UNIVERSITI PUTRA MALAYSIA

USE OF NONWORD AND SENTENCE REPETITION TASKS WITH MANDARIN-ENGLISH BILINGUAL CHILDREN IN MALAYSIA

WOON CHAI PING

FBMK 2015 108

USE OF NONWORD AND SENTENCE REPETITION TASKS WITH MANDARIN-ENGLISH BILINGUAL CHILDREN IN MALAYSIA

By

WOON CHAI PING

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirement for the Degree of Master of Arts

January 2015

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master of Arts

USE OF NONWORD AND SENTENCE REPETITION TASKS WITH MANDARIN-ENGLISH BILINGUAL CHILDREN IN MALAYSIA

By

WOON CHAI PING

28 January 2015

Chair: Associate Professor Yap Ngee Thai, PhD
Faculty: Modern Languages and Communication

Nonword repetition (NWR) and sentence repetition (SR) tasks have been used in measuring children's expressive language skills in normal and abnormal language development and language learning, as well for surveying the proficiency of bilingual language development. Researchers often use NWR to study the mechanisms of phonological short-term memory underlying children's language learning, whereas SR might assess not only short-term memory but also long-term memory. Recently, NWR and SR tasks have been recognized as a potential psycholinguistic tool to identify bilingual children with specific language impairment (SLI). NWR and SR tasks are easy and quick to conduct, and useful tools for obtaining quantitative and qualitative information about children's lexical and morphosyntactic knowledge, as well as language development in a complex linguistic background. This study reports the results of the performance of NWR and SR tasks among bilingual Mandarin-English preschoolers, between the age four to six. The tasks were conducted in two languages: Mandarin and English, to investigate how bilingual children would perform in NWR and SR tasks in different age groups, and also to examine the type of frequent error patterns found among different age groups in the repetition tasks. Overall task accuracy in each language was compared; phoneme and grammatical errors in NWR and SR tasks were described qualitatively. The overall results showed that the older children performed better than the younger children; and children performed better in the Mandarin tasks, compared to the English task. There was an indication that language knowledge and language experience influenced the performance on the tasks. The study also showed that the grammatical errors found in the SR tasks may have potential of being used to distinguish children with typical and atypical language development.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sastera

PENGGUNAAN TUGASAN NONWORD DAN PENGULANGAN AYAT DALAM KALANGAN KANAK-KANAK DWIBAHASA MANDARIN-INGGERIS DI MALAYSIA

Oleh

WOON CHAI PING

Januari 2015

Pengerusi: Profesor Madya Dr.Yap Ngee Thai, PhD
Fakulti: Bahasa Modern dan kommunikasi

Tugasan pengulangan bukan kata (*nonword*) (NWR) dan pengulangan ayat (SR) telah digunakan bagi mengukur kemahiran bahasa ekspresif kanak-kanak dalam perkembangan bahasa normal dan tidak normal, serta meninjau kecekapan perkembangan dwibahasa. Penyelidik kerap menggunakan NWR untuk mengkaji mekanisme ingatan jangka pendek fonologikal yang mendasari pembelajaran bahasa bagi kanak-kanak, manakala SR bukan sahaja boleh menilai ingatan jangka pendek tetapi juga ingatan jangka panjang. Baru-baru ini, tugasan NWR dan SR telah diperakui sebagai sebuah alat psikolinguistik yang berpotensi untuk mengenal pasti kanak-kanak dwibahasa dengan gangguan bahasa tertentu (SLI). Tugasan NWR dan SR mudah dan cepat untuk dikendalikan, dan merupakan alat untuk memperoleh maklumat kuantitatif dan kualitatif mengenai pengetahuan leksikal dan morfosintaktik, serta perkembangan bahasa dalam latar belakang linguistik yang kompleks. Kajian ini melaporkan keputusan pencapaian tugasan NWR dan SR dalam kalangan kanak-kanak prasekolah dwibahasa Mandarin-Inggeris. Tugasan dikendalikan menggunakan dua bahasa: bahasa Mandarin dan Inggeris, untuk menyelidik pencapaian kanak-kanak dwibahasa bagi tugasan NWR dan SR dalam kumpulan umur yang berbeza, dan juga untuk mengkaji jenis pola kesilapan tipikal dan atipikal yang dikesan dalam kalangan kumpulan umur yang berbeza dalam tugasan berulang. Secara keseluruhan, ketepatan tugasan bagi setiap bahasa dibandingkan; fonem dan kesalahan tatabahasa dalam tugasan NWR dan SR diterangkan secara kuantitatif. Keputusan keseluruhan menunjukkan kanak-kanak yang lebih tua lebih baik daripada pencapaian kanak-kanak yang lebih muda. Pencapaian kanak-kanak lebih baik dalam tugasan bahasa Mandarin, berbanding tugasan bahasa Inggeris. Tiada tanda yang menunjukkan pengetahuan bahasa dan pengalaman bahasa mempengaruhi pencapaian dalam tugasan ini. Kajian juga menunjukkan kesilapan tatabahasa yang ditemui dalam tugasan SR mungkin mempunyai potensi untuk digunakan bagi membezakan kanak-kanak dengan perkembangan bahasa tipikal dan atipikal.

ACKNOWLEDGEMENTS

It is a pleasure to convey my gratitude to people I have worked with during the course of this research. First and foremost, I would like to express my sincere gratitude to my dissertation supervisor, Dr Yap Ngee Thai, for her guidance, encouragement, supervision, patience and support during the preparation of this project.

Besides my supervisor, I would like to thank the rest of my thesis committee: Dr. Wong Bee Eng, and Dr. Lim Hui Woan, for sharing their expertise, insightful comments, providing valuable assistance and encouragement. Furthermore, I would like to thank the principal and the teachers of the kindergarten who have assisted me in this project. I am thoroughly grateful for all the 30 children and their parents, who were willing to participate in this study. My sincere thanks also go to the second rater for her time and effort.

And of course, I wish to express my love and gratitude to my family and friends for your understanding, your constant support and your endless love, throughout the duration of my study.

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Arts. The members of the Supervisory Committee were as follow:

Yap Ngee Thai, PhD
Associate Professor
Faculty of Modern Languages and Communication
Universiti Putra Malaysia
(Chairman)

Wong Bee Eng, PhD
Associate Professor
Faculty of Modern Languages and Communication
Universiti Putra Malaysia
(Member)

Lim Hui Woan, Phd
Lecturer
Faculty of Allied Health Sciences
Universiti Kebangsaan Malaysia
(Member)

_____
BUJANG KIM HUAT, PhD
Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date:

Declaration by Members of Supervisory Committee

This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) are adhered to.

Signature: _____
Name of
Chairman of
Supervisory
Committee: Yap Ngee Thai, PhD

Signature: _____
Name of
Member of
Supervisory
Committee: Wong Bee Eng, PhD

Signature: _____
Name of
Member of
Supervisory
Committee: Lim Hui Woan, PhD

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

ADHD	Attention Deficit Hyperactivity Disorder
ALI	Autism plus Language Impairment
ASP	Aspect Marker
B	Boy
CL	Classifier
CNRep	Children's Test of Nonword Repetition
CVC	Consonant-Vowel-Consonant
ENWR	English Nonword Repetition
ESR	English Sentence Repetition
G	Girl
LI	Language Impairment
L1	First Language
L2	Second Language
LTM	Long-Term Memory
MNWR	Mandarin Nonword Repetition
MOD	Modifier
MSR	Mandarin Sentence Repetition
N	Number of participants
NRT	Nonword Repetition Test
NWR	Nonword Repetition
PASS	Passive
PPC	Percentage of Phonemes Correct
PRE	Preposition
QP	Question Particle
SD	Standard Deviation
SFP	Sentence-Final Particle
SLI	Specific Language Impairment
SOV	Subject-Object-Verb
SR	Sentence Repetition
STM`	Short-Term Memory
SVO	Subject-Verb-Object
TD	Typically Developing
WM	Working Memory

CHAPTER 1

INTRODUCTION

1.1 Background of the study

Nonword repetition (NWR) and sentence repetition (SR) tasks have been used in measuring children's expressive language skills in normal and abnormal language development and language learning, as well as for surveying the proficiency of bilingual language development. Researchers often use NWR to study the mechanisms of phonological short-term memory (STM) underlying children's language learning, whereas SR might assess not only short-term memory but also long-term memory (LTM). Recently, NWR and SR tasks have been recognized as a potential psycholinguistic tool to identify bilingual children with specific language impairment (SLI).

SLI is considered to be a neurodevelopmental disorder in childhood. Children with SLI show language ability below the language skills expected for their age, but they have no hearing impairment, no neurological damage, no motor problems in producing speech or autism, and they have normal intellectual abilities (Leonard, 2000). However, the protocol followed by speech language pathologist to identify such children involves the use of a battery of tests which include hearing screening test, articulation test, nonverbal IQ test, language assessment in order to meet the inclusion and exclusion criteria (see Stark & Tallal, 1981; Leonard, 2000). The language assessment tool is only one of the tests used. The process of identifying children at risk for SLI at an early age is challenging even among monolingual children. The problem is even more challenging and difficult in Malaysia as many Malaysian children are bilingual from a very young age, and most assessment tools that have been developed have been normed mainly on monolingual children and may not be suitable for identifying SLI among bilingual children.

In order to develop a suitable language assessment tool that caters directly to the bilingual children in Malaysia, we first need to have a firm understanding of the language development process of these bilingual children. This is the rationale for undertaking this study where I try to make a case for the potential use of NWR and SR tasks as a potential language assessment tool to identify atypical bilingual language development among typical bilingual children.

1.2 Statement of problem

Bilingual children may risk to be misdiagnosed as having SLI or bilingual children with language impairment may be mistakenly considered as having problems commonly encountered by bilingual children. One of the reasons for these mistakes is that many standard language assessments are biased and misrepresent children's language abilities (Dollaghan & Campbell, 1998).

SLI children often have limitations in speech ability. They use short, simple and basic grammatical sentence structures. Bishop (1997) has pointed out that the problems of language development among children with SLI are in the aspects of lexicon, morpho-syntax, and phonology. The aspect of morpho-syntax difficulties as

clinical markers of SLI has widely been investigated in various languages (Hansson, K., & Nettelbladt, 1995; Bedore & Leonard, 2001; Stokes, Wong, Fletcher, & Leonard, 2006; Lukács, Leonard, & Kas, 2010). English is the most investigated language in SLI children.

With the increasing number of bilingual children, there are more and more studies focusing on bilingual SLI children. Research conducted on SLI in the development of dual language among children has focused on morpho-syntactic aspect; however, there is limited data on the bilingual SLI children and proper language assessment tools to identify whether children perform poorly in language due to language impairment or just simply because of interlanguage effect in two different languages (e.g. Paradis, 2007; 2010; Bedore & Peña, 2008). According to Paradis (2007, 2010), the difficulty in identifying bilingual SLI children is caused by the fact that bilingual children generally score lower in standard language assessment tests compared to monolingual children, and their error patterns show similarities to monolingual SLI children. Cultural and linguistic factors are the major influences on their poor performance in such standard language assessments which are normally used for monolingual children (Campbell, Dollaghan, Needleman, & Janosky, 1997; Bedore & Peña, 2008).

The problem in identifying children at risk with SLI is even more challenging in Malaysia as many Malaysian children are bilingual from a very young age. According to Ooi and Wong (2012), in the bilingual society where the speech-language pathologist do not speak the same first language but to share the same L2, the L2 can be used as the assessment language. As in Malaysia, English is using to assess children's language. However, the assessment tools are usually adapted from monolingual standard English-speaking version. Ooi and Wong (2012) pointed out that there are many cases of children in Malaysia with the potential risk of SLI who are not being identified because of the absence of a locally developed norm-referenced language assessment tool that can be used for bilingual children in Malaysia. In the early stage of second language acquisition, according to Paradis and Genesee (1996), bilingual children may need a longer period to achieve the same level of language knowledge compared to their monolingual peers. Therefore, bilingual children are more likely to be diagnosed as having language delay if they are assessed with the assessment tools which have been developed mainly for monolingual children (Ooi & Wong, 2012).

Nevertheless, assess children' L2 only has another shortcoming. Researchers in bilingual domain, often make a distinction between simultaneous and sequential bilingualism. Simultaneous bilinguals are children who hear and acquire two languages at the same time from birth, whereas sequential bilingual are those who learn second language (L2) after the acquisition of a first language. In Malaysia, most of the children acquire L2 when the acquisition of L1 is still developing. Yip and Matthews mentioned in their research, 'there is the possibility for the two simultaneously developing linguistic systems in contact to interact bidirectionally' (Yip, & Matthews, 2007; p.26). Therefore, the combination of language tests in L1 and L2 would provide a better description of the development of linguistic system among bilingual Mandarin-English speaking children.

Currently, measures of language processing such as NWR and SR have been considered as more accurate assessment tools compared to traditional language tests and are considered as a potential psycholinguistic tool to identify children with or without SLI in culturally and linguistically diverse populations (Campbell et al, 1997; Kohnert, Windsor, & Yim, 2006). Measures of language processing have been proposed as less biased measures compared to those standard language assessment tests. The language processing measures such as NWR does not require vocabulary or linguistic knowledge, but the performance on the task is connected to the ability to learn new words (e.g. Gathercole, 2006; Thordardottir & Brandeker, 2012). As for the SR task, it is a measure related to the expressive language abilities and receptive grammar skills. The language processing measures show a potential to establish a connection to the underlying deficit of SLI. Thordardottir and Brandeker (2012) concluded that the limitation of language processing is one of the factors that account for low language achievement among SLI children.

In this study, NWR and SR tasks in Mandarin and English were used as a tool to obtain quantitative and qualitative information about children's lexical and morphosyntactic knowledge, as well as language development in a complex linguistics background in order to compare the various levels of language development among typical bilingual children.

1.3 Purpose of the study

There are two main purposes for this study: (a) to examine how bilingual children would perform on NWR and SR tasks in different age groups and (b) to investigate the frequent error types found among different age groups in their task performance.

1.3.1 Research questions

1) Is there a difference between the different age groups of Mandarin-English bilingual children on NWR and SR scores?
2) Is there a syllable length effect in performing the NWR tasks?
3) How to the bilingual children perform Mandarin and English NWR and SR tasks?
4) What kinds of error do children make in their Mandarin and English tasks? In what ways do the bilinguals' performance differ from or are similar to monolinguals?

1.3.2 Research hypothesis

It is hypothesized that:
1) There would be an age different on the NWR and SR scores. The older children would perform better than the younger children.
2) Children's performance of NWR in both languages would be affected by the syllable length.
3) Children would perform better in Mandarin than English in the NWR and SR tasks.
4) The older children would make lesser omission errors than the younger children in both the NWR and SR tasks.

1.4 Theoretical framework

In this study, the NWR and SR tasks were used as an approach to collecting data in order to examine the development of children's language. In this section, I will first discuss the language acquisition order, then the relations between the memory and immediate recall tasks, and will propose a model that might accommodate the contribution of STM and influences of LTM in NWR and SR.

1.4.1 Language acquisition order

In language acquisition studies, Brown (1973)'s acquisition order of English grammatical morphemes in L1 was widely accepted. Later, Krashen's natural order hypothesis proposed that L2 learners acquired first –ing, plural –s, copula, then followed by auxiliary, article; irregular past will come later, and regular past, third-person singular and possessive –s would be the last to acquire. According to Krashen (1977), L2 learners of English acquired of grammatical structures follow the predictable order regardless the learners' language backgrounds. However, recent research done by Luk and Shirai (2009) posited different fact than the universal acquisition order. They demonstrated the influence of L1 in the order of L2 morpheme acquisition. Their study focused on four languages: Spanish, Korean, Chinese, and Japanese L2 learners and found that the acquisition order of grammatical morphemes is strongly affected by the L1. They argued that similarities grammatical features between L1 and L2 produce a facilitating effect, whereas differences would result a delayed acquisition. Thus, the acquisition of grammatical morpheme is heavily influenced by children native languages.

Yip and Matthews (2007) pointed out about the bidirectionally interaction between two simultaneously developing language, it is possible that simultaneous bilinguals or early sequential bilingual children would acquire the grammatical morpheme in L1 and L2 in different order compared to monolinguals. In this study, NWR and SR tasks were used to collect data.

1.4.2 Short-term memory and immediate nonword repetition

NWR task was designed as a measure of phonological STM. NWR is a task that requires participants to hear a sequence of nonword and is expected to repeat the sequence of nonword verbatim. Difficulty in nonword increases as a function of nonword length increases (e.g. Masoura & Gathercole, 2005; Archibald & Gathercole, 2006a). It was recognized that the English speaking children with SLI were normally found to have difficulty in repeating longer nonwords (e.g. Dollaghan & Campbell, 1998; Archibald & Gathercole, 2006a; Jones, Tamburelli, Watson, Gobet, & Pine, 2010). Similar finding were also found in other languages such as Spanish (Girbau & Schwartz, 2007), Italian (Bortolini, Arfé, Caselli, Degasperi, Deevy, & Leonard, 2006), Dutch (Rispens & Parigger, 2010), and Mandarin (Chi, 2007).

A meta-analysis of studies investigating different NWR tasks performance reported across different studies between children with and without SLI carried out by Graf Estes, Evans, & Else-Quest (2007), showed that children with SLI performed significantly lower than children without SLI on longer nonwords (3- to 4- syllable

nonwords) than shorter nonwords (1- to 2- syllable nonwords). Their result indicated that nonword length was related to the magnitude of effect sizes when they compared different NWR tasks. Overall, it seems that the length of nonwords was able to distinguish between the children with or without SLI. Gathercole and Baddeley (1990, p.344) viewed the repetition difficulties reflect a capacity limitation of the phonological component of working memory. Therefore, a deficit in the capacity of phonological STM may lead to difficulty in repeating nonwords with longer syllables in the NWR tasks (Gathercole, 2006).

When we talk about the capacity, how much information actually can we store in the STM? A well-known study has been published by Miller (1956), who suggested that a typical adult's memory span is limited to a magic number of items or chunks of information which is approximately seven, with +/- two (between 5 to 9 items or chunks based on individual differences). He mentioned that the process of chunking can relate the long-term knowledge to increase STM. Each chunk contains information, and the memory span is a fix number of chunks. In order to build meaningful information, we can simply combine multiple items of chunks (Miller, 1956).

In contrast to the suggestion of the number of chunks, Baddeley, Thomson, Buchanan (1975)'s study suggested that a measure of STM should be based on time. They found that the memory span is related to word-length effect; longer syllable words were more poorly recalled compared to shorter syllable words; memory span is equivalent to the number of words that could be recalled in approximately 2s. In other words, one's memory can hold a phonological form for about 2s; an individual can recall and rehearse in mind as much as he/she can before it decays. Gathercole (2006) pointed out that based on STM theory, phonological representation are related to time-based decay. Longer nonwords need more time to present, repeat, the phonological representation may decay greater before they can be repeated and rehearsed in mind (Gathercole, 2006; Archibald, 2008). This decay effect would be expected to significantly affect those who with a limited capacity of phonological STM.

Earlier researches claimed that NWR evaluates language processing abilities and is a knowledge-free measurement. However, recent researches have shown that language knowledge did influence the accuracy of NWR. Several factors of linguistic knowledge that have influence on immediate NWR will be discussed in the following chapter.

1.4.3 Influences of long-tern memory on immediate sentence repetition

Similar to NWR, SR is a task that requires participants to listen to a sentence and repeat it. To examine the participants' ability, the test items usually include sentences of various lengths and complexities in the language that is being examined. There are questions about whether the SR tasks allow rote imitation. The process of repeating a sentence heard actually involves various cognitive processes. According to Bley-Vroman and Chaudron (1994, p. 247), when the participant hears the target sentence, he/she forms an abstract representation of that sentence based on his/her linguistic knowledge. This representation includes different level of semantic information and the representation is stored in STM. Then the participant utters a sentence based on

the assessed representation. As the sentences contain words that are syntagmatic related, inflectional and derivational morphology, and semantic information, it would be reasonable to believe that SR might access not only the STM, which involves lexical or phonological components, but also the LTM, which includes conceptual or semantic component that are associated with them.

Based on the works of Clay (1971) and Slobin & Welsh (1973) (cited in Riches, Loucas, Baird, Charman, & Simonoff, 2010), an individual's ability to repeat an utterance does not only depend on the STM, but necessitates the use of syntactic knowledge that are stored in LTM to chunk the utterance so that the representation may be easy to retain and recall. Studies by Potter and Lombardi (1990, 1998) have shown that the LTM is involved in SR. They reported that the immediate recall of a sentence is not only a verbatim representation which activates lexical items, but it also primes syntactic structures. It is by regenerating the sentence with these syntactic structures together with the activated words that increase the accuracy of verbatim SR. Vinther (2002) further commends that if participants understand the sentence, they would be able to repeat the sentence without any difficulty. If they understand the sentence but fail to remember the formal details due to the constraints in the STM, they may still produce the sentence with the same meaning, in a form more or less similar to the original, as they are able to draw upon the resources from the LTM. Lust, Chien, & Flynn (1987) also claimed that participants can employ their STM as an acoustic image to recall and imitate a sentence accurately without understanding the sentence provided that if the sentence is short and syntactically simple enough, whereas, for longer sentences, if they do not comprehend the sentence, they cannot rely on their STM to recall the sentence. One of the reasons is that, if participant do not understand a string of words, they may have a problem in rearranging it in chunks and they are not able to retain it in their STM in a short time before they can decode it (Vinther, 2002). Lust, Flynn, and Foley (1996) argued that the sentence repeated is not a rote repetition but a reconstruction of the sentence heard, and therefore reflects cognitive competence. Alloway and Gathercole (2005)'s study found that SR is related to reading and language skills, one of the reasons being the LTM can facilitate the connection between the STM and language skills.

1.4.4 Models of short-term memory

According to Archibald and Gathercole (2006b), immediate memory includes STM and working memory (WM). STM refers to the ability to retain items or information for a short period of time, whereas WM involves a combination of storage, processing and operating information (Baddeley, 2012). For example, the tasks involve immediate recall, serial recognition are considered STM tasks, while the task like reading span which involves storage and processing is considered WM task. The two terms are still used interchangeably in some studies.

Perhaps Baddeley's multi-component model of WM (Baddeley & Hitch. 1974; Baddeley, 1986; 2000; 2003a) is one of the most influential models to account for verbal STM. This section aims to give an overview of Baddeley's model of WM and discuss the theoretical account which would explain how memory and linguistic knowledge influence the repetition tasks.

The multi-component model of WM developed by Baddeley and Hitch (1974) is comprised of three components (see Figure 1.1): the phonological loop, which concerns verbal and acoustic information; the visuospatial sketchpad, which provides it visual equivalent; and the central executive, an attentionally-limited control system where the other two components depend on.

Figure 1.1 The model of working memory proposed by Baddeley and Hitch (1974), extracted from Baddeley (2003a, p.191)

The phonological loop is the component which is most related to language compared to the other two components. The loop comprises two additional subsystems: a phonological store, which can retain information for a few seconds before it decay; an articulatory rehearsal process, which can refresh and rehearse the information in the phonological loop. One of the evidence for the rehearsal system comes from the word-length effect. Baddeley, Thomson, and Buchanan, (1975) showed that in the performance of immediate serial recall, shorter syllable words were recalled more accurately than longer syllable words. This suggests that longer words take a longer time to rehearse; the process is slower and will decay more. Baddeley (2000) believed that "auditory memory traces decay over a period of a few seconds, unless revived by articulatory rehearsal" (p. 419).

Another component developed by Baddeley and Hitch (1974)'s multi-component model of WM is the visuospatial sketchpad. This component is responsible to maintain visual and spatial information for a short period of time. The distinction between visual and spatial memory was found based on neuropsychological studies. The visual memory is to remember the feature of an object, for example, the form and the color; whereas the spatial memory is to remember the location of an object. Like the phonological loop, the visuospatial working memory is limited in capacity and decays over time.

The central executive is the system is responsible for the attentional control of the WM system. It was originally described as having limited capacity of storage and decided resources used between the other two components by attentional control. In Baddeley (2003b)'s review paper, he mentioned that "our three-part model for WM encountered problems when trying to address the interaction with LTM. These problems stemmed from our simplifying assumption that the executive was a purely attentional system." (p. 835). The WM's model failed to explain other than the limited capacity of the phonological loops and the visuospatial sketchpad, for example, the performance on immediate recall influenced by the linguistic knowledge is something clearly beyond the phonological loop's time-based capacity. There must be a link between the STM and LTM (Baddeley, Hitch, & Allen, 2009). Therefore, a fourth component was proposed to the model – the episodic buffer (Baddeley, 2000).

The episodic buffer was proposed to account for the interface between the STM and LTM (see Figure 1.2). The episodic buffer behaves like a backup store, has a limited

capacity, capable of reinforcing the phonological loop or the visuospatial sketchpad, integrating information from many different sources and able to link STM and LTM.

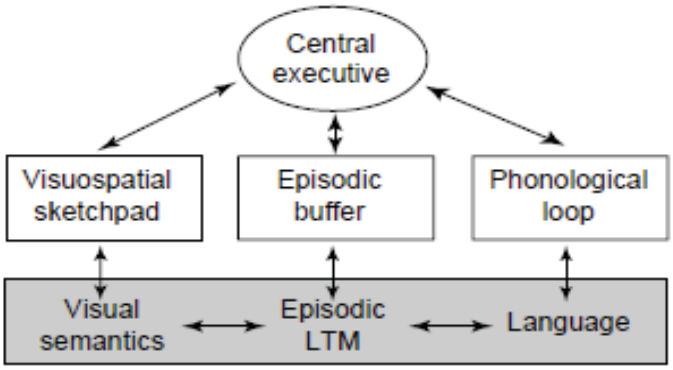

Figure 1.2 The current version of the multi-component working memory modal, extracted from Baddeley (2000, p. 421).

Through conscious awareness, the buffer can be accessed by the central executive, in the sense of binding information from a variety of sources and related new information from STM with LTM, in order to merge our memories and experiences. In his recent review paper (Baddeley, 2012), Baddeley pointed that "it allows executive processes to carry out further manipulation" (p. 17), and that such processes may involve further binging process, for example, by combining the phrases into sentences.

1.4.5 Summary

It appears that the linguistic knowledge influences the performance of immediate recall. According to this model, immediate recall taps the episodic buffer that enhance the direct interaction between the temporary memory and language-knowledge where the information of semantic and syntactic that is stored in LTM (Baddeley, Hitch, & Allen, 2009).

1.5 Overview of the thesis

The present study attempted to make a case for the potential use of NWR and SR tasks as a potential language assessment tool to identify atypical bilingual language development among typical bilingual children.

To begin with, chapter 2 introduces the language background of Malaysia, characteristic of Mandarin Chinese and English, and also provides an overview of previous studies which demonstrate the relationship between the immediate repetition task and language abilities. Chapter 3 describes the design of the present study, the participants, the procedure, conceptual framework, method of analysis, and the pilot studies in detail. The results from the analysis are reported in chapter 4. In chapter 5, the main finding are discussed and compared to previous research. General conclusion is made, limitation of the study is discussed and recommendation for future research is outlined in chapter 6.

REFERENCES

Adams, A. M, & Gathercole, S. E. (1995). Phonological working memory and speech production in preschool children. *Journal Of Speech And Hearing Research*, *38*(2), 403–414.

Adams, A. M., & Gathercole, S. E. (1996). Phonological working memory and spoken language development in young cildren. *The Quaterly Journal of Experimental Psychology*, *49*.

Adams, A. M., & Gathercole, S. E. (2000). Limitations in working memory: implications for language development. *International Journal of Language & Communication Disorder*, *35*(1), 95–116.

Alloway, T. P., & Gathercole, S. E. (2005a). Working memory and short-term sentence recall in young children. *European Journal of Cognitive Psychology*, *17*(2), 207–220. doi:10.1080/09541440440000005

Alloway, T. P., & Gathercole, S. E. (2005b). The role of sentence recall in reading and language skills of children with learning difficulties. *Learning and Individual Differences*, *15*(4), 271–282. doi:10.1016/j.lindif.2005.05.001

Archibald, L. M. D. (2008). The promise of nonword repetition as a clinical tool. *Canadian Journal of Speech-Language Pathology and Audiology*, *32*(1), 21–28.

Archibald, L. M. D., & Joanisse, M. F. (2009). On the sensitivity and specificity of nonword repetition and sentence recall to language and memory impairments in children. *Journal of Speech, Language, and Hearing Research : JSLHR*, *52*(4), 899–914. doi:10.1044/1092-4388(2009/08-0099)

Archibald, L. M. D., & Gathercole, S. E. (2006). Short-term and working memory in specific language impairment. *International Journal of Language & Communication Disorders*, *41*(6), 675–693.

Archibald, L.M.D., & Gathercole, S. E. (2006). Nonword repetition: a comparison of tests. *Journal of Speech, Language and Hearing Research*, *49*(5), 970–983.

Armon-Lotem, S. (2013). Between L2 and SLI: inflections and prepositions in the Hebrew of bilingual children with TLD and monolingual children with SLI. *Journal of Child Langauge*, *40*(2), 1 – 31. doi:10.1017/S0305000912000487

Baddeley, A. D., Hitch, G. J., & Allen, R. J. (2009). Working memory and binding in sentence recall. *Journal of Memory and Language*, *61*(3), 438–456. doi:10.1016/j.jml.2009.05.004

Baddeley, A. D. (2000). The episodic buffer : a new component of working memory ? *Trends in Cognitive Sciences*, *4*(11), 417–423.

Baddeley, A. D. (2003). Working memory: looking back and looking forward. *Nature Reviews. Neuroscience*, *4*(10), 829–39. doi:10.1038/nrn1201

Baddeley, A. D. (2012). Working memory: theories, models, and controversies. *Annual Reviews of Psychology*, *63*, 1–29.

Baddeley, A. D. (2003). Working memory and language: an overview. *Journal of Communication Disorders*, *36*(3), 189–208.

Baddeley, A. D., Thomson, N., Buchanan, M. (1975). Word length and the structure of short-term memory. *Journal of Verbal Learning and Verbal Behavior*, *14*, 575–589.

Baddeley, A.D., & Hitch, G. (1974). Working memory. In G. A. Bower (Ed.), *The psychology of learning and motivation: recent advances in research and theory, Vol 8* (pp. 47–90). New York: Academic Press.

Baskaran, L. (2005). *A Malaysian English Primer*. Kuala Lumpur: University Malaya Press.

Bedore, L. M., & Leonard, L. B. (2001). Grammatical morphology deficits in Spanish-speaking children with specific language impairment. *Journal of Speech, Language, and Hearing Research : JSLHR*, *44*(4), 905–24. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11521782

Bedore, L. M., & Peña, E. D. (2008). Assessment of Bilingual Children for Identification of Language Impairment: current findings and implications for practice. *International Journal of Bilingual Education and Bilingualism*, *11*(1), 1–29. doi:10.2167/beb392.0

Bishop, D. V.M . (2004). Specific language impairment: diagnostic dilemmas. In H. Verhoeven, L., van Balkom (Eds.), *Classification of developmental language disorders: theoretical issues and clinical implications* (pp. 309–326). Lawrence Erlbaum Associates.

Bishop, D. V. M. (1997). *Uncommon understanding: development and disorders of language comprehension in children*. Psychology Press Ltd.

Bishop, D. V. M. (2006). What causes specific language impairment in children? *Current Directions in Psychological Science*, *15*(5), 217–221. Retrieved from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2582396&tool=pmcentrez&rendertype=abstract

Bley-Vroman, R., & Chaudron, C. (1994). Elicited imitation as a measure as a measure of second-language competence. In S. Gass, & A. C. E. Tarone (Eds.), *Research methodology in second-language acquisition* (pp. 245–261). New Jersey: Lawrence Erlbaum.

Book, C. W. F. (2013). Central Intelligence Agency (2013). *2013, Central Intelligence Agency (2013) CIA World Fact Book*. Retrieved from https://www.cia.gov/library/publications/download/download-2013/index.html

Bortolini, U., Arfé, B., Caselli, C. M., Degasperi, L., Deevy, P., & Leonard, L. B. (2006). Clinical markers for specific language impairment in Italian: the contribution of clitics and non-word repetition. *International Journal of Language & Communication Disorders / Royal College of Speech & Language Therapists*, *41*(6), 695–712. doi:10.1080/13682820600570831

Campbell, T., Dollaghan, C., Needleman, H., & Janosky, J. (1997). Reducing bias in language assessment : Processing dependant measures. *Journal of Speech, Language, and Hearing Research*, *40*(3), 519–525.

Cheung, H. (1996). Nonword Span as a Unique Predictor of Second-Language Vocabulary Learning. *Developmental Psychology*, *32*(5), 867–873.

Cheung, H. (2009). Grammatical characteristics of Mandarin-speaking children with specific language impairment. In S.-P. Law, B. S. Weekes, & A. M.-Y. Wong (Eds.), *Language Disorders in Speakers of Chinese* (pp. 33–52). Multilingual Matters.

Cheung, P., Li, P., & Barner, D. (2008). Sources of individuation in Mandarin Chinese, a classifier language. In *22nd Pacific Asia Conference on Language, Information and Computation* (pp. 151–160).

Chi, P. S. (2007). Phonological short-term memory in children with specific language impairment. *Bulletin of Speical Education*, *32*(4), 19–45. Retrieved from http://bse.spe.ntnu.edu.tw/upload/journal/prog/994_3238_26CU_10RY518.pdf

Chiat, S., Armon-lotem, S., Marinis, T., Polišenská, K., Roy, P., & Seeff-gabriel, B. (2012). The potential of sentence imitation tasks for assessment of language abilities in sequential bilingual children. In V. C. M. Gathercole (Ed.), *Bilinguals and assessment: State of the art guide to issues and solutions from around the world*. Multilingual Matters. Retrieved from http://reading.academia.edu/TheoMarinis

Chiat, S., & Roy, P. (2007). The preschool repetition test: an evaluation of performance in typically developing and clinically referred children. *Journal of Speech, Language, and Hearing Research*, *50*, 429–443.

Clay, M. M. (1971). Sentence repetition: elicited imitation of a controlled set of syntactic structures by four language groups. *Language*, *36*(3).

Coady, J. A., & Evans, J. L. (2008). Uses and interpretations of non-word repetition tasks in children with and without specific language impairment (SLI). *International Journal of Language & Communication Disorders*, *43*(1), 1–40.

Conti-Ramsden, G., Botting, N., & Faragher, B. (2001). Psycholinguistic markers for specific language impairment (SLI). *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, *42*(6), 741–748. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12882530

Crago, M., & Paradis, J. (2003). Two of a kind? Commonalities and variation in languages and language learners. In Y. Levy, & J. Schaeffer (Eds.), *Language competence across populations: toward a definition of specific language impairment* (pp. 95–110). Mahwah, NJ: Lawrence Erlbaum Associates.

De Bree, E., Rispens, J., & Gerrits, E. (2007). Non-word repetition in Dutch children with (a risk of) dyslexia and SLI. *Clinical Linguistics & Phonetics*, *21*(11-12), 935–944. doi:10.1080/02699200701576892

De V. Hage, S. R., & Grivol, M. A. (2009). Reference values of nonword repetition test for Brazilian Portuguese-speaking children. *Journal of Applied Oral Sciences*, *17*(sp.issue), 63–68.

Devescovi, A., & Caselli, M. C. (2007). Sentence repetition as a measure of early grammatical development in Italian. *International Journal of Language and Communication Disorders*, *42*(2), 187–208.

Dispaldro, M., Leonard, L. B., & Deevy, P. (2013). Real-word and nonword repetition in Italian-speaking children with specific langauge impairment: a study of diagnostic accuracy. *Journal of Speech, Language, and Hearing Research*, *56*, 323 – 336.

Dispaldro, M., Deevy, P., Altoé, G., Benelli, B., & Leonard, L. B. (2011). A cross-linguistic study of real-word and nonword repetition as predictors of grammatical competence in children with typical language development. *International Journal of Language & Communication Disorders*, *46*(5), 564–578.

Dodd, B., So, Li., & Li, W. (1996). Symtoms of disorder without impairment: the written and spoken errors of bilinguals. In B. Dodd, R. Campbell, & L. Worrall (Eds.), *Evaluating theories of langauge: evidence from disorder* (pp. 119–136). London: Whurr.

Dollaghan, C., & Campbell, T. F. (1998). Nonword repetition and child language impairment. *Journal of Speech, Language, and Hearing Research : JSLHR*, *41*(5), 1136–46. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9771635

Dörnyei, Z. (2007). *Research methods in applied linguistics*. Oxford Univeristy Press.

Duanmu, S. (2007). *The phonology of standard Chinese*. In J. Durand (Ed.) (2nd edition). Oxford Univeristy Press.

Early childhood care & Education. (n.d.). Retrieved from http://www.schoolmalaysia.com

Ellis, N. (2001). Memory for language. In P. Robinson (Ed.), *Cognition and Second Language Instruction* (pp. 33–68). Cambridge: Cambridge University Press.

Ellis Weismer, S., Tomblin, J. B., Zhang, X., Buckwalter, P., Chynoweth, J. G., & Jones, M. (2000). Nonword repetition performance in school-age children with

and without language impairment. *Journal of Speech, Language and Hearing Research*, *43*(4), 865–878. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11386474

Erbaugh, M. (1992). The acquisition of Mandarin. In D. I. Slobin (Ed.), *The Crosslinguistics Study of Language Acquisition* (vol.3 ed., pp. 373–456). Mahwah, NJ: Lawrence Erlbaum.

Erlam, R. (2006). Elicited imitation as a measure of L2 implicit knowledge: an empirical validation study. *Applied Linguistics*, *27*, 464–491.

Fletcher, Paul., & Ingham, R. (1995). Grammatical impairment. In B. Fletcher, Paul & MacWhinney (Eds.), *The handbook of child language* (pp. 603–622). Oxford, UK: Blackwell.

Fraser, C., Bellugi, U., & Brown, R. (1963). Control of grammar in imitaion, comprehension, and production. *Journal of Verbal Learning and Verbal Behavior*, *2*, 121–135.

French, L. M., & O'Brien, I. (2008). Phonological memory and children's second language grammar learning. *Applied Psycholinguistics*, *29*, 463–487.

Fung, R. S. Y. (2009). Characteristics of Chinese in relation to language disorders. In S. P. Law., B. S. Weekes, & A.M.-Y. Wong (Eds.), *Language disorders in speakers of Chinese* (pp. 1–18). Multilingual Matters.

Gao, Q. (2008a). Word order in Mandarin: reading and speaking. In M.Chan, & H. Kang. (Eds.), *Proceedings of the 20th North American Conference on Chinese Linguistics (NACCL-20)* (pp. 611–626). Columbus, Ohio: The Ohio State University.

Gao, Q. (2008b). 汉语"宾动"与"动宾"的互换机制以及对汉语教学的启示. 东方语言学, *3*, 51–63.

Gardner, H., McClelland, A., & van der Lely, H. K. J. (2006). Development of the Grammar and Phonology Screening (GAPS) test to assess key markers of specific language and literacy difficulties in young children. *International Journal Language Communication Disorders*, *41*(5), 513 – 540.

Gathercole, S. E. (2006). Nonword repetition and word learning: the nature of the relationship. *Applied Psycholinguistics*, *27*(04), 513–543. doi:10.1017/S0142716406060383

Gathercole, S. E., & Baddeley, A. D. (1989). Evaluation of the role of phonological STM in the development of vocabulary in children: a longitudinal study. *Journal of Memory and Language*, *28*(2), 200–213. doi:10.1016/0749-596X(89)90044-2

Gathercole, S. E., & Baddeley, A. D. (1990). Phonological memory deficits in language disordered children: is there a causal connection? *Journal of Memory and Language*, *29*(3), 336–360. doi:10.1016/0749-596X(90)90004-J

Gathercole, S. E., Frankish, C. R., Pickering, S. J., & Peaker, S. (1999). Phonotactic influences on short-term memory. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, *25*(1), 84–95.

Gathercole, S. E., Service, E., Hitch, G. J., Adams, A. M., & Martin, A. J. (1999). Phonological short-term memory and vocabulary development: Further evidence on the nature of the relationship. *Applied Cognitive Psychology*, *13*, 65–77.

Gathercole, S. E., Willis, C., Emslie, H., & Baddeley, A. D. (1991). The influences of number of syllables and wordlikeness on children's repetition of nonwords. *Applied Pscholinguistics*, *12*, 349–367.

Girbau, D., & Schwartz, R. G. (2007). Non-word repetition in Spanish-speaking children with specific language impairment (SLI). *International Journal of Language & Communication Disorders / Royal College of Speech & Language Therapists*, *42*(1), 59–75. doi:10.1080/13682820600783210

Goldstein, B. A, & Bunta, F. (2012). Positive and negative transfer in the phonological systems of bilingual speakers. *Internation Journal of Bilingualism*, *16*(4), 388–401.

Goldstein, B. A., Fabiano, L., & Washington, P. S. (2005). Phonological skills in predominantly English-speaking, predominantly Spanish-speaking, and Spanish-English bilingual children. *Language, Speech, and Hearing Services in Schools*, *36*, 201–218.

Graf Estes, K., Evans, J. L., & Else-Quest, N. M. (2007). Differences in the nonword repetition performance of children with and without specific language impairment: a meta-analysis. *Journal of Speech, Language, and Hearing Research : JSLHR*, *50*(1), 177–95. doi:10.1044/1092-4388(2007/015)

Graham, C.R., Lonsdale, D., Kennington, C., Johnson, A., & McGhee, J. (2008). Elicited imitation as an oral proficiency measure with ASR scoring. In *Proceeding of LREC 2008* (pp. 1604–1610). Retrieved from http://repository.dlsi.ua.es/242/1/pdf/409_paper.pdf

Gutiérrez–Clellen, V. F., & Kreiter, J. (2003). Understanding child bilingual acquisition using parent and teacher reports. *Applied Psycholinguistics*, *24*(02). doi:10.1017/S0142716403000158

Haji Omar, A. (1992). *The linguistic scenery in Malaysia*. Dewan Bahasa dan Pustaka.

Hamayan, E., Saegert, J., & Larudee, P. (1977). Elicited imitation in second language learners. *Language and Speech*, *20*(1), 86–97.

Hansson, K., & Nettelbladt, U. (1995). Grammatical characteristics of Swedish children with SLI. *Journal of Speech and Hearing Research*, *38*, 589–598.

Hirsch, C., & Wexler, K. (2004). Children's passives and their resulting interpretation. In *Paper presented at GALANA, 2004, Universiti of Hawai'I at Manoa, December 17-20, 2004*.

Hoff, E., Core, C., & Bridges, K. (2008). Nonword repetition assesses phonological memory and is related to vocabulary development in 20- to 24-month-olds. *Journal of Child Language*, *35*, 1–14. Retrieved from http://psy2.fau.edu/~hoff/2008_Hoff_Core_Bridges_JCL.pdf

Hulme, C., Thomson, N., Muir, C., & Lawrence, A. (1984). Speech rate and the development of short-term memory span. *Journal of Experimental Child Psychology*, *38*, 241–253.

Jones, G., Tamburelli, M., Watson, S. E., Gobet, F., & Pine, J. M. (2010). Lexicality and frequency in specific language impairment: accuracy and error data from two nonword repetition tests. *Journal of Speech, Language, and Hearing Research*, *53*(1642 - 1655).

Keller-Cohen, D. (1981). Elicited imitation in lexical development: evidence from a study of temporal reference. *Journal of Psycholinguistic Research*, *10*(3), 273–288.

Kirby, S. (2010). *Passives in first language acquisition: what causes the delay?* Retrieved from http://repository.upenn.edu/pwpl/vol16/iss1/13

Kohnert, K., Windsor, J., & Yim, D. (2006). Do language-based processing tasks separate children with language impairment from typical bilinguals? *Learning Disabilities Research and Practice*, *21*(1), 19–29. doi:10.1111/j.1540-5826.2006.00204.x

Kosaka, M. (2009). Nonword repetition tasks in Japanese as clinical markers for discrimination between specific language impairment and typically developing children. *Journal of Medical Welfare*, *14*(2), 57–66.

Krashen, S. (1977). Some issues relating to the Monitor Model. In R. C. H. Brown, & C. Yorio (Eds.), *On TESOL'77* (pp. 144–158). Washington, DC: TESOL.

Kwan-Terry, A. (1991). *Child language development in Singapore and Malaysia*. Singapore Univerversity Press.

Ladefoged, P., & Johnson, K. (2010). *A course in phonetics* (sixth.). Wadsworth: Cengage Learning.

Leonard, L.B . (2000). *Children with specific language impairment* (First MIT .). Cambridge, MA: MIT Press.

Li, A. (1990). *Order and constituency in Mandarin Chinese*. Dordrecht: Kluwer.

Li, P., Huang, B., & Hsiao, Y. (2010). Learning that Classifiers Count: Mandarin-Speaking Children's Acquisition of Sortal and Mensural Classifiers. *Journal of East Asian Linguist*, *19*, 207 – 230.

Li, C. N., & Thompson, S. (1989). *Mandarin Chinese: a funtional reference grammar*. Berkeley, CA: University of California Press.

Ping, Li., & Bowerman, M. (1998). The acquisition of lexical and grammatical aspect in Chinese. *First Language*, *18*, 311–350.

Luk, Zoe P. S., & Shirai, Y. (2009). Is the acquisition order of grammatical morphemes impervious to L1 knowledge? Evidence from the acquisition of plural -s, articles, and possessive 's. *Language Learning*, *59*(4), 271–356.

Lukács, A., Leonard, L. B., & Kas, B. (2010). Use of noun morphology by children with language impairment: the case of Hungarian. *International Journal of Language & Communication Disorders / Royal College of Speech & Language Therapists*, *45*(2), 145–61. doi:10.3109/13682820902781060

Lust, B., Chien, Y., Flynn, S. (1987). What children know: methods for the study of first language acquisition. In B. Lust (Ed.), *Studies in the acquisition of anaphora, vol. II* (pp. 271–356). Dordrecht: D. Reidel Publishing Company.

Lust, B., Flynn, S., & Foley, C. (1996). What children know about what they say: elicited imitation as a research method for assessing children's syntax. In D. McDaniel, C. McKee, H. S. Caims (Eds.), *Methods for assessing children's syntac language, speech, and communcation* (pp. 55–76). MIT Press.

Marinis, T., Chiat, S., Armon-Lotem, S., Piper, & Roy, P. (2011). School-age sentence imitation test-E32. Retrieved from http://www.city.ac.uk.

Masoura, E. V., & Gathercole, S. E. (1999). Phonological short-term memory and foreign language learning. *Internation Journal of Psychology*, *34*(5), 383–388. Retrieved from http://blogs.sch.gr/stelam/files/2011/06/memory-and-vocabulary-learning.pdf

Masoura, E. V., & Gathercole, S. E. (2005). Contrasting contributions of phonological short-term memory and long-term knowledge to vocabulary learning in a foreign language. *Memory*, *13*, 422–429.

McEnergy, A., & Xiao, Z. (2005). Passive constructions in English and Chinese: a corpus-based contrastive study. In *In Proceedings of Corpus Linguistics 2005. Birmingham University*. Retrieved from http://eprints.lancs.ac.uk/63/1/CL2005_(22)_-_passive_paper_-_McEnery_and_Xiao.pdf

McLaughlin, Barry. (1978). *Second language acquisition in childhood*. Hillsdale, NJ: Lawrence Erlbaum.

Messer, M. H., Leseman, P. P. M., Boom, J., & Mayo, A. Y. (2010). Phonotactic probability effect in nonword recall and its relationship with vocabulary in monolingual and bilingual preschoolers. *Journal of Experimental Child Psychology*, *105*, 306–323.

Miller, G. A. (1956). The magical number seven, plus or minus two: some limits on our capacity for processing information. *Psychological Review*, *63*(2), 81–97.

Myers, J. (2000). Rule vs. analogy in Mandarin classifier selection. *Journal of Langauge and Linguistics*, *1*(2), 187 – 209.

Myers, J., & Tsay, J. (2000). The acquisition of the default classifier in Taiwanese. Retrieved from http://www.ccunix.ccu.edu.tw/~lngproc/MyersTsay-classacq.pdf

Nicoladis, E., Song, J. H., & Marentette, P. (2012). Do young bilingual acquire past tense morphology like monolinguals, only later? Evidence from French-English and Chinese-English bilinguals. *Applied Psycholinguistics*, *33*(3), 457–479.

Ooi, C. C.-W., & Wong, A. M.-Y. (2012). Assessing bilingual Chinese-English young children in Malaysia using language sample measures. *International Journal of Speech-Language Pathology*, *14*(6), 499–508. doi:10.3109/17549507.2012.712159

Paradis, J. (2007). Bilingual children with specific language impairment: theoretical and applied issues. *Applied Psycholinguistics*, *28*(03), 551–564. doi:10.1017/S0142716407070300

Paradis, J. (2010). *Bilingual children's acquisition of English verb morphology: effects of language exposure, structure complexity, and task type*. *Language Learning* (Vol. 60, pp. 651–680). doi:10.1111/j.1467-9922.2010.00567.x

Paradis, J., & Crago, M. (2000, August). Tense and temporality: a comparison between children learning a second language and children with SLI. *Journal of Speech, Language, and Hearing Research : JSLHR*. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11386472

Paradis, J., Genesee, F. (1996). Syntactic acquisition in bilingual children. *Studies in Second Language Acquisition*, *18*, 1–25. doi:10.1017/SO272263100014662

Phoon, H. S. (2010). *The phonological development of Malaysian English speaking Chinese children: a normative study*. Unpublished doctoral dissertation, University of Canterbury. Retrieved from http://ir.canterbury.ac.nz/handle/10092/4336

Phoon, H. S., Abdullah, A. C., & Maclagan, M. (2012). The effect of dialect on the phonological analysis of Chinese-influenced Malaysian English speaking children. *International Journal of Speech-Language Pathology*, *14*(6), 487–98. doi:10.3109/17549507.2012.719549

Polišenská, K. (2011). *The influence of linguistic structure on memory span: repetition tasks as a measure of language ability*. Unpublished doctoral dissertation, City University London. Retrieved from http://openaccess.city.ac.uk/682/

Potter, M. C., & Lombardi, L. (1998). Syntactic Priming in Immediate Recall of Sentences. *Journal of Memory and Language*, *38*(3), 265–282. doi:10.1006/jmla.1997.2546

Potter, C. M., & Lombardi, L. (1990). Regeneration in the short term recall of sentences. *Journal of Memory and Language*, *29*, 633–654.

Redmond, S. M. (2005). Differentiating SLI from ADHD using children's sentence recall and production of past tense morphology. *Clinical Linguistics & Phonetics*, *19*(2), 109–127. doi:10.1080/02699200410001669870

Redmond, S. M., Thompson, H. L., & Goldstein, S. (2011). Psycholinguistic profiling differentiates specific language impairment from typical development and from attention-deficit/hyperactivity disorder. *Journal of Speech, Language and Hearing Research* (Vol. 54, pp. 99–117). ASHA. Retrieved from http://jslhr.highwire.org/cgi/content/abstract/54/1/99

Riches, N. G., & Davis, K. (2009). *Qualitative Assessment of Sentence Repetition*. Retrieved from http://www.reading.ac.uk/pcls/research/cls-quasr.aspx

Riches, N. G., Loucas, T., Baird, G., Charman, T., & Simonoff, E. (2010). Sentence repetition in adolescents with specific language impairments and autism: an investigation of complex syntax. *International Journal of Language & Communication Disorders / Royal College of Speech & Language Therapists*, *45*(1), 47–60. doi:10.3109/13682820802647676

Rispens, J., & Parigger, E. (2010). Non-word repetition in Dutch-speaking children with specific language impairment with and without reading problems. *British Journal of Developmental Psychology*, *28*(1), 177–188. doi:10.1348/026151009X482633

Seeff-Gabriel, B., Chiat, S., & Dodd, B. (2010). Sentence imitation as a tool in identifying expressive morphosyntactic difficulties in children with severe speech difficulties. *International Journal of Language & Communication Disorder*, *45*(6), 691–702.

Slobin, C. A., & Welsh, C. A. (1973). Elicited imitation as a research tool in developmental psycholinguistics. In C. A. Ferguson & D. I. Slobin (Eds.), *Studies in child language development* (pp. 485–497). Holt Rinehart and Winston.

So, L. K. H. & Dodd, B. (1995). The acquisition of phonology by Cantonese-speaking children. *Journal of Child Language*, *22*, 473–495.

Stark, R. E., & Tallal, P. (1981, May). Selection of children with specific language deficits. *The Journal of Speech and Hearing Disorders*. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/7253588

Statistics Malaysia. (n.d.). Retrieved from 2013, Central Intelligence Agency (2013) CIA World Fact Book

Stokes, S. F., Wong, A. M.-Y., Fletcher, P., & Leonard, L. B. (2006). Nonword repetition and sentence repetition as clinical markers of specific language impairment: the case of Cantonese. *Journal of Speech, Language, and Hearing Research : JSLHR*, *49*(2), 219–36. doi:10.1044/1092-4388(2006/019)

Stokes, S., & Fletcher, P. (2003). Aspectual forms in Cantonese children with specific language impairment. *Journal of Linguistics*, *41*(2), 381 – 405.

Summers, C., Bohman, T. M., Gillam, R. B., Peña, E. D., & Bedore, L. M. (2010). Bilingual performance on nonword repetition in Spanish and English. *International Journal of Language & Communication Disorders / Royal College of Speech & Language Therapists*, *45*(4), 480–93. doi:10.3109/13682820903198058

Tai, J. H. Y. (1973). Chinese as an SOV language. In *Papers from the 9th Chicago Linguistic Society 9* (pp. 659–671).

Thirusanku, J., & Yunus, M. (2012). The Many Faces of Malaysian English. *ISRN Education (January)*. Retrieve from http://www.isrn.com/journals/education/2012/138928

Thordardottir, E., & Brandeker, M. (2013). The effect of bilingual exposure versus language impairment on nonword repetition and sentence imitation scores. *Journal of Communication Disorders*, *46*(1), 1–16. doi:10.1016/j.jcomdis.2012.08.002

Tongue, R. K. (1974). *The English of Singapore and Malaysia*. Singapore: Eastern Universities Press.

Valian, V., & Aubry, S. (2005). When opportunity knocks twice: two-year-olds' repetition of sentence subjects. *Journal of Child Language*, *32*(03), 617. doi:10.1017/S0305000905006987

Vance, M. (2008). Short-term memory in children with developmental language disorder. In C. F. Norbury., J. B. Tomblin., D. V. M. Bishop. (Eds.), *Understanding Developmental Language Disorders: From theory to practice* (pp. 23–38).

Vinther, T. (2002). Elicited imitation:a brief overview. *International Journal of Applied Linguistics*, *12*(1), 54–73. doi:10.1111/1473-4192.00024

Vitevitch, M. S., & Luce, P. A. (2005). Increases in phonotactic probability facilitate spoken nonword repetition. *Journal of Memory and Language*, *52*, 193–204.

Wang, X. M. (2010). The sociolinguistic realignment in the Chinese community in Kuala Lumpur: past, present and future. *Journal of Multilingual and Multicultural Development*, *31*(5), 479–489.

Weitze, A., McGhee, J., Graham, C. R., Dewey, D. P., & Eggett, D. L. (2011). Variability in L2 acquisition across L1 backgrounds. In L. P. & M. Schierloh (Eds.), *Selected Proceedings of the 2009 Second Language Research Forum* (pp. 152–163). Retrieved from http://www.lingref.com/cpp/slrf/2009/paper2532.pdf

Windsor, J., Kohnert, K., Lobitz, K. F., & Pham, G. T. (2010). Cross-language nonword repetition by bilingual and monolingual children. *American Journal of Speech-Language Pathology / American Speech-Language-Hearing Association*, *19*(4), 298–310. doi:10.1044/1058-0360(2010/09-0064)

Wong, B, E., & Teo, P. H. L. (2012). Elicited imitation as a measure of L2 English learners' interlanguage representation of relative clauses. *Electornic Journal of Foreign Language Teaching*, *9*(1), 91–107. Retrieved from http://e-flt.nus.edu.sg/v9n12012/wongbe.pdf

Yip, P. H. (2000). *The Chinese lexicon*. Routledge.

Yip, P., & Don, R. (2004). *Chinese: a comprehensive grammar*. London: Routledge.

Yip, V., & Matthews, S. (2007). *The bilingual child: early development and language contact.* Cambridge University Press.

Yu, C. L. M. (2012). *Sentence repetition in typically-developing Malaysian kindergarten Chinese children with Mandarin as their first language: a pilot study*. Unpublished master dissertation, University of Reading.

Zhang, F .C., & Yin, P. P. (2009). A study of pronunciation problems of English learners in China. *Asian Social Science*, *5*(6), 141–146.

Zhu, H. (2002). *Phonological development in specific contexts: studies of Chinese-speaking children*. Clevedon: Multilingual Matters Ltd.