language learning setting as measured by picture naming (Hyland, 1995). The effect of the use of songs on picture naming and word recognition has not been clearly established due to the scarcity of studies. It is therefore necessary when examining beginning CFL/CSL vocabulary learning to distinguish different vocabulary tasks and further investigate the effects of the use of songs on them. The focus of this study is to strengthen the research base by exploring the potential effects of singing on CFL/CSL vocabulary development. More specifically, the focus is on how Shared Singing as an instructional tool might enhance Chinese immersion children's picture naming, Chinese word recognition and spoken vocabulary recall in the story.

Finally, most studies on the use of songs in vocabulary acquisition and retention involve college-level subjects learning alphabetic languages; therefore, there is a need to further examine a participant population different from those. In this case, Chinese immersion kindergarteners in the U.S. would be a good sample. Various studies have found that second/foreign language

education should start as early as possible; therefore, young Chinese immersion students were

chosen to participate in this study.

CHAPTER 3

RESEARCH METHODOLOGY

The previous chapter reviewed the literature related to the use of songs in language learning, in particular, vocabulary acquisition and retention. This study used an experimental design at the class level to compare the effects of the use of songs on young CFL/CSL learners' immediate vocabulary acquisition and delayed retention in picture naming, Chinese word recognition and spoken vocabulary recall in the story. In particular, the following two research questions were addressed:

(1) Do the Shared Singing group acquire more vocabulary of picture naming, Chinese word recognition and spoken vocabulary in the story than the Shared Reading group?

(2) Do Shared Singing kindergarteners retain more vocabulary of picture naming, Chinese word recognition and spoken vocabulary in the story than Shared Reading group?

The present chapter describes the design, variables, participants, materials, instruments, procedures and data analysis. The chapter begins with a description of the research design, variables, setting and participants. Then information about the materials and measures is discussed. Finally, this chapter ends with a description of data analysis and the validity and reliability of the data. The researcher obtained research approval for these studies and the participants' informed consents (Appendices A & B).

Design of the Study

This study investigated the effect of the use of songs on young CFL/CSL learners' vocabulary acquisition and retention. It adopted an experimental design method at the class level rather than at the individual level (Gribbons & Herman, 1997). In other words, the participants

41

were not randomly assigned to the experimental and control groups by the researcher in the first place. Rather, they were arranged into two groups by the schools at the beginning of the school year on the basis of the number of students and gender distribution in each class. In order not to disrupt the regular instruction at the school, the two groups were then randomly assigned to the experimental and control groups by the researcher at the time the study was conducted. In this regard, the study was not an experimental design at the individual level; rather, it was an experimental design at the class level.

The study was designed to investigate the instructional intervention of singing on immediate and delayed vocabulary recall in two different learning conditions—Shared Singing and Shared Reading. The instructional intervention of singing was the independent variable and the students' vocabulary growth in picture naming, Chinese word recognition and spoken vocabulary recall in the story were three dependent variables. Students' immediate and delayed test results in these three aspects were compared under the two learning conditions (Shared Singing and Shared Reading). These two learning conditions were included in order to test whether singing would influence students' performance on vocabulary acquisition and retention. Particularly in terms of vocabulary posttests, the Shared Singing condition was assumed to draw more student attention to the target words, which, in turn, was believed to facilitate vocabulary learning (Hulstijn, 1992).

Pretests were administered to measure the participants' vocabulary knowledge prior to the research. For the vocabulary pretest, only picture naming and Chinese word recognition were administered. Spoken vocabulary recall in the story was not used because the purpose of the pretest was to investigate the participants' prior knowledge of the target vocabulary before the intervention was implemented.

The scores of the immediate vocabulary posttests were used to measure the participants' vocabulary acquisition in picture naming, word recognition and spoken vocabulary recall in the story, and the scores of the delayed posttests were used to measure their vocabulary retention in the above three areas. As the foci of the study were, on the one hand, to investigate the effects of the use of songs on immediate vocabulary recall after an initial exposure of the target words in the two learning conditions, immediate post-test was needed; and on the other hand, to examine the effects of the use of songs on vocabulary retention after a certain period of time, delayed posttest was also necessary (Hulstijn, 2001). A more detailed research design could be found in Figure 1.

```
                        ┌──────────────┐
                        │ Participants │
                        └──────────────┘
                                │
                                ▼
                   ┌────────────────────────┐
                   │ Pre-tests (picture naming
                   │ & word recognition)    │
                   └────────────────────────┘
                      ╱                    ╲
                     ▼                      ▼
      ┌─────────────────────────┐   ┌─────────────────────────┐
      │ Shared Singing Condition│   │ Shared Reading Condition│
      └─────────────────────────┘   └─────────────────────────┘
                      ╲                    ╱
                       ▼                  ▼
              ┌──────────────────────────────────┐
              │ Immediate post-tests (picture naming,
              │ word recognition & spoken
              │ vocabulary recall in the story)  │
              └──────────────────────────────────┘
                                │
                                ▼
              ┌──────────────────────────────────┐
              │ Delayed post-tests (picture naming,
              │ word recognition & spoken
              │ vocabulary recall in the story)  │
              └──────────────────────────────────┘
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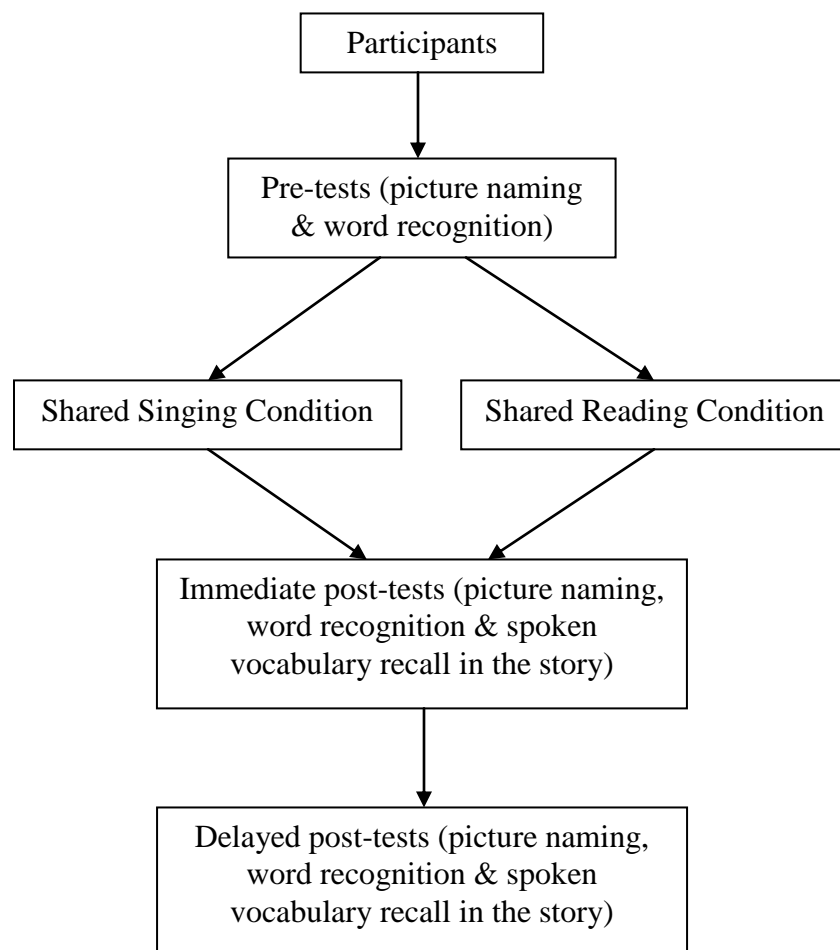
Figure 1: Detailed research design

The following section of this chapter describes in more detail the variables, participants, setting, instruments, data collection procedures, intervention fidelity and the methods of data analysis.

Variables

The dependent variables were the vocabulary gains in picture naming, Chinese word recognition and spoken vocabulary recall in the story. There was one independent variable: the use of singing. It was employed to investigate whether singing had effects on CFL/CSL immediate acquisition and delayed vocabulary recall. The experimental group learned the target words with the use of a story song through Shared Singing, while the control group learned the same words without singing through Shared Reading, and both groups were measured on the same dependent variables.

For the control of the participants' previous knowledge of the target words, the target words were identified by the researcher and confirmed by the participating teachers to be unfamiliar to typical Chinese immersion kindergarteners at the beginning of the school year. The participants' demographic information regarding their age, gender and prior knowledge in the Chinese language was collected prior to the pretests.

Pretests on picture naming and word recognition were conducted to determine the participants' Chinese language proficiency level prior to the research. Immediate and delayed posttests were administered on all the three measures: picture naming, Chinese word recognition and spoken vocabulary recall in the story. The immediate posttests were conducted to detect the participants' vocabulary acquisition right after the implementation of the instructional intervention of singing. This study adopted Krashen's (2003) definition of acquisition which

referred to the process by which humans acquired the capacity to perceive and comprehend a language, as well as to produce and use words and sentences to communicate. As the participants in the study were at the very beginning level of Chinese proficiency, only acquisition of vocabulary was tested. The delayed posttests were employed to test the vocabulary retention.

Participants and Setting

This study was conducted in October, 2011 in three Chinese immersion programs in Michigan. A convenience sample (Babbie, 2001) was used in this study mainly because the sites were close enough for the researcher to access without having to travel extensively. The site selection criteria included: (1) the participating teachers and the school principals expressed interest in participating in the research; (2) the children were studying in Chinese Immersion Programs; (3) they were at the kindergarten level and first year CFL learners; and (4) they were voluntarily participating in this study with the written permission of their parents.

The participants in the main study were 106 U.S. kindergarteners from three Chinese Immersion Programs in Michigan. They were five-year-olds in their second month of the first semester of kindergarten. The demographic composition of the sample (Table 1) was as follows: Of the 106 participants, there were twelve more girls (n=59) than boys (n=47). Eighty of them were Caucasian; five were African-American; one was Mexican American; and twenty were Asian including adopted Asians. Upon entering the kindergarten, two groups of students were randomly and equally divided into morning (AM) and afternoon (PM) classes by each school based on the number of students and gender distribution in each class. A native Chinese immersion teacher and an English speaking U.S. teacher taught both groups of kindergarteners half a day, and they then switched after lunchtime. There were also other forms of alternation of

the two groups in other schools. For example, the English speaking teacher taught on Mondays, Wednesday and Friday mornings while the Chinese immersion teacher taught on Tuesdays, Thursdays and Friday afternoons.

Although the participants were not randomly selected from a larger population, they were randomly assigned to the experimental and control groups at the class level at the time they participated in the study. One of the participant teachers had the Morning group as the experimental group and the Afternoon group as the control; one had the Afternoon group as the experimental and the Morning as the control, and the other teacher had the experimental group in her class on Monday (all day), Tuesday (all day), and Friday morning and the control group on Wednesday (all day), Thursday (all day), and Friday afternoon. Although the Morning and Afternoon groups were not alternated due to the fact that it involved the non-language classroom teachers, gym, music and art teachers, and the principal, which was beyond the researcher's capabilities to make the arrangements; however, the experimental and control groups were counterbalanced to make it a strength. There were 53 participants in the experimental group and 53 in the control. Again the placement of students was a grouping of convenience as no attempt was made to place the students in these classes based on their English or Chinese language proficiency.

Although the students' language proficiency was not considered in determining the classroom placement, it was necessary to identify their Chinese proficiency level when comparing the two groups used for the study. Three methods were used for the purpose: informal talk with the participating teachers, a background questionnaire for parents and a pretest on the participating students' target vocabulary. The informal talk with the participating teachers found that the students' Chinese language knowledge was zero upon their entry to the Chinese

Immersion Programs. And their average Chinese proficiency level was close to zero by the date the research was conducted (beginning of October) because they had only been in the immersion program for less than one month. The teachers reported that the majority of the instructional time was spent training the students to behave appropriately at school; therefore, the Chinese language that the students were exposed to was merely limited to routine oral expressions such as "eyes on the teacher (眼睛看老师)", "line up (排队)", "be quiet (安静)", "stand up (站起来)" and some other simple expressions that were used for classroom management. Understanding was emphasized, but reading and speaking were not considered important at all and had barely been practiced at this beginning stage.

To learn about the participants' vocabulary knowledge prior to the study, an independent sample t-test was conducted to analyze the pretest data in picture naming and Chinese word recognition. No significant difference was found in the scores of picture naming for the Shared Singing (M = 0.11, SD = 0.61) and Shared Reading (M = 0.09, SD = 0.49) groups, t (104) = -0.176, p = 0.861; nor was significant difference found in the scores of Chinese word recognition for the Shared Singing (M = 0, SD = 0) and Shared Reading (M = 0, SD = 0) groups. These results suggested that the two groups were at the same Chinese proficiency level in terms of picture naming and Chinese word recognition before the start of the study.

These findings were confirmed by the participants' demographic information regarding the children's prior Chinese language knowledge and experience (Appendix C). The demographic questionnaire results (Table 1) showed that the two groups were similar in terms of gender distribution, ethnicity status and exposure to the Chinese language.

Of all the participants, ninety-seven percent of them had had no Chinese learning experience before they were enrolled in the Chinese Immersion Programs. Although three female

participants were from Chinese families and their parents spoke Chinese between themselves at home, the children's pretest scores showed that their Chinese proficiency level was very low (two got two correct out of fifteen, and one got three correct). As the points were lower than the cut-off point of 30%, they were not excluded during the data collection and analysis. Two students were adopted from China before they were one year old, but they had little prior experience related to Chinese. They were, therefore, included in the study. Those who were unwilling to participate still joined in the intervention activities, but they were excluded from the video recording and data analysis.

Table 1: Demographics of the Sample of the Main Study (N=106)

	Mean	SD		
Age	4.96	2.36		
	N	%	Control	Experimental
Gender				
Male	47	44.3%	25	22
Female	59	55.7%	28	31
Ethnicity				
Caucasian	80	75.5%	41	39
African-American	5	4.7%	1	4
Mexican-American	1	0.9%	0	1
Asian	20	18.9%	11	9
Child's mother tongue				
Chinese	3	2.8%	1	2
Non-Chinese	103	97.2%	52	51
Prior experience related to Chinese				
None	101	95.3%	51	50
Parents speaking Chinese?	3	2.8%	1	2
Adopted from China/Lived/visited a Chinese-speaking country/place?	2	1.9%	1	1

Instruments

A questionnaire was used to collect demographic information from the participants' parents (Appendix C). It contained two major parts: demographic information and Chinese

language learning experience. The portion dealing with demographic information was designed to gather information about the participants' age, gender, ethnicity and mother tongue. The other portion of the questionnaire gathered information about the participants' experience and familiarity with the Chinese language.

There were three proposed concepts to be measured in this study: Chinese picture naming, Chinese word recognition and Chinese spoken vocabulary recall in the story. These instruments were designed by the researcher because there were no commercial ones available for this purpose. Each concept was separately measured by a different instrument: picture naming vocabulary test, Chinese word recognition test and spoken vocabulary recall test in the story (see examples in Table 2 and Figures 2, 3 and 4). Each measure consisted of the same 15 vocabulary items, but they were used to test different language skills—picture naming skill, word recognition skill and vocabulary recall skill in the context.

They were used as a way to indicate whether changes had occurred in the participants' vocabulary development. The picture naming scores from the pre- and post- tests were used to determine speaking vocabulary knowledge prior to and at the conclusion of the study. The word recognition test scores from the pre- and post- tests were used to determine Chinese word recognition knowledge prior to and at the end of the study. The tests of picture naming, word recognition and spoken vocabulary recall from the immediate posttests to delayed posttests were used to measure the retention of the target vocabulary.

Table 2: Vocabulary Measures

Type	Stimulus	Description
Picture Naming	15 pictures on 15 individual index cards	On a sheet of paper that contained the target vocabulary, researcher pointed to each picture by asking "What is it?" in English and the student was asked to answer in Chinese.
Chinese Word Recognition	15 Chinese words on 15 individual index cards	On a card, the student pointed to and recognized the Chinese words.
Spoken Vocabulary Recall in the Story	Small book of the story	Flipping the pages, the researcher read the story and the student was asked to fill in the blanks by recalling.

The Chinese picture naming test consisted of 15 color pictures, each glued on a 3-by-5 inch index card. All of the pictures on the cards were different from the ones used in the story, but the content conveyed the same meanings. This safeguard was taken to avoid random guessing by students who might have remembered a picture they saw in the Shared Reading/Singing without understanding its meaning. All pictures were color drawings or photos of objects or concepts taken from clipart and photo collection at www.google.com.
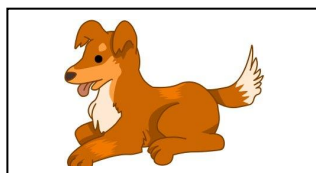

Figure 2: Example of picture naming card (For interpretation of the references to color in this and all other figures, the reader is referred to the electronic version of this dissertation.)

In the Chinese word recognition test, all the above fifteen target words were used (Appendix F), and each Chinese concept was printed in the middle of a 3-by-5 inch index card.

The font used for the words was Chinese Song Style, a widely-used and standardized font in Chinese elementary textbooks, and the word size was 120 bold. In this test, students were asked to read each word. One point was given for a correct answer.

小狗
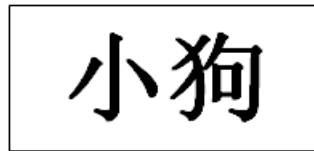
Figure 3: Example of Chinese character recognition card

To test the participants' Chinese spoken vocabulary recall in the story, a small book of the story was created by the researcher by taking pictures of the pages of the Big Book and editing them into a 4.25-by-5.5 inch book. The target words were replaced with blanks with lines underneath (Figure 4). The text of the story was used as a spoken cloze test (Appendix G). The participants were required to tell orally the missing words.

她找到一些 ＿＿＿。

Figure 4: Example of item assessing vocabulary recall in context

Data Collection

A pilot study had been conducted to test the materials, measures and methods four months before the main study was conducted. It followed the same data collection procedures as

the main study, as described below. Extra data collection information and research results of the

pilot study were reported in Appendix J.

In order to collect the data for this study, three tests were given. The participants were

pretested as to their entry knowledge of the target Chinese words. A picture naming test with 15

pictorial items (Appendix E) and a Chinese word recognition test (Appendix F) with the same 15

target words served to verify the participants' lack of familiarity with the target vocabulary. In

the picture naming task, the participants were shown the pictures and then asked to produce a

name in Chinese for each picture. In the word recognition task, they were shown the Chinese

words and then were asked to read each of them. Immediately after the last day of the

intervention, the participants were post-tested on the picture naming, Chinese word recognition

of the target words, and the contextual spoken vocabulary recall to examine whether there were

any differences in scores before and after the intervention. The order of administration of

assessments was not counterbalanced because the order in which the assessments were given

would not affect the behavior of the participants or the responses they made. Last, a 16-day

delayed posttest was repeated to examine the participants' retention of the target words

throughout the process. The 16-day interval was chosen because the pilot study found that the

nine-day interval was too short to produce significant difference. The administration of the

posttests followed the procedures of the pretest. The 15 items in the posttests were the same as

those used in the pretest, but the order of the items in the vocabulary test was randomly changed

to minimize the potential test effects of the previous assessments.

Every measure administration required a separate scoring sheet. The scoring sheet was

common across all the measures and contained test time, date of measure administration, data

collection site, the IDs of the assessed students, test type and test items (Table 3). Under each test

type, the 15 items were shown for the researcher to circle. The target vocabulary item was circled and scored as correct only when correct in pronunciation, and each correct answer was counted as one point. Answered items were scored from one to fifteen points. The measures were scored by counting and recording the number of correct responses for each item on the scoring sheet.

Table 3: Example of a Scoring Sheet

Test time: Pretest, Immediate posttest or delayed posttest (circle one)

Data Collection Date: _____   Data Collection Site: _____

Data Collector: _____

ID	Picture Naming	Word Recognition	Recall
001	小猫 cat, 小狗 dog, 老鼠 mouse, 母鸡 hen, 麦子 wheat, 种子 seed, 面粉 flour, 蛋糕 cake, 吃 eat, 种 plant, 磨 grind, 浇水 water, 拔草 weed, 农场 farm, 割 cut Total correct: _____	小猫 cat, 小狗 dog, 老鼠 mouse, 母鸡 hen, 麦子 wheat, 种子 seed, 面粉 flour, 蛋糕 cake, 吃 eat, 种 plant, 磨 grind, 浇水 water, 拔草 weed, 农场 farm, 割 cut Total correct: _____	小猫 cat, 小狗 dog, 老鼠 mouse, 母鸡 hen, 麦子 wheat, 种子 seed, 面粉 flour, 蛋糕 cake, 吃 eat, 种 plant, 磨 grind, 浇水 water, 拔草 weed, 农场 farm, 割 cut Total correct: _____

Test Validity and Reliability

Internal validity of the research was achieved by employing various types of strategies that guided the entire process of the study to ensure that the findings captured what was true in reality (Gall, Gall, and Borg, 2007). To achieve this goal, five approaches were taken. First, the classes were randomly assigned to the experimental and control groups at the time they participated in the study. The study was, therefore, an experimental design at the class level. Second, selection bias was avoided. The participants in both the control and experimental groups were alike with regard to the length of time they were exposed to the Chinese language and their Chinese language proficiency level. Third, the participating teacher was provided with the

intervention protocol and was trained to implement it as planned. Fourth, the teacher's

instruction was recorded during the intervention period to ensure that she adhered closely to the

intervention protocol. Last, the teachers were asked not to expose the target words or the story to

the participants between the repeated measures of the tests. To achieve that, the Big Book was

asked to be returned to the researcher at the conclusion of the intervention, and the teachers were

asked not to review the target words or the story.

Content validity involves "the systematic examination of the test content to determine

whether it covers a representative sample of the behavior domain to be measured" (Anastasi &

Urbina, 1997, p. 114). To achieve the content validity, first, face validity was examined. A

Chinese graduate student who has expertise in assessment was invited to judge whether each of

the three tests appeared to test what it was intended to measure. Her report showed that the

picture naming test contained pictures similar to the ones on the Big Book that would be used for

the study and it tested the picture naming skill; the word recognition test included the exact

Chinese characters from the Big Book and it tested Chinese word recognition skills; and the

spoken recall test was an oral cloze test based on the Big Book and it required the participants to

recall the missing words to finish the sentences. In addition, all the target words were selected

from the target story. Therefore, all of these tests measured what they were intended to measure

(picture naming, word recognition, and speaking vocabulary), constituting face validity.

Next, to obtain the content validity, two raters were invited to judge how essential each of

the fifteen items was in the three measures. One of them participated in the face validity test

above and the other participated in the video ratings that were described in the later section.

They provided responses (1=essential, 0=useful but not essential, -1=not essential) to the

question, "Is this picture naming or word recognition or spoken recall skill/knowledge measured

by the item?" To calculate the content validity ratio, Lawshe's formula (1975) was used: $CVR = (n_e - N / 2) / (N / 2)$ where CVR = content validity ratio, n_e = number of raters indicating "essential", N = total number of raters. Table 8 shows that positive numbers $(0 - 1)$ were obtained, indicating that the content validity was generally satisfactory and that the measures related well to the measures of vocabulary/language development necessary for beginning Chinese learners.

Table 4: Ratings on Each Item of the Measures by Two Raters

Items		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Rater 1	Pic.	0	1	1	1	1	-1	1	1	1	1	1	1	1	1	1
Rater 2	Pic.	1	1	1	1	1	1	1	1	1	-1	1	1	1	1	1
	CVR	0	1	1	1	1	0	1	1	1	0	1	1	1	1	1
Rater 1	Word	1	1	1	1	1	0	1	1	1	0	1	-1	0	1	1
Rater 2	Word	0	1	1	1	1	0	1	1	1	0	1	1	0	1	1
	CVR	0	1	1	1	1	0	1	1	1	0	1	0	0	1	1
Rater 1	Rec.	-1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
Rater 2	Rec.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	CVR	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1

Note: Ratings of 1=essential; 0=useful but not essential; -1=not necessary. CVR= content validity ratio.

Preliminary test-retest reliability was measured by implementing the three instruments on the control group at two different times during the research. The interval between the two tests was four days, and there was no change for the control group except the regular school work. After the data was collected, the correlation between the two separate measurements (the Pearson

rho) was computed using SPSS. The test-retest showed a reliability coefficient of 0.673 for the picture naming test, 0.573 for the word recognition test, and 0.818 for the spoken recall test, indicating that the test-retest reliability was medium to high and that the measures were basically reliable.

However, the performance distribution histograms of picture naming (Figure 5) and word recognition (Figure 6) showed that the data were positively skewed with more variation clustered in the left-tailed direction, with the scores of the picture naming test consistently remaining within the range of 0-7 and the scores of the word recognition within the range of 0-5. This indicated some floor effects for the two measures, and the case of word recognition measure was more severe than that of picture naming measure. And they would not allow differences to be found and affected the validity of the reliability examination to some degree. As both the experimental and the control groups did not perform so well on the two measures, it could well be the case that the effect of the intervention was not strong enough, the intervention length was not sufficient or the two measures were too difficult for the young CFL learners.

The pilot study found the similar pattern with the word recognition measure, but not with the measure of picture naming. The major reason was because the pilot study was conducted at the end of the school year when the participants had learned Chinese for eight months. With several months' Chinese immersion learning, the majority of the kindergarteners had had some fundamental listening and speaking vocabularies. Therefore, the picture naming was not as challenging to them then as in the main study when it was conducted at the beginning of the school year. However, considering that Chinese word recognition, like picture naming, was a basic language skill for Chinese language learners, and the floor effect would be problematic for

5-year-olds only when they earned raw scores of zero, the word recognition measure along with

the picture naming one was thus not dropped in the main study.

The histogram of the spoken vocabulary recall in the story (Figure 7) revealed an

approximately normal distribution. There were no floor or ceiling effects for this measure.
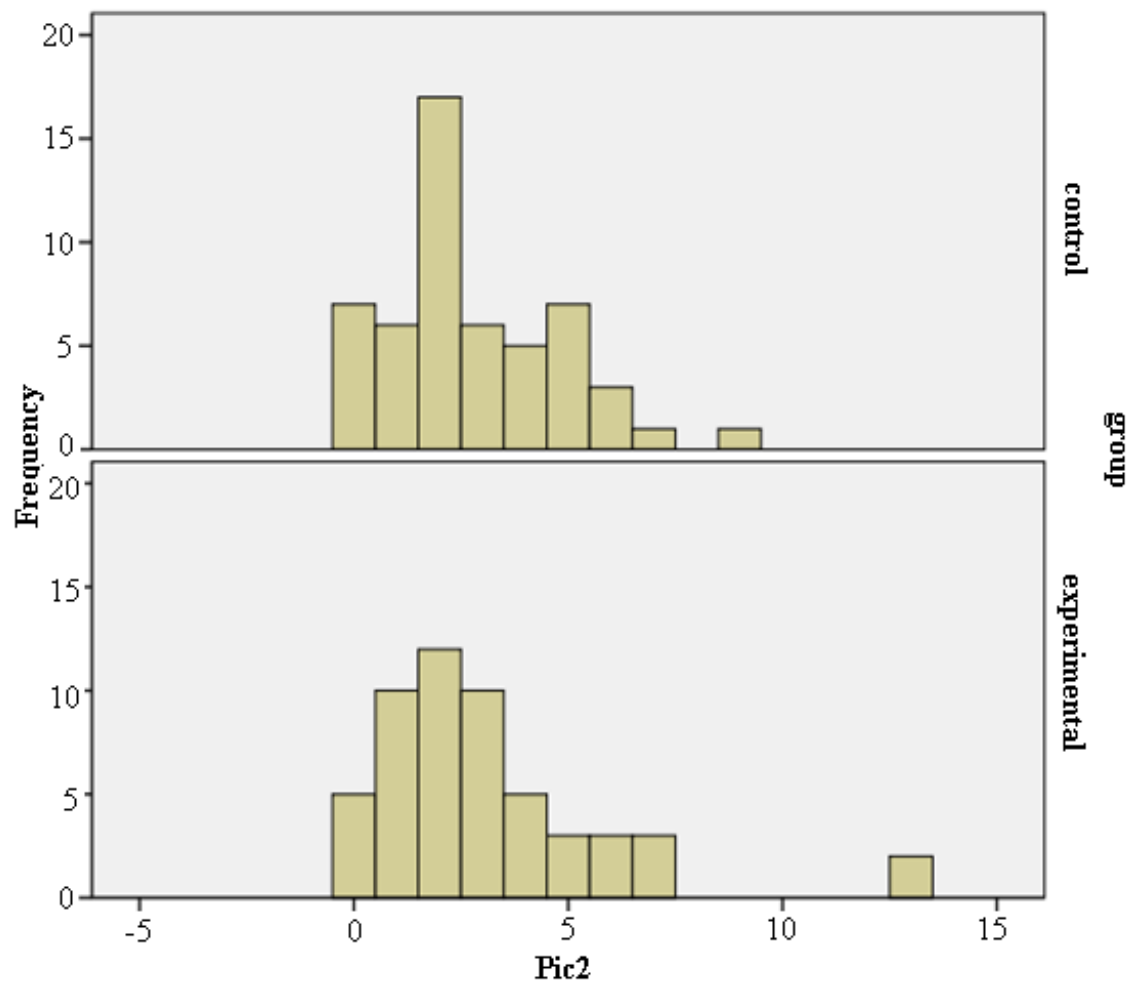
Figure 5: Performance distribution histograms of picture naming
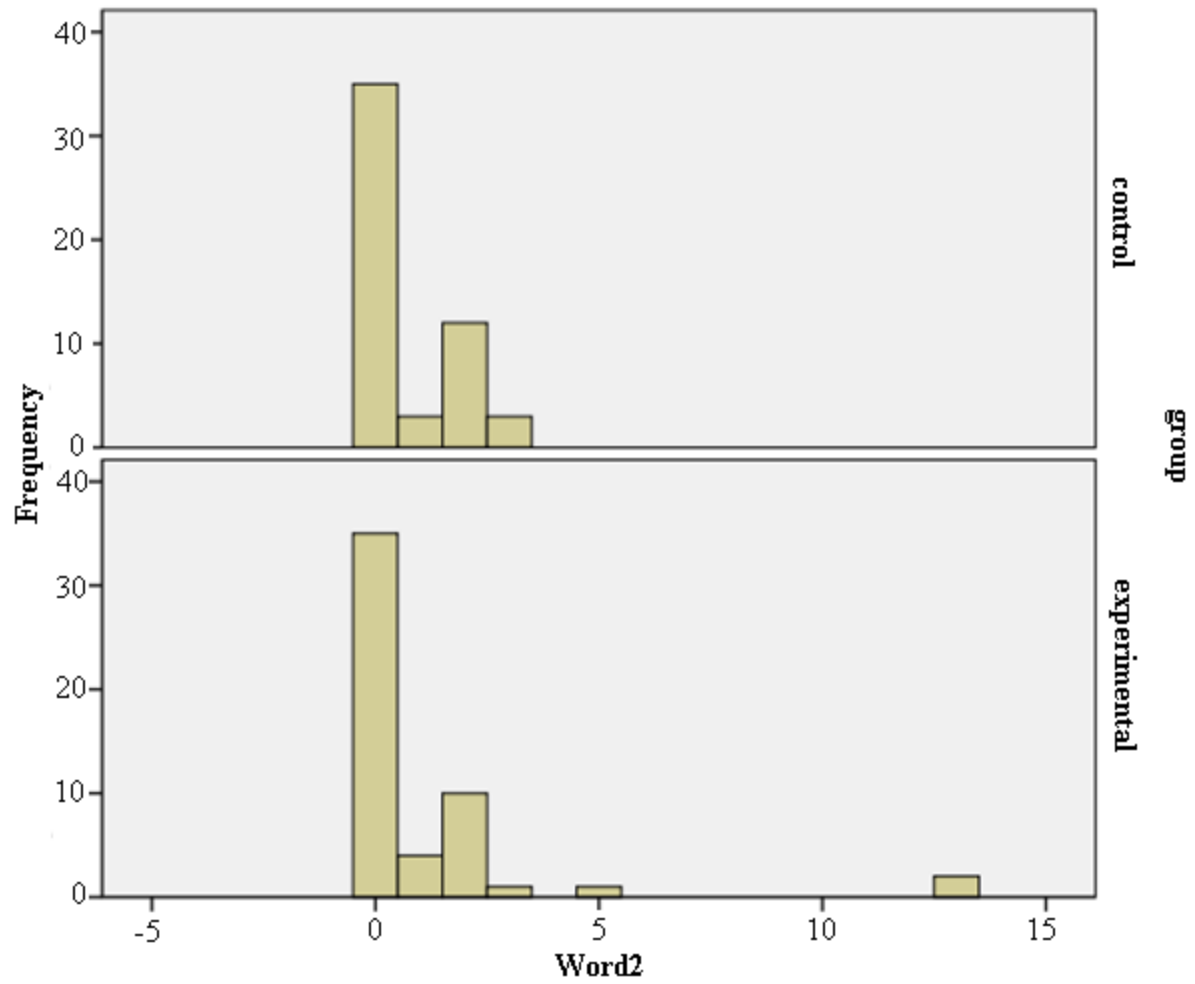
Figure 6: Performance distribution histograms of word recognition
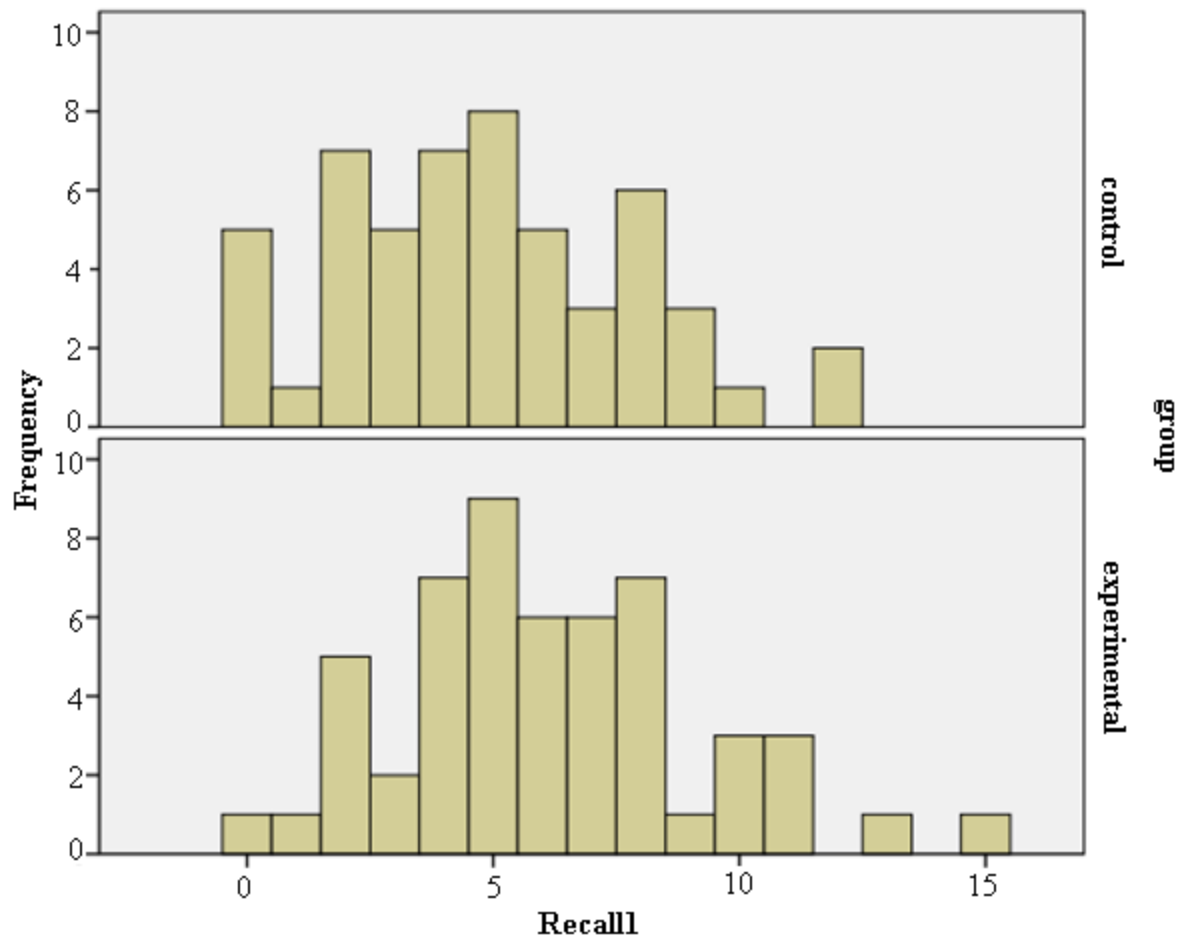
Figure 7: Performance distribution histogram of spoken vocabulary recall in the story

Teaching Material Selection and Development

It is important to determine which story and story song would be used and which vocabulary words would be the focus of this study. A Chinese story song (Appendix D) was created based on the English story "The Little Red Hen" and 15 target words were chosen for the study (Appendices E, F & G).

The Chinese picture book used for this study was a translated and revised version of Heather Forest's "The Little Red Hen (小红母鸡)". The difficulty of the content was also considered by taking into account learner, task and text or input factors (Nunan, 2004). To ensure

that the story selected served the study well, the following two criteria were employed. The first was the acceptable reliability of the story that had been well established by the U.S. kindergarten teachers, that is, lots of U.S. kindergarten teachers told this story in the class. The second was the appropriateness: in particular, the story contained vocabulary, content, and the text length that were appropriate for kindergarteners, that is, the vocabulary had very clear and concrete meanings, the content was easy to comprehend, and the story was manageable for both the teacher and students due to the simple sentence structures and repetitive patterns that were used in a dialogic manner at the kindergarten level.

After the story was selected, the English story was then translated into Chinese by the researcher. Word-for-word translation was avoided. Chinese wording and sentence patterns were carefully adapted to make it suitable for the young Chinese immersion learners. For example, the English sentence "Once upon a time, there was a little red hen that lived on a farm" was translated into "农场上有一只红母鸡" which means "on a farm there was a red hen." Last, the song music/melody "The Mulberry Bush" was selected for the story mainly because it was well-known among the young children and easy for them to follow. This avoided adding burden to their cognitive load when learning this story song.

To establish the content validity of the target reading material, four people were involved in the proof-reading process, and the following steps were undertaken. First, the translation was reviewed for grammar and ease of understanding by a monolingual Chinese speaker who is a retired teacher who used to teach Chinese Language Arts in an elementary school in China before he came to visit his son in the U.S. Modification was made based on his feedback. Next, the modified Chinese version was sent to two Chinese immersion teachers for review of the language appropriateness in terms of grammar and ease of understanding for the kindergarten

level. Both of them speak fluent Chinese as the first language and English as the second language, and they have more than one year's kindergarten teaching experience in the U.S. classrooms. Eventually, any inappropriateness regarding grammar and ease of understanding was resolved during this rigorous translation and proof-reading process.

Then the Chinese Big Book "Little Red Hen" was created for this study by the researcher, with the help of her two artistic daughters. The reasons for self-illustration included: first, a simplified Chinese version of the story was not available on the market; second, as the story was a revised version of the original English story and none of the available versions of the English story book was appropriate for the study.

To create a Big Book version of the text, three major steps were undertaken. First, after reading the English picture book and studying the Chinese story text many times, it was decided that 32 pages were needed for the Big Book. What was wanted on each page was then decided according to the story text. Next, an 18-by-12 inch drawing pad that contained more than 32 blank pages was purchased. Then, the story text was printed out in large font (size 72, bold), which totaled 29 sentences, with approximately one sentence per page except that there was one sentence across pages three and four, one across pages 25 and 26, and one across pages 31 and 32. They were then pasted onto the pages where I wanted them to be on the drawing pad. Last, three identical copies of the colorful Big Book with 32 pictures were illustrated before the pilot study (Figure 8). They were used first in the pilot study and then in the main study.

Figure 8: An image of a page from the book

Picture Book Content Validity

In order to make sure that the pictures drawn convey the intended meaning of the story and match the story texts, they were validated by four Chinese people who did not participate in the study. Two of them are graduate students from China; one is a 14-year-old American-born Chinese; and the last one is a middle-aged Chinese father. The first three are bilingual in both Chinese and English, and the fourth speaks Chinese only.

Altogether 29 pages out of 32 single pages were rated, pages three and four were considered as one page because there was only one sentence of text on the two pages. It was the same with pages 25-26 and pages 31-32. Table 5 demonstrates the raters' responses for the agreement of the picture and the text on each page of the story. A four-point scale (1=not relevant; 2=somewhat relevant; 3=quite relevant; 4=highly relevant) was used. Of the 29 pages, 21 pages were rated quite or highly relevant, with a content validity index (CVI) of 1.00. Pages 1, 11 and 31-32 had a lower value of CVI at 0 and 0.5. The final score of the page-level CVI

which represented the average picture-text agreement was 0.88. That means the raters reached 88% mean agreement for all the 29 pages. Based on this information, pages 1, 11 and 31-32 were modified on the Big Book before the main study was conducted.

Table 5: Ratings on Each Page of the Big Book by Four Raters: Items Rated 3 or 4 on a 4-point

Relevance Scale (N=4)

Pages	Rater 1	Rater 2	Rater 3	Rater 4	# in agreement	P-CVI
1	--	--	--	--	0	0
2	X	X	X	--	3	0.75
3-4	X	X	X	X	4	1
5	X	--	X	X	3	0.75
6	X	X	X	X	4	1
7	X	X	X	X	4	1
8	X	X	X	X	4	1
9	X	X	X	X	4	1
10	X	X	X	X	4	1
11	X	X	--	--	2	0.5
12	X	X	X	X	4	1
13	X	X	X	X	4	1
14	X	X	X	X	4	1
15	X	X	X	X	4	1
16	X	X	X	X	4	1
17	X	X	X	X	4	1
18	X	X	X	X	4	1
19	X	X	--	X	3	0.75
20	X	X	X	X	4	1
21	X	X	X	--	3	0.75
22	X	X	X	X	4	1
23	X	X	X	X	4	1
24	X	X	X	X	4	1
25-26	X	X	--	X	3	0.75
27	X	X	X	X	4	1
28	X	X	X	X	4	1
29	X	X	X	X	4	1
30	X	X	X	X	4	1
31-32	--	X	X	--	2	0.5
Property Relevant:					Mean P-CVI=25.75/29=0.88	
	27/29= 0.93	27/29= 0.93	25/29= 0.86	24/29= 0.83	Mean=3.55/4 =0.88	

Note: Ratings of 1=not relevant; 2=somewhat relevant; 3=quite relevant; 4=highly relevant. Dashes indicate ratings of 1 or 2. Markers of "X" indicate ratings of 3 or 4. P-CVI=Page-level Content Validity Index.

Selection of the Target Vocabulary Items

Fifteen words unknown to the participants were selected from the story as targets for investigation of the effect of the use of singing on vocabulary acquisition and retention. They were "cat (猫), dog (狗), mouse (老鼠), hen (母鸡), wheat (麦子), seed (种子), flour (面粉), cake (蛋糕), eat (吃), plant (种), grind (磨), water (水), weed (草), farm (农场), and cut (割)." The 15 words consisted of about half of the total number of words in the Big Book "The Little Red Hen" (15/35) and were selected by the researcher using the following criteria: First, they were non-borrowed words for the learners (e.g., 咖啡 pronounced as "coffee" is a borrowed word from English). Second, they could be effectively drawn as pictures. Third, they were frequently-used speaking words at the kindergarteners' level in their native language (Hiebert, 2005). These words were introduced in the text and emphasized during the singing/reading of the story book. The concepts were pictured in the Big Book, which helped the children make the associations.

Teacher Training

In order to ensure that the participating teachers understood the research and followed the intervention instruction, training was necessary. Prior to both pilot and main studies, teacher trainings were provided by the researcher through AdobeConnect, a web conferencing platform for web meetings. The training lasted three hours, consisting of a brief introduction of the study, two video clip sessions on Shared Reading techniques (because Shared Reading was introduced as a springboard for Shared Singing), one 90-minute session explaining the use of lesson plans (Appendix H) for using the Shared Singing approach, and the learning of the story song. Materials such as parent consent forms, assent forms, lesson plans for both groups, and the demo

singing of the story song were distributed to the trainees via email. One Chinese immersion kindergarten teacher participated in the pilot study training. Three participated in the main study training including the one who had attended the pilot study training (but she had a different group of kindergarten students for the main study).

Procedures

The study was conducted during the participants' regular class times, and required a 25 to 30 minute session a day, lasting for a week. The participants had been pre-arranged into two groups named Morning and Afternoon groups by the school before the start of the school year. A Chinese immersion teacher taught the Morning group in the morning and the Afternoon group in the afternoon. The two groups were randomly assigned to the two learning conditions (Shared Singing and Shared Reading) by the researcher. The two learning conditions were conducted separately either in the morning or in the afternoon. The following procedures were implemented to conduct the main study as well as the pilot study:

First, the consent forms were distributed to the parents two weeks before the study. Assents were received from the participants during the school hour. The Big Books were delivered to the teachers through express mail.

Next, teacher training was provided prior to the study. The topics covered the purpose of the study, explanation of the learning conditions, training of the Shared Reading and Shared Singing approaches, clarification of the lesson plans, demonstration of the singing of the story song and answering the questions raised by the participant teachers.

The pretests were then administered by the researcher individually during the regular school time at a small desk in the hallway of the participating schools. The pictures and the

Chinese word cards were presented in front of the individual student one at a time. For the picture naming test, the researcher pointed to the pictures one at a time and instructed the participants to say them in Chinese. A score of "1" was given if the correct answer was provided. For an incorrect answer, "0" was given. Then the Chinese word recognition test was repeated in a similar manner.

After the pretest, the intervention was administered to the two groups of kindergarteners for a week. The Shared Singing intervention was conducted during regular class time by the same teacher following the lesson plans provided (see a sample part in Table 6). This method was applied to reduce variance in environment, teaching methodology, or student-teacher rapport. The instruction in all classes remained the same for the two groups since the beginning of the school year except for the addition of the intervention. The experimental group shared singing the story song, while the control group shared reading the same story without singing. The story was read or sung for approximately 25-30 minutes each class over a period of one week. Both groups were able to view the words of the story during the class time, but were not allowed to take the book out of the classroom. The sung version and spoken version of the story were identical. The intervention processes of Shared Singing and Shared Reading were both video-taped.

Table 6: Sample of Teaching Procedures

Experimental Group	Control Group
Procedures:	*Procedures:*
• Review the vocabulary and actions orally by playing the game charades. • Review the Chinese characters on flashcards. • Have the dialogue cards up for support. **Review by singing the dialogue.** Track the words while singing. • Point to the quotation marks in the dialogue and teach them that when someone talks, the author writes down what the character says using quotation marks. (Read "Mao hao" after the teacher). Write the enlarged quotation marks on the whiteboard. Bring students' attention to the quotation marks in the dialogue by asking them to find them. • **Re-sing the story**, tracking the words (letting students join in on the repetitive wording).	• Review the vocabulary and actions orally by playing the game charades. • Review the Chinese characters on flashcards. • Have the dialogue cards up for support. **Review by reading the dialogue**. Track the words while reading. • Point to the quotation marks in the dialogue and teach them that when someone talks, the author writes down what the character says using quotation marks. (Read "Mao hao" after the teacher). Write the enlarged quotation marks on the whiteboard. Bring students' attention to the quotation marks in the dialogue by asking them to find them. • **Re-read the story**, tracking the words (letting students join in on the repetitive wording).

To test the immediate acquisition of picture naming and word recognition of the target Chinese vocabulary, the students in both groups took a picture naming posttest and a word recognition posttest at the end of the last lesson of the week's intervention. Meanwhile, to test their vocabulary acquisition in the story, the students were tested on the spoken vocabulary recall in the story. They were presented with pictures from the story with the words omitted. The researcher read the story and the students were then asked to fill in the blanks orally. Sixteen days after the immediate posttest, a delayed posttest was repeated to examine the participants' retention of the target words. The same instruments were used in both the immediate and delayed posttests. The administration of the posttests followed the procedures of the pretest.

Intervention Fidelity

The intervention fidelity was high based on the teachers' self-reports and the researcher's verification. It was achieved in the following four ways: First, before the study, the participating teachers attended a three-hour online training to become familiar with the intervention protocol. Daily scripted lesson plans for the intervention week were distributed and explicitly explained at the training. This provided the teachers a scaffold in using the intervention of singing in telling a story. It also provided training in creating the Shared Reading and Shared Singing learning conditions for the study. Additionally, it ensured to some extent that the teachers followed the intervention procedures as planned.

Second, to determine the teachers' adherence to the intervention protocol, videotapes of four sessions for both control and experimental groups (out of a total of ten sessions, or forty percent) were selected at random to provide estimates of the intervention fidelity. Adherence to the intervention protocol was assessed by the two raters who had rated the content validity via the researcher-developed checklist, which contained eight question items. If they were present on the video recording, the raters would circle "yes"; otherwise, "no" would be indicated. The fidelity score was calculated by dividing the number of items circled "yes" by the total number of checklist items. A mean fidelity score was obtained ranging from six to eight. A mean fidelity score of seven was obtained across the sessions, indicating that the participating teachers adhered closely to the intervention protocol (Table 7).

Third, to ensure that both groups spent the same amount of time with the texts, the teachers were asked to put away the Big Book as soon as the intervention activities were finished. They were required not to review the book outside the intervention and the book was

required to be kept in the classroom during the intervention. Right after the immediate posttest, the researcher collected the Big Book to ensure it was not reviewed before the delayed posttest.

Fourth, daily check-in was conducted by the researcher at the conclusion of each day's teaching. It was used to check the teachers' implementation of the intervention and collect their general and specific impressions about the major intervention components (e.g., Big Book design and use, teaching activities, student motivation, student reading performance, etc.). The daily check-in results showed that the teachers' general impression about the intervention was positive: the Big Book and the illustrations were kid-friendly and fun; the teaching activities were very good except that detailed procedures as to how to teach the target vocabulary needed to be explicitly laid out; both the Shared Reading and Shared Singing approaches were interactive and engaging. When talking about the responses from the students, the teachers' observations in the classroom found that, whether singing or reading the Big Book, both groups of students enjoyed the process, and they became increasingly confident in understanding the story and participating in the activities. The most obvious difference was that the experimental group was more motivated and attended to the singing activity more instantly.

Table 7: Video-observer Agreement

	Session 1	Session 2	Session 3	Session 4
Rater 1	7	8	7	6
Rater 2	7	7	6	7
				Mean = 7

Data Analysis

The data were analyzed using the SPSS for Windows, version 17.0. To assess the effectiveness of the intervention strategy and whether growth between pre- and post- testing was significant, an independent t-test was administered on the immediate posttest and a one-way

ANOVA was performed on the delayed posttest for each of the measures: picture naming, word recognition, and spoken vocabulary recall in the story. The data were analyzed and examined in terms of the effect of the use of singing.

Data are presented visually in the form of graphic representations, such as tables and figures. The means and standard deviations were established based on the outcomes of the test scores. Using statistical inference, attempts to make inferences about population parameters from sample statistics were conducted. Tests of statistical significance were performed, and an alpha level was set at .05 to estimate the probability that shared storybook reading activities affected vocabulary skills in each student. Several ANOVA tests were used to compare the means of the pre- and post- test scores and to determine if they were significantly different.

In summary, this chapter described the main study's instruments, design, variables, participants, materials and procedures. It also presented the study's validity, reliability and intervention fidelity, and discussed the changes made to the main study. Chapter 4 will present the results that were obtained from the main study.

CHAPTER 4

RESEARCH FINDINGS

The purpose of this chapter is to communicate the data analysis results as well as report the findings related to each research question. Specifically, this chapter introduces results obtained from the three instruments over the time of the pretest, immediate posttest and delayed posttest.

The pretests of picture naming and Chinese word recognition were administered to learn about the participants' entry Chinese proficiency level right before the study. The immediate posttests of the three instruments (picture naming, word recognition and spoken vocabulary recall in the story) were conducted to find out the participants' acquisition of the target vocabulary right after the instructional intervention of singing was completed. Sixteen days later, the delayed posttests of the three instruments were implemented to detect their vocabulary retention. An independent t-test was conducted on each test. The alpha level was set at .05 for all the analysis.

The results of the vocabulary acquisition in picture naming, Chinese word recognition and spoken vocabulary recall in the story are reported first. Then the results of the vocabulary retention are discussed, with a one-way ANOVA analysis being performed on each test. The assumption of equal variance underlying the analysis was also tested and reported. Below is the presentation of the results along with the examination of each of the research questions.

Question 1 – Effects of Singing on Vocabulary Acquisition

The first research question concerned whether the Shared Singing group acquired more picture naming vocabulary, recognized more Chinese words, or recalled more spoken vocabulary

in the story than the Shared Reading group. The results of the immediate posttests were used to report the participants' vocabulary acquisition right after the implementation of the instructional intervention of singing for a week. An independent t-test was chosen to compare the group means between the Shared Singing and Shared Reading groups in the vocabulary acquisition.

The initial examination of the data indicated that there were no significant violations of the assumptions of the t-test for any of the dependent variables. And Levene's tests indicated no significant violations of the homogeneity of variance assumptions, $p > 0.05$.

To compare the group means of vocabulary acquisition between the Shared Reading and Shared Singing groups, independent sample t-tests were conducted on the three measures— picture naming, Chinese word recognition and spoken vocabulary recall in the story. No significant difference was detected in the scores of picture naming for the Shared Singing (M = 3.09, SD = 2.73) and Shared Reading (M = 2.77, SD = 2.03) conditions, $t\,(104) = -0.686$, $p = 0.494$, Cohen's $d = 0.133$; and there was also not a significant difference in the scores of Chinese word recognition for the Shared Singing (M = 1.09, SD = 2.60) and Shared Reading (M = 0.68, SD = 1.02) conditions, $t\,(104) = -1.081$, $p = 0.282$, Cohen's $d = 0.21$. However, a significant difference was found in the scores of spoken vocabulary recall in the story for the Shared Singing (M = 6.11, SD = 3.07) and Shared Reading (M = 4.87, SD = 3.01) conditions, $t\,(104) = -2.106$, $p = 0.038$, Cohen's $d = 0.41$. These results suggested that the Shared Singing did not have a significant effect on vocabulary acquisition in picture naming or Chinese word recognition, but it did have an effect on spoken vocabulary recall in the story. Specifically, the findings suggested that when the learning of vocabulary was situated in the Shared Singing condition, the students' acquisition of picture naming or word recognition might not be enhanced significantly, but their acquisition of spoken vocabulary in the story increased. Therefore, Hypotheses 1 and 2, which

stated that the Shared Singing group would score higher than the Shared Reading group in the immediate posttest of picture naming and word recognition, were rejected, but Hypothesis 3, which stated that the Shared Singing group would perform better than the Shared Reading group in the immediate posttest of spoken vocabulary recall in the story, was supported.

Question 2 – Effects of Singing on Vocabulary Retention

The second research question focused on whether young CFL learners retained more vocabulary of picture naming, Chinese word recognition and contextual spoken words recall in the Shared Singing condition than the Shared Reading one. Specifically, a statistical analysis was performed to determine whether there were any significant differences between groups regarding their performance from the immediate posttest to delayed posttest. To examine the effect of the independent variable, first, the mean scores for the tests were compared. Second, homogeneity of variance assumption underlying the one-way ANOVA was tested. Last, if all the assumptions were met, the raw scores on the tests were submitted to a one-way ANOVA design with "group" as an independent variable, and the test scores in the three measures were dependent variables. The alpha level for this study was set at 0.05.

Results of the retention of picture naming vocabulary.

The Levene's tests of homogeneity of variance for the measures of immediate and delayed picture naming posttests showed that the p values were greater than the alpha level, $p_1 = 0.381$ and $p_2 = 0.843$. Therefore, the homogeneity of variance assumption was reasonably satisfied for the tests.

The descriptive statistics of the picture naming test, including group means and standard deviations for each group in the immediate and delayed posttests, were reported in Table 8. The descriptive measures revealed gains by the two groups on both the immediate and delayed posttests with the experimental group performing a little bit better than the control group. On average, the experimental group named 3.09 pictures out of 15 correctly while the control group scored an average of 2.77 picture naming correctly on the immediate posttest. And the outperformance was maintained on the delayed posttest.

Table 8: Mean Number of Words Correct and Standard Deviations on the Picture Naming Test

Groups	Immediate Posttest		Delayed Posttest	
	M	SD	M	SD
Control (n=53)	2.77	2.205	2.47	2.628
Experimental (n=53)	3.09	2.733	2.55	2.805

However, the one-way ANOVA analysis (Table 9) revealed that the picture naming gains between the two groups were not statistically different, and effect size measured by Cohen's d indicated a small effect size (0.133 standard deviation difference) for the immediate posttest comparison of the two groups and a small effect size (0.26 standard deviation difference) for the delayed posttest comparison of the two groups.

Table 9: Results of One-way ANOVA for Picture Naming Test

Comparison of Means	95% CI		F	p	Cohen's d
	Lower Limit	Upper Limit	(1, 104)		
Immediate Posttest Control vs. Experi.	2.47	3.40	0.471	0.494	0.133
Delayed Posttest Control vs. Experi.	1.99	3.03	0.02	0.887	0.26

* $p < .05$

In summary, the results indicated that the use of singing did not result in significantly better performance in picture naming retention. Thus, Hypothesis 4, which stated that students in the Shared Singing group would perform better than students in the Shared Reading group, was not supported.

Results of the retention of Chinese word recognition.

The descriptive statistics (Table 10) showed that both groups made gains on the immediate and delayed posttests with the experimental group in general outperforming the control group.

Table 10: Mean Number of Words Correct and Standard Deviations on the Word Recognition Test

	Immediate Posttest		Delayed Posttest	
Groups	M	SD	M	SD
Control (n=53)	0.68	1.015	0.36	0.71
Experimental (n=53)	1.09	2.604	1.02	2.635

The Levene's test of homogeneity of variance for the immediate word recognition posttest revealed that the p value was greater than the alpha level, $p_1 = 0.065$, which meant that the homogeneity of variance assumption was satisfied for this set of data. Therefore, a one-way ANOVA analysis was performed (Table 11). It found that the difference between the two groups was not statistically significant for the immediate posttest of word recognition, F (1, 104) = 3.104, $p = 0.081$. Cohen's d showed a small effect for the intervention in both groups. The Shared Singing group had a greater gain (0.21 standard deviation difference) over the Shared Reading group on the immediate posttest.

Table 11: One-way ANOVA for Word Recognition Test

Comparison of Means	95% CI		F	p	Cohen's d
	Lower Limit	Upper Limit	(1, 104)		
Immediate Posttest					
Control vs Experi.	0.51	1.27	1.169	0.282	0.21

* $p < .05$

The Levene's test of homogeneity of variance for the delayed posttest showed that the p value was smaller than the alpha level, $p_2 = 0.006$, which meant that the homogeneity of variance was violated for this set of data. Therefore, a Welch F test was performed to examine the differences between the two groups. However, the Welch's test did not find a statistical difference, $F (1, 59.51) = 3.104, p > 0.05$.

In summary, the above results indicated that the use of singing did not result in significantly better performance in the retention of Chinese word recognition. Thus, Hypothesis 5, which stated that students in the Shared Singing group would perform better than those in the Shared Reading group, was not supported.

Results of retention of spoken vocabulary recall in the story.

The Levene's tests of homogeneity of variance for the measures of immediate and delayed spoken vocabulary recall posttests showed that the p values were greater than the alpha level, $p_1 = 0.984$ and $p_2 = 0.522$. Therefore, the homogeneity of variance assumption was reasonably satisfied for the two sets of data.

Table 12 presented the group means and standard deviations for each group over time, and Figure 9 displayed the group means graphically. These descriptive statistics showed that the experimental group scored significantly higher in spoken vocabulary recall than the control

group on both the immediate and delayed posttests. This was confirmed by the one-way

ANOVA analysis (Table 13) which showed that the experimental group significantly

outperformed the control group on the immediate test of spoken vocabulary recall, F (1, 104) =

4.436, $p < 0.05$, and on the repeated delayed test, F (1, 104) = 4.033, $p < 0.05$. Cohen's d showed

a medium effect for the intervention in both groups. The Shared Singing group had a greater gain

(0.41 standard deviation difference) over the Shared Reading group on the immediate posttest,

and 0.39 standard deviation difference on the delayed posttest.

Table 12: Mean Number of Words Correct and SD on the Spoken Vocabulary Recall Test

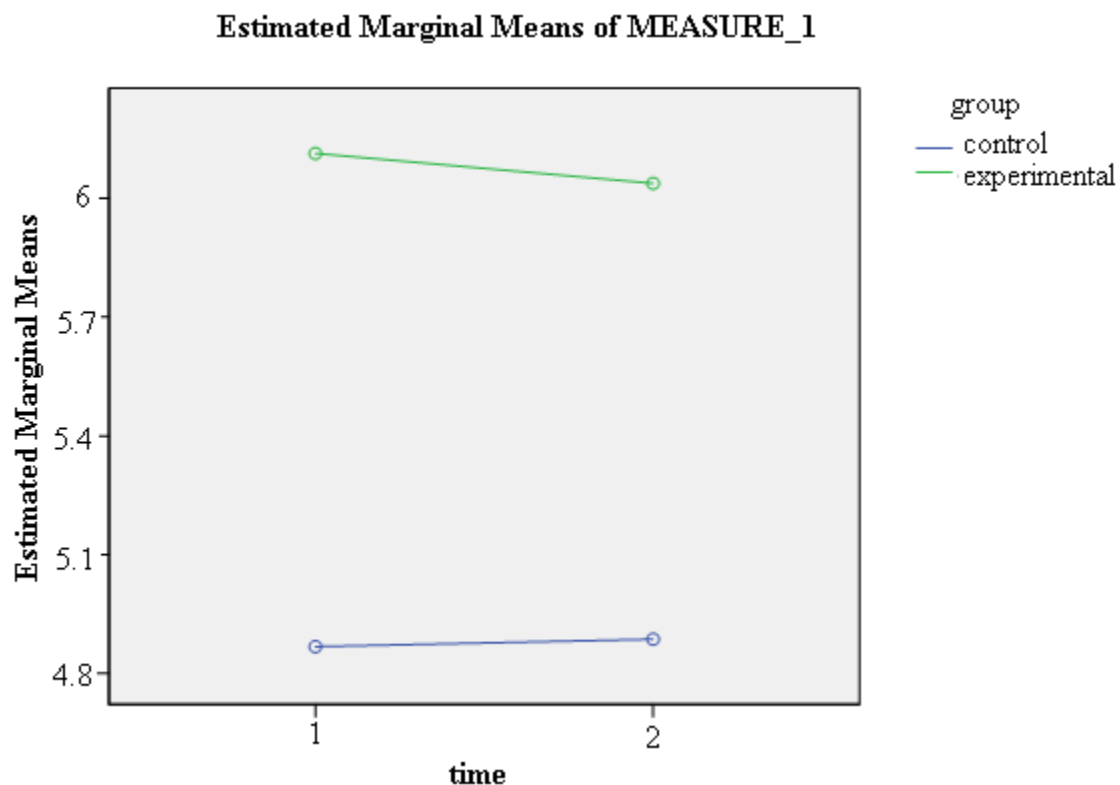| Groups	Immediate Posttest		Delayed Posttest	
	M	SD	M	SD
Control (n=53)	4.87	3.013	4.89	2.694
Experimental (n=53)	6.11	3.074	6.04	3.186

Figure 9: Group means on spoken recall test over time.

Table 13: One-way ANOVA for the Spoken Recall Test

Comparison of Means	95% CI		F	p	Cohen's d
	Lower Limit	Upper Limit	(1, 104)		
Immediate Posttest					
Control vs Experi.	4.89	6.09	4.436	0.038	0.41
Delayed Posttest					
Control vs Experi.	4.89	6.04	4.033	0.047	0.39

* $p < .05$

For the spoken vocabulary retention in the story, to summarize, the use of singing resulted in significantly better performance than the use of reading. Thus, Hypothesis 6, which stated that students in the Shared Singing group would perform better than those in the Shared Reading condition on the Chinese spoken vocabulary recall, was supported.

Summary of the Findings

The overarching question addressed in this study concerned how the use of singing affected young CFL learners' acquisition and retention of Chinese vocabulary in Shared Singing and Shared Reading conditions. Picture naming, Chinese word recognition and spoken vocabulary recall in the story were the foci of the investigation.

Three immediate posttests were used to measure the participants' vocabulary acquisition of picture naming, Chinese word recognition and contextual spoken vocabulary recall. The Shared Singing approach was not found to be significantly more effective in facilitating the acquisition of Chinese picture naming or word recognition vocabulary than the Shared Reading approach. However, the Shared Singing condition resulted in significantly better acquisition of Chinese spoken vocabulary in the story.

The delayed posttests were administered to measure the participants' vocabulary retention in the picture naming, word recognition and spoken vocabulary recall in the story. The use of singing was not found to be more effective in enhancing the retention of picture naming or Chinese word recognition, but it was found to facilitate the retention of the spoken vocabulary in the story.

In summary, the main study found that there were statistically significant differences between the Shared Singing and Shared Reading groups in the acquisition and retention of Chinese spoken vocabulary in the story, but no statistically significant difference was detected between the groups in their vocabulary acquisition and retention of picture naming and Chinese word recognition. Chapter 5 will discuss the main study and its findings related to the existing research literature. It will also look at the implications, limitations and recommendations for future research.

CHAPTER 5

DISCUSSION AND CONCLUSION

This dissertation examined the effects of the use of songs on Chinese immediate vocabulary recall and delayed retention in picture naming, word recognition and spoken vocabulary recall in the story. After an introduction to the problem in Chapter 1, Chapter 2 reviewed in detail the related literature on the use of songs in language and vocabulary studies in particular. Chapter 3 described the method of data collection and analysis, and Chapter 4 presented the results of the study. This final chapter will present the interpretations of the results addressing each research question, discuss pedagogical implications, describe research limitations and make recommendations for future research.

Interpretations of the Results

Based on the results presented in Chapter 4, the interpretation will address each of the research questions, make references to the literature, and explain possible reasons for the obtained results.

Effects of singing on picture naming.

The first research question addressed the effectiveness of singing on vocabulary acquisition including picture naming vocabulary. On average, the Shared Singing group said 3.09 words correctly out of 15 while the Shared Reading group scored an average of 2.77 words correctly on the immediate posttest. The Shared Singing group appeared to outperform the Shared Reading group. However, the ANOVA analysis showed no significant difference between the two groups on the immediate recall in picture naming, indicating that Shared

Singing was not more effective in enhancing students' acquisition of picture naming compared with the Shared Reading approach. The results were contradictory to Hyland's (1995) finding that there was significantly greater vocabulary acquisition of the picture naming vocabulary for bilingual learners who had books sung to them than for similar students who had books read aloud to them.

Three plausible reasons may explain why no differences were detected. The first reason may be related to the object for comparison (i.e., the reading approach). Reading has already been found to be effective in vocabulary learning. When compared with it, the advantages of singing would not be easily detected. Even in the reading group, the vocabulary the participants acquired in the assessments was small. The second reason may be related to the length of the intervention. That is, a one-week intervention with 25-30 minutes a day might not be sufficient to allow the kindergarteners to acquire the picture naming vocabulary in Chinese as a foreign language, as this is a new language for them and is usually regarded as one of the hardest languages for speakers of most, if not all, Indo-European languages to learn. If the initial learning time were increased to allow enough exposures and processing time, the children would be able to increase their vocabulary knowledge and production in Chinese picture naming. That would probably increase the discrepancy between the experimental group and the control group and reach significance statistically. The third reason is probably related to the nature of the difficulty of producing vocabulary in L2. As L2 learners' vocabulary knowledge grows from receptive to productive (Laufer, 1998), to produce words requires repeated exposure and reinforcement of the target vocabulary in listening and reading. Therefore, it demands great "mental effort the reader devotes to that particular word, especially for productive vocabulary" (Chen, 2006, p. 135). In this study, to name a picture, the young participants had to first

recognize it and then produce the appropriate spoken form of that word in the target language. Due to the limited intervention time, the children's insufficient accumulation in receptive words probably resulted in their poor productive knowledge of the target words.

Effects of singing on Chinese word recognition.

The first research question was also concerned about the effects of songs on the acquisition of Chinese word recognition. On average, the experimental group recognized 1.09 words correctly out of 15 while the control group scored an average of 0.68 words correctly on the immediate posttest. The ANOVA results did not show any significant effects. This finding is congruent with the previous studies by Ayotte (2004), Medina (1990), Mouri (2011), Winter (2010) and Walton, Canaday and Dixon (2010), who found that song-based activities did not facilitate written vocabulary learning, especially new vocabulary.

This could be explained by the following two reasons. First, it could be explained by the nature of the task used for this study. The Chinese word recognition test combined recognition and production in that scores were given to the participants to see if the target words were recognized. The process involved understanding a word first when it was seen and then having the ability to say it. The first step was at the receptive stage and the second was at the productive stage (Gass, 1999). To move from the first to the second stage, students needed repeated exposures and manipulation of the vocabulary to internalize and then say the newly acquired vocabulary (Belisle, 1997; Swain & Lapkin, 1991). This took time and effort. As discussed above, the one-week intervention did not warrant sufficient reinforcement of the Chinese character recognition, which might result in poor production of the target words. In addition, as the invention was implemented at the beginning of the school year at the kindergarten level, the

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participants might not have even known yet what to look for in Chinese characters, just as many English-speaking children reading English did not yet know that the lines and bumps and orientation of the English letters were important. In this sense, the Chinese word recognition test was challenging for the U.S. kindergarteners. Second, the Chinese writing system is harder to learn, in absolute terms, than an alphabetic writing system due to the "linguistic complexity of Chinese writing, such as the lack of sound-script correspondence, irregularity in strokes for individual characters, and the large number of homophonic-heterographic characters" (Shen, 2010, p. 486). As Kennedy (1937) writes, "The difficulty of memorizing a Chinese ideograph, as compared with the difficulty of learning a new word in a European language, is such that a rigid economy of mental effort is imperative" (p. 591). Even for intermediate and advanced college students, Chinese word recognition remains a challenge (Everson & Ke, 1997). Therefore, it is no surprise that the young beginning learners of Chinese in this study had great difficulty in recognizing the target Chinese characters, given the fact that the characters did not give a clue as to their pronunciation and no pinyin (the Romanized phonetic system for Chinese) was given to these characters.

However, it should be noted that, although there was no group difference on the picture naming or Chinese word reading measures of the pre- post- tests, the mean scores revealed that the singing children on average scored a little higher on the two measures than the reading children. This suggested that the use of singing might be generally beneficial in facilitating young CFL children's vocabulary acquisition of picture naming and word recognition. This finding affirmed the general benefits of singing in language education by previous studies (Medina, 1990; Mouri, 2011; Schunk et al., 1999; Winter, 2010) and increased our knowledge of how children acquired new words through the Shared Singing approach. It was possible that the

introduction of new labels in the context of a story song was sufficient to result in learning of the

Chinese picture-sound mapping and script-sound association: the children might be able to

understand the story song by referring to the pictures while listening and singing the story, and

the illustrations helped them narrow down the meanings of the words in the context of the story.

With the teachers' explicit vocabulary teaching using flashcards, games, cloze tests and sentence

completion during the process of Shared Singing, the children were able to notice the target

words in the written form more consciously. And the teachers' tracking the words during the

Shared Singing helped them make the necessary associations of the sounds and the scripts. The

repeated but pleasurable singing not only provided opportunities for the students to self-correct

their errors while listening and singing, but also reinforced their accurate utterance of the target

vocabulary. Therefore, the use of Shared Singing both enhanced young learners' CFL learning

and engaged them in language acquisition in ways that Shared Reading alone cannot. This could

be supported by the teachers' feedback on the use of the two learning conditions. The daily

check-in data revealed that the teachers reported enhanced student motivation in the Shared

Singing group 13 times during the one-week intervention. Specifically, their reports showed that

the Shared Singing group was more motivated and were more easily attracted by the singing and

attended to singing activity more instantly than the Shared Reading group. And they were less

likely to become bored. Therefore, unlike Shared Reading, Shared Singing can arouse young

learners' interest immediately and encourage their "joining in". By "joining in" Shared Singing,

they can pick up the target language more quickly and much easier than through the non-singing

approach of Shared Reading. This explains why the Shared Singing group scored higher than the

Shared Reading group in post-tests of picture naming and word recognition.

Effects of singing on vocabulary retention.

The response to the second research question, "Is the use of singing more effective in enhancing young CFL learners' vocabulary retention than using the reading approach?" varied with the type of measures. Although no significant differences were detected for the two groups' picture naming and word recognition tests, the scores of the Shared Singing group were significantly greater than that of the Shared Reading group on the test of the spoken vocabulary recall in the story. This finding indicated that the use of singing displayed a significant advantage on children's spoken vocabulary recall and was a strong indicator of perceived vocabulary retention. This finding supported the findings of Mouri (2011) and Salcedo (2010), but was inconsistent with the research findings of Recette and Perretz (2007). In a study of 33 college students who were learning Japanese as a foreign language, Mouri (2011) found that there were statistically significant differences between the experimental (learning vocabulary along with a melody) and the control (non-melody) groups on their delayed recognition. He concluded that singing could be an effective learning source for vocabulary acquisition. In a similar study by Salcedo (2010), it was found that the song-stuck-in-my-head phenomenon facilitated the vocabulary retention and production. In analysis of the reason, some researchers (Barker, 1999; Serafine, Davidson, Crowder & Repp; 1986) stated, as the melody and the text of the story were learned together as one integral unit and the flow of the words was enhanced by the flow of the music, our brain was able to remember the words embedded in music easier and quicker. The melody helped them follow the flow of the music and recall the song lyrics quickly, which made their production of the language happen in a natural way. And it also made the repeated language production enjoyable and facilitated memorizing by transferring the spoken language to the long-term memory. This could be explained by the "song-stuck-in-my-head" (SSIMH) phenomenon

(Murphey, 1990) and "din-in-the-head" (DINH) theory (Barber, 1980), i.e., fragments of the story song would last long in students' short- and long- term memory and sometimes popped out of their unconsciousness even long after they stopped consciously repeating them. And this method of auditory recall accounted for involuntary rehearsals that facilitated language learners' vocabulary retention and recall.

The comparison of the mean scores on the three tests also revealed that the students in this study demonstrated some retention of the target vocabulary on both the contextualized measure (recall in the story) and the isolated measures of picture naming and word recognition, but retention rates were stronger on the contextualized measure, with the mean number of the correctly recalled words in the story being 6, compared with the mean number of correctly named pictures being 3 and the mean number of correctly recognized words being just 1. This confirmed the research findings of some studies on contextual language learning. Martin-Chang et al. (2007) compared 28 second graders' (16 boys and 12 girls) ability to retain vocabulary after isolated and context word training. Mean scores showed an increase in word recognition accuracy for both methods, but the delayed posttest indicated that students in the context group scored higher than the isolated word group. Similarly, Rodriguez and Sadowki (2000) examined the effects of rote rehearsal, context, keyword, and context/keyword methods on immediate and long-term retention of English as a foreign language (EFL) vocabulary in natural classroom settings. Eight ninth-grade EFL classes were randomly assigned to one of four learning conditions: rote rehearsal, context, keyword, and context/keyword condition. Cued recall was assessed either immediately or after a one-week delay. Results showed that the context/keyword method produced superior recall to any of the other three methods after one week, suggesting a very promising educational value for this method.

Shared Singing, like Shared Reading, is a good example of rich and meaningful contexts for L2 language learning. L2 learners are capable of understanding the target language including new and unfamiliar vocabulary with the aid of extra-linguistic support such as illustrations, body language, visual aids, realia, and contextual clues (Krashen, 2003). When children learn a story song, the familiar vocabulary and syntax contained in the songs may provide meaningful context for them to clarify the unfamiliar words, which not only enhances their acquisition of the target language, but also helps them store the information in the long-term memory.

It is also interesting to note that the participants were able to name more pictures (Mean=3) than they could read/recognize the Chinese words (Mean=1) in the delayed vocabulary retention tests. This confirms many of the studies in the field of recall and retention (McBirde & Dosher, 2002; Tonzar, Lotto & Job, 2009) that picture stimuli increase memory performance more than word stimuli. Tonzar et al. (2009) compared two learning methods (picture and word-mediated learning) and found that the picture-mediated method resulted in a better performance than the word-mediated method. "When word and pictorial information are contrasted in an explicit verbal recall task, usually retention favors picture" (Al Nassir, 2012, p. 29). This is called Picture-Superiority Effect (Nelson, Reed & Walling, 1976). According to Nelson et al., pictures have two encoding advantages over words. The first is that pictures are encoded more uniquely, which increases their chances for retrieval. The second advantage is that pictures access meaning more directly than words. However, in the case of the Chinese language, as the sound-character correspondence is missing, the children cannot use the sound-out strategy. If the concept (picture naming) cannot be accessed, they will have a hard time moving directly from written input to oral pronunciation (word recognition).

It has also been found that the participating teachers reported that students were more motivated in the Shared Singing condition than in the Shared Reading condition. This affirms the previous studies (Anderson, 1998; Arnold & Fonseca, 2004; Christison, 1995; Lazear, 1991) that singing has motivational effects on language learning. The main reason is the good atmosphere it creates in the classroom. Young children relate to songs as part of entertainment rather than work and find learning vocabulary through songs amusing rather than burdensome and tedious. And better familiarity with these songs improves their status within the peer group and therefore stimulates learning.

In conclusion, this study adds to the growing body of evidence suggesting that the use of singing is beneficial in L2 education and the Shared Singing approach is effective in facilitating young bilingual children's Chinese vocabulary acquisition and retention. It extends prior research by including multiple measures (picture naming, word reading and spoken vocabulary recall) of young CFL children's productive vocabulary.

Implications for CFL/CSL Instruction in Immersion Settings and Beyond

The purpose of this study is to address the challenges of building CFL/CSL vocabulary knowledge in young children, specifically, to contribute to a better understanding of the use of songs in language instruction, that is, its effect upon the vocabulary acquisition and retention of picture naming, word recognition and spoken vocabulary recall. Information about the effect is important for primary L2 teachers, because (1) picture naming and word recognition are two basic skills that young L2 learners should have when they learn a new language (Bates et al, 2003; Coady & Huckin, 1997); and (2) decisions about how to teach L2 vocabulary and how to help students maintain the learnt words have been an essential part of their daily work. Knowing

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about the impact of the use of songs may inform them of the options that help them vary and maximize their instructional strategies while teaching young children L2 vocabulary. This study shows that Shared Singing is a fun and useful pedagogical tool in the teaching of CFL/CSL vocabulary because it helps make the vocabulary acquisition in a meaningful way and the retention is made easy and strong. It facilitates the children to remember and recall the vocabulary by providing sufficient contextual cues, which in turn makes their utterance of the vocabulary painless. In this regard, it is very important for L2 teachers to incorporate this approach into the language instruction.

The results of this study also inform curriculum designers and teachers regarding effective teaching practices for CFL/CSL instruction. As the use of singing has been found to positively impact young children's Chinese vocabulary acquisition and retention, it provides strong evidence that both curriculum designers and teachers should strive to include more use of music and songs in CFL/CSL education. Given the fact that currently L2 materials are scarce, particularly those for young CFL/CSL learners, curriculum designers may start producing some multimedia resources to meet the needs of the market. Language teachers can also be creative in applying L1 melodies to L2 instruction, therefore building on funds of knowledge in L1 to facilitate L2 development. In addition, it is necessary to educate parents on the specific knowledge and resources which will increase the effectiveness of parental support. For example, they can purchase the commercial story songs, learn about the strategy of Shared Singing and use it to practice singing the target story songs at home together with their children. This will not only reinforce what children learn at school, but also help them acquire incidental vocabulary that has not been explicitly taught in the classroom.

Limitations

There are four limitations of the study. First, the use of convenience samples from the Chinese immersion program in Michigan limited the generalizability of the study. In addition, the sample was confined to 4- and 5-year-old kindergarten students who were fairly homogenous in terms of race and culture. Second, the participants were initially divided into two groups by the school district at the entrance of kindergarten based on the number of students and gender distribution in each class. The researcher had little control over the random assignment in the initial phase. This may affect internal validity, or the extent to which the results of this research can be generalized. Third, the research took place in the school settings during regular school hours. As a result, there were extraneous variables for which the researcher could not control, such as alternating the AM and PM groups, as proposed by the committee members. Alternating the AM and PM groups was not implemented because it involved too many teachers and the school system did not permit providing such services to the groups of the children in the study. Fourth, the one-week intervention seemed too short to produce statistically significant differences between the experimental and the control groups. It was especially true for the measures of picture naming and word recognition. If more time were allowed, significant differences might be detected in the vocabulary acquisition of Chinese picture naming and word recognition.

Suggestions for Future Research

The results of this study indicate positive effects of the singing intervention on the acquisition and retention of Chinese spoken vocabulary in the story. They also detect increased

vocabulary production of picture naming and word recognition. The results highlight the usefulness of this approach in the beginning years of L2 learning.

The findings of this study generate several ideas for future research. While children who shared singing the story improved on the Chinese spoken vocabulary recall in the story (productive language), it would be interesting to see whether this knowledge generalizes to other aspects of the language development such as identification of the target words (receptive language) through multiple choices, sound-picture matching or picture-character matching because receptive language skills are especially important for beginning foreign language learners like young immersion students.

The study did not detect significant effects of Shared Singing on the acquisition of vocabulary as assessed by picture naming and word recognition, compared with the use of Shared Reading. But that does not mean that it has little value in L2 instruction. Rather, it indicates that Shared Singing, like Shared Reading, is an effective tool for language development. To better examine the effects of singing, it is suggested that the control group should use non-singing or non-Shared-Reading approaches. This way the statistic significance might be reached.

Another suggestion may be to use the same method but lengthen the intervention time. In this study, 25-30 minutes a day were spent on the story, with less than half of the time devoted to target vocabulary activities. And the intervention lasted for one week only. Therefore, the frequency that the learners encountered the target words was very limited during the time, which might not be helpful enough for them to produce the target vocabulary. Vocabulary acquisition involves repeated exposure to the target words, multiple encounters and constant revisits (Gass, 1999). And vocabulary production is not easy for L2 learners, in particular, beginning learners. It

takes time and practice. If the intervention time were extended to half a month or even longer, the students would have opportunities to encounter the target words more often, and statistical significance between the control group and the experimental group might be detected.

The last suggestion would be to have more conditions compared. This study only involved Shared Singing and Shared Reading. If one or two more conditions, such as memorization of vocabulary lists were included, we might be able to learn more about the impact of Shared Singing.

Conclusions

Previous studies have examined the effects of songs on vocabulary learning and retention. Some of the studies have supported the effectiveness of songs in facilitating vocabulary learning and retention. However, others have reported contradictory results. Given the fact that no study in second language education has examined the use of songs in CFL/CSL vocabulary acquisition and retention in picture naming, word recognition and spoken vocabulary recall in a story format with young children, this dissertation focused on this issue by comparing the effects of songs on Chinese vocabulary gains in the immediate recall and delayed retention in picture naming, word recognition and spoken vocabulary recall under Shared Singing and Shared Reading learning conditions.

The results of the study demonstrate that the use of singing is effective in facilitating CFL/CSL learners' acquisition and retention of spoken vocabulary in the story and that the Shared Singing learning condition is more effective than the Shared Reading learning condition in promoting L2 vocabulary acquisition and retention in general. Furthermore, situating L2

vocabulary learning in the context such as stories results in better vocabulary acquisition and

retention than teaching vocabulary in an isolated manner.

APPENDICES

Appendix A: Consent Form

Dear Parents,

Your child is invited to participate in a study conducted by Dr. Guofang Li and Wenying Zhou from College of Education, Michigan State University. We hope to investigate the effect of the use of songs in shared reading on kindergarteners' Chinese vocabulary acquisition and retention. Your child was selected as a possible participant in this study because (1) he/she is learning Chinese in the Chinese Immersion Program; (2) he/she is at a kindergartener; and (3) the teacher has expressed her interest in the research and the school has approved it.

If you prefer your child to participate, we will first conduct a pretest to learn about your child's current Chinese vocabulary. It consists of a picture-reading test and a word recognition test. The picture-reading test contains 15 pictures and your child will be asked to say the corresponding words in Chinese. The word recognition test contains the same vocabulary but in words and your child will be asked to recognize and read them. Right after the pretest, your child's Chinese teacher will start the shared-singing and shared-reading intervention as the regular class activities. The story that will be used is the Chinese version of "The Little Red Hen". The teacher will tell it through shared reading with one group and shared singing with the other. The intervention will take 25 minutes per day and last a week. Immediately after the intervention, a post-test will be administered by the investigator individually to your child. The test will repeat the picture-reading, word recognition, and a spoken recall test will be added. Your child will be provided the text of the story with the same 15 target words being replaced with blanks and he/she will be required to tell orally the missing words. These tests will be repeated in two weeks' time to learn about your child's Chinese vocabulary retention. At the completion of the study, your child will be given a fancy pencil as a thank-you gift.

The expected benefits that your child will get from the intervention include: (1) he/she will be exposed to an interesting story; (2) he/she will enjoy learning the story; and (3) some of his/her Chinese language skills such as word recognition, picture-reading, listening comprehension and text recall will be enhanced.

There are no known risks involved, and your privacy and your child's privacy will be strictly protected. Any information that is obtained in connection with this study and that can be identified with your child will remain confidential and will be disclosed only with your permission or as required by law. Your child's participation in this study is voluntary and you may withdraw at any time without penalty. Your decision whether or not to have your child participate will not prejudice your future relations with the teacher, or the school.

The Committee on the Protection of Human Subjects at Michigan State University has reviewed and approved the present research. If you have any questions, Dr. Guofang Li (liguo@msu.edu) and Wenying Zhou (zhouweny@msu.edu) will be happy to answer them. If you have questions about subjects' rights or other concerns, you can contact the MSU Institutional Review Board, (517) 432-4503.

If you agree to have your child participate in the study described above and acknowledge the researchers' obligation to provide you with a copy of this consent form, please sign your name below.

Subject Signature _____   Date _____

Relationship with the subject _____

Signature of the investigator _____

Appendix B: Assent

(Participant Teacher): Would you like to listen to stories? Who likes to listen to stories, raise your hands? I can see almost all of you like to listen to stories. So for the next whole week, we are going to listen to a very interesting story called "Little Red Hen". Before listening to the story, Ms. Zhou would like to know whether you know any words of the story. She will sit down with you in the hallway and ask you to read some pictures and words in Chinese. If you can't read any of them, it does not matter, because that's why we are here learning Chinese. I will read the story to you for a whole week, and we are going to do lots of fun activities related to the story. After learning about the story, you will be tested on how you remember the key words in the story by Ms. Zhou. You will be asked to recall some missing parts of the story. I am sure all of you will be able to do it. Are you interested in learning about the story with me? If you are interested, raise your hands. (Ms. Zhou, the researcher, will record those who would not like to participate on a piece of paper)

Appendix C: Participants' Chinese Background Questionnaire

This questionnaire aims to help us understand your child's Chinese learning background. Please fill it out with information about your child. This information will be seen only by the researcher(s) and will have no bearing on his/her grade. Your child's name will only be used for matching purposes, and your response is **completely confidential.**

1. Your Child's Name: _____

2. Sex: _____Male _____Female

3. Age: _____

4. Ethnicity: ___Mexican-American ___American Indian ___Asian

   ___African American ___Native Hawaii/other Pacific Islander ___Caucasians

5. My child's mother tongue* is _____.

6. My child has studied Chinese before he/she was enrolled for this program.

   ____YES ____NO

   If yes, tell how long he/she had learned Chinese: _____

7. Do any of your family members speak Chinese? ____YES ____NO

   If yes, who? _____

8. My child has lived in/visited a Chinese-speaking country/place:

   ____ Yes, for _____ day(s) ____ Yes, for _____ week(s)

   ____ Yes, for _____ month(s) ____ Yes, for _____ year(s)

   ____ No, never.

*the language he/she speaks at home, his/her native language.

(Chinese version) 农场上有一只红母鸡，她找到一些种子。红母鸡问朋友，"谁愿意帮种种子？""我不愿意，"小狗说。"我不愿意，"小猫说。"我不愿意，"老鼠说。"唉，那我就自己去种种子。"红母鸡种种子，浇浇水，拔拔草。红母鸡问朋友，"谁愿意帮我割麦子？""我不愿意，"小狗说。"我不愿意，"小猫说。"我不愿意，"老鼠说。"唉，那我就自己去割麦子。"红母鸡割麦子，割麦子，割麦子。红母鸡问朋友，"谁愿意帮我磨麦子？""我不愿意，"小狗说。"我不愿意，"小猫说。"我不愿意，"老鼠说。"唉，那我就自己去磨麦子。"红母鸡磨麦子，磨麦子，磨麦子。红母鸡问朋友，"谁愿意帮我做蛋糕？""我不愿意，"小狗说。"我不愿意，"小猫说。"我不愿意，"老鼠说。"唉，那我就自己去做蛋糕。"红母鸡和面粉，和面粉，做蛋糕。红母鸡问朋友，"谁愿意帮我吃蛋糕？""我不愿意，"小狗说。"我不愿意，"小猫说。"我不愿意，"老鼠说。"嗯，谁要是帮忙就吃蛋糕。"小猫帮忙浇浇水，小狗帮忙拔拔草，老鼠帮忙磨面粉，大家都帮忙做蛋糕。"小狗，快来吃蛋糕。小猫，快来吃蛋糕。老鼠，快来吃蛋糕。我们一起来吃蛋糕。"

(English translation) There was a Red Hen on the farm. She found some seeds. She asked her friends, "Who would like to plant the seeds with me?" "Not I," said Dog. "Not I," said Cat. "Not I," said Mouse. "(sigh) I shall have to do it myself." Red Hen planted, watered, and weeded. She asked her friends, "Who would like to cut the grains with me?" "Not I," said Dog. "Not I," said Cat. "Not I," said Mouse. "(sigh) I shall have to do it myself." Red Hen cut the grains. She cut and cut. She asked her friends, "Who would like to grind the grains with me?" "Not I," said Dog. "Not I," said Cat. "Not I," said Mouse. "(sigh) I shall have to do it myself." Red Hen ground the grains. She ground and ground. She asked her friends, "Who would like to make a cake with me?" "Not I," said Dog. "Not I," said Cat. "Not I," said Mouse. "(sigh) I shall have to do it myself." Red Hen mixed the flour and made the cake. She asked her friends, "Who would like to eat the cake with me?" "Me," said Dog. "Me," said Cat. "Me," said Mouse. "En, I shall share the cake with those who help." Cat helped with watering. Dog helped with weeding. Mouse helped with grinding. Everyone helped with baking. "Dog, come eat the cake. Cat, come eat the cake. Mouse, come eat the cake. Let's eat the cake together."

Figure 10: Picture naming test

Appendix F: Word Recognition Test

(for pre-, immediate and delayed post- tests)

母鸡(hen)、农场(farm)、猫(cat)、狗(dog)、老鼠(mouse)、种子(seed)、浇水(water)、拔草(weed)、麦子(wheat)、割(cut)、磨(grind)、面粉(flour)、蛋糕(cake)、吃(eat)、和(mix)

Appendix G: Spoken Vocabulary Recall in the Story Test

(for immediate and delayed post- tests)

____(农场)有一只红____(母鸡)，她找到一些____(种子)，红母鸡问朋友，"谁愿意帮我种

种子？" "我不愿意，"小狗说。"我不愿意，"小猫说。"我不愿意，"老鼠说。"唉，那我就

自己去种种子。"

红母鸡种种子，____(浇浇水)，拔____(拔草)。红母鸡问朋友，"谁愿意帮我

____(割)___(麦子)？" "我不愿意，"小狗说。"我不愿意，"小猫说。"我不愿意，"老鼠说。

"唉，那我就自己去割麦子。"

红母鸡割麦子，割麦子，割麦子。红母鸡问朋友，"谁愿意帮我____(磨)麦子？" "我不愿

意，"小狗说。"我不愿意，"小猫说。"我不愿意，"老鼠说。"唉，那我就自己去磨麦子。"

红母鸡磨麦子，磨麦子，磨麦子。红母鸡问朋友，"谁愿意帮我做____(蛋糕)？" "我不愿

意，"小狗说。"我不愿意，"小猫说。"我不愿意，"老鼠说。"唉，那我就自己去做蛋糕。"

红母鸡____(和)____(面粉)，和面粉，做蛋糕。红母鸡问朋友，"谁愿意帮我____(吃) 蛋

糕？" "我愿意，"小狗说。"我愿意，"小猫说。"我愿意，"老鼠说。"嗯，谁要是帮忙就吃

蛋糕。"

小猫帮忙浇浇水，小狗帮忙拔拔草，老鼠帮忙磨面粉，大家都帮忙做蛋糕。"小狗，快来

吃蛋糕。小猫，快来吃蛋糕。老鼠，快来吃蛋糕。我们一起来吃蛋糕。"

Appendix H: Lesson Plan—The Little Red Hen

Table 14: Lesson Plan—The Little Red Hen

Day 1 (25 minutes)

Experimental Group	Control Group
Procedures: - Present some grains of wheat, real wheat stalks, and a few products made from wheat such as bread, flour, cake. - Tell the students what each item is. - Ask the class what they think the products are made from. - Then ask students to share ways they think the grains of wheat eventually became bread, etc. - Show pictures to explain how grains of wheat become wheat products. Introduce the terms "plant" "grind" "mix" "bake". - Have the students sequence the process by manipulating the pictures. - Explain that it takes a lot of time and hard work to get from grain to cake and that this week they will learn all about the process! New story: - Introduce title, author and illustrator; - Show the cover and talk about what the hen, cat, duck, and dog are doing; - Take a picture walk. Be sure to discuss what is happening in each of the pictures and introduce the terms 'sprout'. - Make sure to stop the picture walk right after the hen places the dough into the oven. Ask students to predict what they think will happen next; - Talk about what happens when the bread comes out of the oven.	
(experimental group) Sing the story.	(control group) Read the story.

Table 14 (cont'd): Lesson Plan—The Little Red Hen

Day 2 (25 minutes)

Experimental Group	Control Group

Procedures
 • Turn to each page in the book that shows what the core vocabulary words are (e.g. wheat, bread, seed, grind, dough, etc.). Decide an action for each word. Review them using actions.
 • Ask students to recall what the story was about. Review sequencing from Day 1.
 • Sing aloud the story using the big book while flipping the pages and the actions created for the core words.
 • Ask questions to check students' comprehension while flipping the pages:
    o Where did the red hen live?
    o Who were her friends?
    o What did she find one day? How did she feel when she found it?
    o What did she ask her friends to do? How did they respond?
    o How did she feel? What did the red hen do then?
    o Why do you think the red hen not share the cake with her friends?
    o Did the red hen share the cake with her friends at last? Why?
 • Sing aloud the story again, inviting the students to join in.
 • Sing aloud the story again, tracking each character.
	Procedures
	 • Turn to each page in the book that shows what the core vocabulary words are (e.g. wheat, bread, seed, grind, dough, etc.). Decide an action for each word. Review them using actions.
	 • Ask students to recall what the story was about. Review sequencing from Day 1.
	 • Read aloud the story using the big book while flipping the pages and the actions created for the core words.
	 • Ask questions to check students' comprehension while flipping the pages:
	    o Where did the red hen live?
	    o Who were her friends?
	    o What did she find one day? How did she feel when she found it?
	    o What did she ask her friends to do? How did they respond?
	    o How did she feel? What did the red hen do then?
	    o Why do you think the red hen not share the cake with her friends?
	    o Did the red hen share the cake with her friends at last? Why?
	 • Read aloud the story again, inviting the students to join in.
	 • Read aloud the story again, tracking each character.

Table 14 (cont'd): Lesson Plan—The Little Red Hen

Day 3 (25 minutes)

Experimental Group	Control Group
Procedures: • Review the core vocabulary by playing charades. • Ask students to recall what the story was about. See if they can tell what the animals say in the story ("what does the red hen ask" "what did they say" "what did she say" etc.) • Put the dialogue up on sentence strips (___ asked her friends, "who will help me ___ the wheat?" "Not I!" said ___. "Then I will ___ myself!" said ___.). Complete each sentence with the vocabulary words and practice singing it. • Choral sing the dialogue with expression. • Bring real grains of wheat and a wheat grinder or grinding stones and use the dialogue to ask the students who will help to grind the wheat. Model asking by singing "who will help me grind the wheat?" (teach them to say "I will") and a chosen student would respond "I will". After that student gets a short turn at grinding the wheat, he/she would ask the question by singing and choose another student to answer. • Choral sing the dialogue. Track the words while singing.	*Procedures:* • Review the core vocabulary by playing charades. • Ask students to recall what the story was about. See if they can tell what the animals say in the story ("what does the red hen ask" "what did they say" "what did she say" etc.) • Put the dialogue up on sentence strips (___ asked her friends, "who will help me ___ the wheat?" "Not I!" said ___. "Then I will ___ myself!" said ___.). Complete each sentence with the vocabulary words and practice reading it. • Choral read the dialogue with expression. • Bring real grains of wheat and a wheat grinder or grinding stones and use the dialogue to ask the students who will help to grind the wheat. Model asking "who will help me grind the wheat?" (teach them to say "I will") and a chosen student would respond "I will". After that student gets a short turn at grinding the wheat, he/she would ask the question by singing and choose another student to answer. • Choral read the dialogue. Track the words while reading.

Table 14 (cont'd): Lesson Plan—The Little Red Hen

Day 4 (25 minutes)

Experimental Group	Control Group
Procedures: - Review vocabulary words and actions. - Review singing the dialogue. Have the dialogue cards from the day before up for support. Track the words while singing. - Teach the students that when someone talks, the author writes down what the character says using quotation marks. Show/write the enlarged quotation marks. Bring students' attention to the quotation marks in the dialogue by asking them to find them. - Highlight the quotation marks to make them more obvious. - Re-sing the dialogue practiced in the last lesson. - Boys and girls take turns to sing the quotation parts ("who will help me …?") and the parts of the characters (Red Hen asked her friends…). - Re-sing the story, (letting students join in on the repetitive wording, pointing to the retelling chart). - Divide the students into four groups so that there is one group singing the lines/acting out their part for each character in the story. - Have students act out the story.	*Procedures:* - Review vocabulary words and actions. - Review reading the dialogue. Have the dialogue cards from the day before up for support. Track the words while reading. - Teach the students that when someone talks, the author writes down what the character says using quotation marks. Show/write the enlarged quotation marks. Bring students' attention to the quotation marks in the dialogue by asking them to find them. - Highlight the quotation marks to make them more obvious. - Re-read the dialogue practiced in the last lesson. - Boys and girls take turns to read the quotation parts ("who will help me …?") and the parts of the characters (Red Hen asked her friends…). - Re-read the story, (letting students join in on the repetitive wording, pointing to the retelling chart). - Divide the students into four groups so that there is one group saying the lines/acting out their part for each character in the story. - Have students act out the story.

Table 14 (cont'd): Lesson Plan—The Little Red Hen

Day 5 (25 minutes)

Experimental Group	Control Group
Procedures: - On a T-chart have students list everything the hen does in the story on the left side. Have them tell what Dog, Cat and Mouse do. Talk about the importance of hard-work and being helpful. - Have students tell one thing they do to be hardworking or helpful. Read them after you and post it on the board. - Choral sing the story. Have a student come up and use a wand to track the words. - Choral sing again with the teacher's voice taking more of a background role, having another student track the words. - In a pocket chart, show the prepared sentence strips with the sentences "Who would like to help me plant the seeds", etc. On individual cards there are corresponding pictures. The students are invited to come up and match the sentence strips with the matching picture and to sing the sentence by pointing to the words. - Review the story, having students work together to sequence pictures from the story to show what happened first, second, third, next, etc. - Distribute a similar set of pictures and have the students cut apart, color, sequence, and glue them into a small booklet so that they will have the story to re-sing.	*Procedures:* - On a T-chart have students list everything the hen does in the story on the left side. Have them tell what Dog, Cat and Mouse do. Talk about the importance of hard-work and being helpful. - Have students tell one thing they do to be hardworking or helpful. Read them after you and post it on the board. - Choral read the story. Have a student come up and use a wand to track the words. - Choral read again with the teacher's voice taking more of a background role, having another student track the words. - In a pocket chart, show the prepared sentence strips with the sentences "Who would like to help me plant the seeds", etc. On individual cards there are corresponding pictures. The students are invited to come up and match the sentence strips with the matching picture and to read the sentence by pointing to the words. - Review the story, having students work together to sequence pictures from the story to show what happened first, second, third, next, etc. - Distribute a similar set of pictures and have the students cut apart, color, sequence, and glue them into a small booklet so that they will have the story to retell.

Appendix I: Procedural Fidelity

Table 15: Procedural Fidelity

IMPLEMENTATION	(circle one)
Did the teacher tell the target story?	YES NO
Did the teacher do picture walk?	YES NO
Did the teacher provide the story text to the students?	YES NO
Did the teacher follow the lesson plan? Describe what happened in the video:	YES NO
Did the teacher do more than the lesson plan required? If yes, what is it?	YES NO
Did the teacher invite the students to do the shared reading/singing?	YES NO
Did the session last no more than 30 minutes?	YES NO
Did the teacher do any vocabulary activities? Describe what happened in the video:	YES NO

Appendix J: Pilot Study

Participants and Setting

A pilot study was conducted in a Chinese immersion program from mid-May to the

beginning of June to test the materials, instruments and methods. A convenience sample (Babbie,

2001) was used mainly because the site was easy to access.

A total of 45 students were invited to participate in the pilot study. Of this number,

twenty-five students' parents agreed to have their children participate. The control group

contained 14 children and the experimental group included 11. Of all participants, there were

eleven male students (44%) and fourteen female (56%). Sixteen (64%) were Caucasians, six

(24%) were African-American, and three (12%) were adopted Asians. Their average age was

five years old. The background questionnaire showed, according to the parents' self-reports,

none of their children had had any Chinese learning experience before they were enrolled in the

Chinese immersion program or had ever traveled to China. The three adopted children had been

exposed to the Chinese language in China when they were less than one year old. They could not

say a word of Chinese by the time the pilot study was conducted. Therefore, nobody was

excluded from the data collection and analysis. As for the participants' Chinese proficiency

level, the pretest showed that their reading and speaking levels were beginning. Those who were

unwilling to participate were not excluded from participating in the activities, but they were not

included in the video recording or data analysis.

In this pilot study, after communicating with the researcher, the participant teacher chose

the AM group as the experimental group and the PM group as the control one. The reason was

mainly because, according to the teacher's report, the AM group of students was not as active as

the PM one, and the teacher just wanted to motivate them through singing. Although it was

proposed that the AM and PM classes should be alternated during the intervention so that the

singing would occur in both the AM and PM periods; however, in the pilot study, the two groups

were not alternated due to the fact that it was beyond the researcher's capabilities to make the

arrangements.

Procedures and Data Collection

The procedures of the pilot study were the same as those for the main study, as described

in the main body of the writing.

Data were collected from the pre- and post- tests, as described in the main study. In

addition, the pilot study used the following methods to collect some extra data: (a) daily check-in

with the participant teacher during the intervention period; and (b) daily videotaping for

confirmatory observations during the intervention. By using more than one data collection

method (Table 16), the researcher was able to cross-check the results of each method (Cohen &

Manion, 2000). This strategy helped increase the credibility and reliability of the test data.

Table 16

Extra Data Collection

Questions	Data Methods	Indicators
Is the teacher able to follow the lesson plans for both control and experimental classes?	Observations of the video recordings of the teacher's instruction	Researcher-developed fidelity checklist
Are the teaching activities/materials appropriate? What needs to be improved?	Daily check-in with the teacher Classroom observations of the video recordings	Teacher comments Video recording research and evaluation
Do the students make gains and retentions in the target vocabulary?	Vocabulary tests	Acceptable performance levels
Did the test results produce test-retest reliability? Are there any ceiling/floor effects?	Correlation coefficients between pretest and immediate posttest, and immediate posttest and delayed posttest	Pearson rho

Results

  The qualitative data regarding the appropriateness of the materials, improvement of the

materials and intervention fidelity had been discussed in the main body of the study. The

quantitative data of the pilot study were entered for SPSS analysis. Descriptive statistics for the

measures in the form of means, standard deviations and student sample sizes were reported in

Table 17. The statistics showed that the control group in general outperformed the experimental

group on the measures of picture naming and word recognition at the time of pretesting. They

continued to outperform the experimental group on the measures of picture naming and spoken

recall at the time of immediate and delayed post-testing, but not on the word recognition tests.

However, the ANOVA results revealed that there was no statistically significant difference between the experimental group and the control group on the posttests of the picture naming measures, $F(1, 23) = 2.552$, $p = 0.124$, the word recognition measures, $F(1, 23) = 0.286$, $p = 0.598$ and the spoken vocabulary recall measures, $F(1, 23) = 3.06$, $p = 0.02$.

Table 17

Means and SD for Three Types of Tests for Pre- and Post- tests in the Pilot Study

Measures	Groups	Pretest		Immediate		Delayed	
		Means	SD	Means	SD	Means	SD
Picture reading test	Control (n=14)	3.000	0.877	5.71	1.59	6.43	2.102
	Experi. (n-11)	2.182	0.874	5.45	2,382	5.09	1.700
Word recognition test	Control (n=14)	0.357	0.745	2.00	1,754	2.36	1.781
	Experi. (n=11)	0.091	0.302	2.55	1.695	2.82	1.834
Spoken recall test	Control (n=14)			9.79	1.89	10.14	2.316
	Experi. (n=11)			9.36	2.014	9.73	1.954

Conclusion and Suggested Changes

Scores from the three pre- and post- tests revealed that Shared Singing and Shared Reading had a similar effect on vocabulary acquisition, but different effects on vocabulary retention. Specifically, compared with Shared Reading, Shared Singing did not facilitate young children's acquisition of picture naming and word recognition, but it facilitated their retention of the spoken word recall.

The qualitative data produced by examining the measures found that the materials of the story, song, and lesson plans were good. The design of the Big Book was age- and level-

appropriate. Both the teacher and the students showed great interest in it. The teacher delivered the lesson plans as designed and implemented the intervention as planned. The intervention fidelity was satisfactory. The format and administration procedures worked well for the pilot study sample. Based on the researcher's experience in working with the students as well as on the data collected from the pilot study, the format of the measures, i.e. 3 x 5 inch index cards in the picture reading and character recognition tests included appropriate stimulus material and procedures for the kindergarten students. The administration of the measures that required only a "reading" or "speaking" response worked very well for the students to generate responses and engage in the task. The students were able to follow the administration directions as conveyed by the researcher and to respond to the testing items of the measures. Therefore, the researcher-illustrated Big Book and the lesson plans would be used because the teacher's responses were positive.

Several limitations of the pilot study were observed and at the same time, some changes were suggested accordingly. The first and most obvious was demonstrated by the results produced by the pretest. The results showed that at the time of the pretesting, the control and experimental groups were not at the same Chinese language proficiency level. This caused a great deal of difficulty interpreting the upcoming results. In analysis of the problem, conducting the research in May after the Chinese immersion students had been in the program for eight months was the major factor. The academic gap already occurred among the students. To avoid this, the intervention would be implemented at the beginning of the school year for the main study. The second limitation was the unequal group size, which might have caused some discrepancy in the test scores between the two groups. To address this, the main study should have the same number of students in the experimental group as in the control group. The third

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limitation was observed from the video recordings--the teacher spent lots of time learning and reviewing the target vocabulary each day, which reduced the time the students did the shared reading/singing. To address it, the time the teacher spent on vocabulary teaching and revision would be reduced accordingly. Fourthly, the kindergarteners did not have enough experience with formal assessments. To help them familiarize with the test formats, one test example and practice opportunity would be provided in the main study. Fifth, the pre- post- tests didn't find significant difference between the two groups on vocabulary acquisition. Nine days' interval between the two posttests might not be enough for the significant differences to occur. To increase the possibility, the interval between the two posttests would be lengthened to 16 days.

In spite of these limitations, the results suggested that the measures examined in this pilot study could be potentially used to assess the vocabulary performance of the young students with beginning Chinese language proficiency. First, the students in the study were able to respond to the measures. Second, the evidence from the teacher's feedback and the students' performance in the video recordings suggested that the content of the measures corresponded to the academic skills in picture reading, word recognition, and spoken recall skills perceived as important by the Chinese immersion teachers when planning instruction for their students.

Changes in the Main Study

To increase the reliability of the results, based on the results of the pilot study, four changes were made: (1) there was equal number of participants in the control and experimental groups. This change ensured ease in data interpretation. (2) The participants took the delayed posttest 16 days after the instruction was completed, instead of nine days as in the pilot study. This longer time period was intentionally designed in the hopes of increasing the statistical significance of the results as well as to test effects over a longer duration (Figure 11). (3) Time

spent on singing was increased a little bit, and the time on vocabulary teaching and revision was

reduced. The change was deliberate, as the video observations in the pilot study showed that the

teacher didn't spend much time on singing, which created difficulty in finding differences

between the two groups. (4) One test example and practice opportunity was provided for the

kindergarteners to become familiar with the test formats in the main study. This change was

designed to eliminate the possibility of their underperformance due to their inexperience in tests
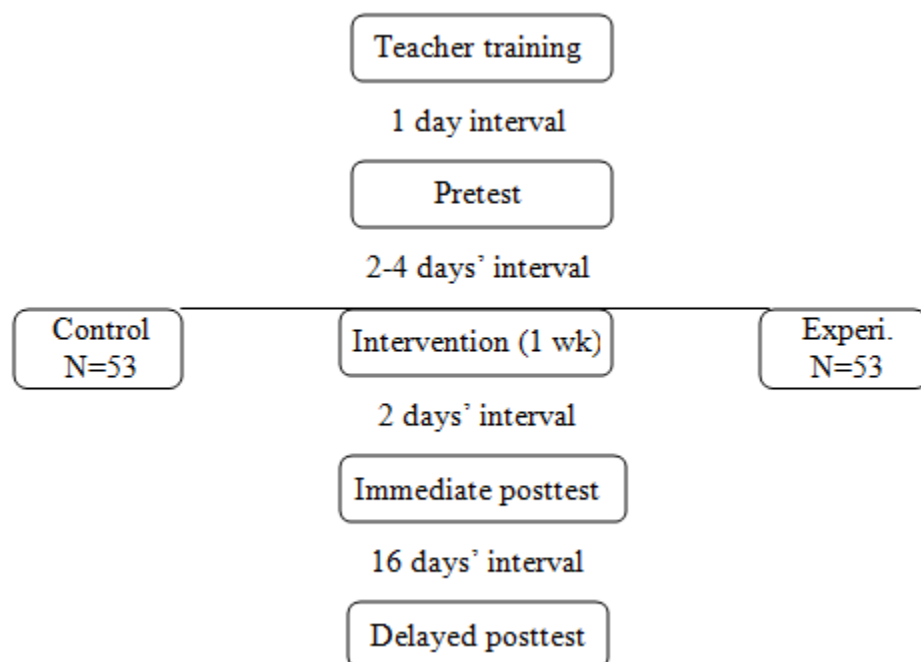
at this age.

Teacher training

1 day interval

Pretest

2-4 days' interval

| Control N=53 | Intervention (1 wk) | Experi. N=53 |

2 days' interval

Immediate posttest

16 days' interval

Delayed posttest

Figure 11: Main study schedule

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