

SEPARATING LANGUAGE DIFFERENCE FROM DISORDER FOR BILINGUAL SPEAKERS

The syntactic-semantic awareness of Chinese bidialectal
speakers learning English as a second language

Weifeng Han

Speech Pathology

School of Health Sciences

College of Nursing and Health Sciences

Thesis submitted in total fulfillment of the requirements for the degree

Doctor of Philosophy

25th July 2018

Table of contents

TABLE OF CONTENTS.....	I
LIST OF TABLES	IV
LIST OF FIGURES.....	VI
LIST OF BOXES.....	VII
LIST OF ABBREVIATIONS	VIII
ABSTRACT	IX
DECLARATION	XII
ACKNOWLEDGEMENTS	XIII
CHAPTER 1 INTRODUCTION	1
CHAPTER 2 LANGUAGE DEVELOPMENT AND ASSESSMENT	7
LANGUAGE DEVELOPMENT.....	8
<i>L1 development</i>	9
<i>L2 development</i>	11
BILINGUALISM, BIDIALECTISM AND THE RELATIONSHIP BETWEEN THEM	13
<i>Bilingualism and bidialectism</i>	13
<i>L1 bidialectism and L2 acquisition</i>	14
LANGUAGE ASSESSMENT OF BILINGUAL CHILDREN.....	16
<i>Assessment of typically developing bilingual children</i>	16
<i>Language impairment</i>	17
<i>Assessment of bilingual children with language impairment</i>	19
SUMMARY	20
CHAPTER 3 FURTHER THEORETICAL ISSUES, THE RATIONALE, AND THE RESEARCH QUESTION	22
ACCESS TO UG AND THE INITIAL STATE OF LEARNING IN L2.....	23
<i>UG and L2 learning</i>	24
<i>The L2 initial state</i>	29
CROSS-LINGUISTIC TRANSFER AND SECOND LANGUAGE LEARNABILITY	31
SYNTAX-SEMANTICS INTERFACE AND THE FORM-MEANING MISMATCH BETWEEN L1 AND L2	38
<i>Syntax-semantics interface</i>	39
<i>The form-meaning mismatch between L1 and L2</i>	41
<i>Sentence grammaticality and acceptability</i>	45
<i>Semantic role</i>	46
<i>A theoretical dilemma</i>	46
CHINESE AND CHINESE DIALECTS	47
<i>Overview</i>	48
<i>The phonological system</i>	51
<i>The writing system</i>	53
<i>The vocabulary</i>	53
<i>The syntax</i>	54
<i>Problems existing in current “Chinese” studies</i>	57
STUDY RATIONALE	59

RESEARCH QUESTION	61
SUMMARY	62
CHAPTER 4 METHODOLOGY	63
GENERAL HYPOTHESIS	63
SUB-HYPOTHESES	63
SELECTION OF THE MIXED METHOD	66
THE TWO-PHASE DESIGN	68
PARTICIPANT RECRUITMENT	70
<i>Ethical clearance</i>	70
<i>Places of recruitment</i>	70
<i>Language background questionnaire (LBQ)</i>	70
<i>Participant demographic and linguistic factors</i>	73
<i>Recruitment criteria</i>	79
<i>Sample size and power</i>	81
<i>The p-value</i>	82
<i>Recruitment procedure</i>	82
SUMMARY	85
CHAPTER 5 QUANTITATIVE ANALYSIS	86
INSTRUMENT DESIGN	86
<i>The sentence-picture matching task</i>	86
<i>Test structures</i>	87
INSTRUMENT CONSISTENCY AND VALIDITY	96
ADMINISTRATION AND SCORING PROCEDURES	101
ANALYSIS	103
<i>Independent variables</i>	103
<i>Missing data</i>	104
<i>Analysis plan</i>	107
RESULTS	108
<i>The t-test results</i>	109
<i>The ANOVA test results</i>	110
<i>The GLM test results</i>	118
INTERPRETATION OF THE QUANTITATIVE RESULTS	121
SUMMARY	123
CHAPTER 6 QUALITATIVE ANALYSIS	125
THE PROCEDURE	125
<i>Before the interview</i>	125
<i>During the interview</i>	126
<i>After the interview</i>	128
RIGOR	131
DATA CODING AND ANALYSIS	132
RESULTS	135
<i>The ONLY and the EVERY structures</i>	135
<i>The BUY and the T-C structures</i>	138
INTERPRETATION OF THE QUALITATIVE RESULTS	141
SUMMARY	141
CHAPTER 7 GENERAL DISCUSSION	143

UG ACCESS FOR CHILD L2 LEARNERS AND THE L2 INITIAL STATE.....	145
CROSS-LINGUISTIC TRANSFER AT THE SYNTAX-SEMANTICS INTERFACE.....	148
ABSTRACT REPRESENTATION IN L2.....	153
LANGUAGE DISTANCE AND L2 LEARNING.....	156
MULTI-COMPETENCE AND INPUT IN L2 LEARNING	158
THE DEMOGRAPHIC FACTORS IN L2 LEARNING	160
LANGUAGE DIFFERENCE AND DISORDER IN PLURALISTIC CONTEXTS	162
SUMMARY	164
CHAPTER 8 LIMITATIONS, IMPLICATIONS AND FUTURE RESEARCH	167
LIMITATIONS.....	168
IMPLICATIONS AND FUTURE RESEARCH	170
SUMMARY	178
CHAPTER 9 CONCLUSION	180
REFERENCES.....	183
APPENDICES.....	213
APPENDIX I - TEST TARGETS	213
APPENDIX II – RECRUITMENT PACKAGE	214
APPENDIX III – STATISTICAL OUTPUTS.....	215

List of tables

Table 1: Topicalization, Scrambling and Remnant Movement in German and English.....	27
Table 2: Readings of the double quantified structure in Japanese and English	28
Table 3: Categories of UG access	29
Table 4: UG access in L2.....	29
Table 5: L2 initial states.....	30
Table 6: First vs. second language acquisition	32
Table 7: The crosslinguistic form-meaning mismatch between English and Chinese (Mandarin and Wu)	44
Table 8: Difference in the degree of topic-prominence between Mandarin and Wu	50
Table 9: Summary of the test structures and predictions	65
Table 10: Choosing a mixed methods design	66
Table 11: Independent variables	72
Table 12: Participant demographic factors	74
Table 13: Parental demographic factors.....	76
Table 14: Participant language factors.....	78
Table 15: Parental language factors	79
Table 16: Expected ESL competence of grade four students in primary schools in China	80
Table 17: Participant recruitment criteria	81
Table 18: Steps in participant contact and recruitment	83
Table 19: Information provided to the participating parties	84
Table 20: Anonymity and confidentiality	85
Table 21: Examples of test sentences and pictures for the ONLY structure.....	89
Table 22: Examples of test sentences and pictures for the EVERY structure	91
Table 23: Examples of test sentences and pictures for the BUY structure	93
Table 24: Examples of test sentences and pictures for the T-C structure	95
Table 25: Strategies to ensure instrument consistency	97
Table 26: Threats to validity and the strategies	99
Table 27: Administration procedures of the phase one test	101
Table 28: Scoring procedures of the test.....	103
Table 29: Significant factors between groups.....	104
Table 30: Missing values	105
Table 31: Missing values - Summary of estimated means.....	106
Table 32: Missing values - Summary of estimated standard deviations	106
Table 33: Statistical tests employed and their purposes.....	107
Table 34: Overall points for each group	109
Table 35: Group statistics – initial comparison (overall performance).....	109
Table 36: Independent sample test – initial comparison (overall performance)	109
Table 37: Group statistics – initial comparison (structural performance).....	110
Table 38: Independent sample test – initial comparison (structural performance)	110
Table 39: ANOVA - Dialectal differences at the structural level	111
Table 40: Robust Tests of Equality of Means (Welch adjustment)	111
Table 41: Measures of association - Dialectal differences at the structural level	111
Table 42: Post Hoc multiple comparisons - Dialectal differences at the structural level	112

Table 43: Homogeneous subsets – The ONLY structure.....	114
Table 44: Homogeneous subsets – The EVERY structure	115
Table 45: Homogeneous subsets – The BUY Structure.....	116
Table 46: Homogeneous subsets – The T-C structure	117
Table 47: Correlation between the independent and dependent variables	118
Table 48: Univariate analysis of variance - Tests of between-subject effects at the structural level..	120
Table 49: T-test result and its meaning	121
Table 50: ANOVA result and its meaning.....	122
Table 51: GLM result and its meaning	123
Table 52: Nine steps to conduct individual interviews	128
Table 53: Procedures of data analysis after interview	130
Table 54: Qualitative rigor assurance procedures	131
Table 55: Coding summary.....	133
Table 56: Distribution of answers between the monodialectal and bidialectal interviewees.....	134

List of figures

Figure 1: L1 positive transfer.....	3
Figure 2: L1 negative transfer.....	4
Figure 3: Numbers of First-Language dialectal speakers of Chinese in China.....	49
Figure 4: Geographical distribution of Chinese dialects.....	49
Figure 5: Syntactic distance between the Chinese dialects.....	55
Figure 6: Convergent parallel mixed methods.....	68
Figure 7: The two phases design.....	69
Figure 8: Location of the four places of recruitment	70
Figure 9: Mean plots – The ONLY structure.....	114
Figure 10: Mean plots – The EVERY Structure	115
Figure 11: Mean plots – The BUY structure.....	116
Figure 12: Mean plots – The T-C structure.....	117
Figure 13: Dialectal continuum of the Beijing, Henan, Shanghai and Shaoxing participants	158

List of boxes

Box 1: Terms of Chinese and its dialects.....	56
Box 2: Example of the printed test targets used in the interview.....	126

List of abbreviations

<i>Abbr.</i>	<i>Meaning</i>	<i>First appears on</i>
ANOVA	Analysis of Variance	page 86
CDS	Child-Directed Speech	page 9
cL2A	Child Second Language Acquisition	page 2
CPH	Critical Period Hypothesis	page 23
DLD	Developmental Language Disorder	page 5
ESL	English as a Second Language	page 1
FLA	First Language Acquisition	page 10
GLM	General Linear Model	page 86
IH	Interface Hypothesis	page 30
L1	First Language	page 1
L2	Second Language	page 1
L2er	Second Language Learner	page 8
LAD	Language Acquisition Device	page 10
LBQ	Language Background Questionnaire	page 63
Ln	Additional Language	page 1
NP	Noun Phrase	page 46
QUAL	Qualitative Data Collection and Analysis	page 68
QUAN	Quantitative Data Collection and Analysis	page 68
SLA	Second Language Acquisition	page 7
SLP	Speech-Language Pathologist	page 2
SPMT	Sentence Picture Matching Task	page 68
SSP	Semantic Subset Principle	page 41
TD	Typically Developing	page 6
TL	Target Language	page 1
UG	Universal Grammar	page 6
UQ	Universal Quantification	page 42
VP	Verb Phrase	page 46

Abstract

Child second language acquisition (cL2A) is a much-debated topic in second language acquisition (SLA) studies (Blom & Unsworth, 2010), especially when it comes to the acquisition at various “interfaces” of the target language (Slabakova, 2008; White, 2009). For speech-language pathologists (SLPs), non-biased language assessment of bilingual children can be complex (Caesar & Kohler, 2007; Gillam, Peña, Bedore, Bohman, & Mendez-Perez, 2013). It becomes even more complicated, both theoretically and clinically, when involving first language (L1) bidialectal speakers. There has been, however, a lack of understanding of bidialectal children’s L1 syntactic and semantic development as well as a shortage of data on the development of L1 bidialectal children’s second language (L2) acquisition (W. Han, Brebner, & McAllister, 2016), especially at the “interfaces”.

Within the Universal Grammar (UG) framework, it is proposed that UG is common to all language learners. There are arguments, however, as to whether L2 learners have the same access to UG in L2 as L1 learners do, or whether all L2 learners have the same pattern of access to UG. This study is motivated by the need to link speech-language pathology and syntactic-semantic typological studies in a bidialectal/multidialectal vs. bilingual/multilingual context. Under the UG framework, it endeavors to reveal the interactive (whether positive or negative) relationship between L1 bidialectism and L2 acquisition by laying special emphasis on early L2 learners’ syntactic-semantic awareness. The general question, therefore, is “does first language bidialectism in Chinese impact on child learners’ second language syntactic-semantic interface awareness in English?”. Accordingly, the general hypothesis proposes that first language bidialectism has a positive impact on child learners’ second language syntactic-semantic interface awareness. The expected outcome of L1 bidialectism on L2, therefore, is that the more syntactically different the dialects of the first language are from each other, the better awareness the learner will have at the syntax-semantics interface in the second language.

Four structures are included in the study, that is the ambiguous focus (the *ONLY* structure), the negation of universal quantification (the *EVERY* structure), the ditransitive construction (the *BUY* structure), and the topic-comment construction (the *T-C* structure). All four structures have parallel forms in both English and the Chinese dialects under study (i.e. Mandarin and Wu). However, while the *ONLY* structure and the *EVERY* structure are ambiguous and have

two readings in English (i.e. the L2), they have only one of the readings in the Chinese dialects (i.e. the L1). On the contrary, for the *BUY* structure and the *T-C* structure, both are ambiguous and have two readings in L1 Chinese, but only one reading in L2 English.

In order to provide a more comprehensive understanding of the role L1 bidialectism may have onto the L2 learning at the syntax-semantics interface, a mixed method with both quantitative and qualitative analyses was adopted. Correspondingly, there was a two-phase design (i.e. phase one – the Sentence Picture Matching Task (SPMT) and phase two – the Interview). Altogether, there were 78 L1-monodialectal (Mandarin only) and 79 L1-bidialectal (Mandarin and Wu) participants recruited for the phase one SPMT. The top and bottom 10% from each group (15 monodialectal and 16 bidialectal) according to their SPMT scores were selected for the interview.

Quantitatively, an independent *t*-test was first performed. The results showed that the bidialectal groups had a better overall performance than the monodialectal groups. Taking a close look at each structure, the LSD post-hoc and the Tukey HSD homogeneity tests found, however, while bidialectal participants performed significantly better than the monodialectal participants for the *ONLY* and the *EVERY* structures, there was no significant difference between the two groups for the *BUY* or the *T-C* structures. The GLM model corroborated these results. The model further demonstrated that the participants' L1 dialectal background was the only factor that was related to their performance being significantly different between the monodialectal and bidialectal groups. The qualitative results helped explain why the participants had chosen the targets and showed at most that one group had better reasoning than the other. The results of the qualitative analysis suggest that this better performance came from the more complex L1 knowledge of the bidialectal participants. A general picture we can see from both the quantitative and qualitative analyses, therefore, is that L1 bidialectal advantage emerges when the same structure in L2 is semantically inclusive of that in L1, but not the other way around. That is, there is an L1 bidialectal advantage in L2 syntax-semantics interface acquisition when the same structure has more readings in the L2 than in the L1, but not vice versa.

The study results provide evidence to support that L2 learners have, at least, partial access to UG, and L1 bidialectism is an important variable to take into consideration in bilingual research and clinical practices with bilingual clients. One difference between L1 mono- and bidialectal learners is that while L1 knowledge is present for both groups, the bidialectals rely more on

UG to access the new language, and the monodialectals are subject more to the existing L1 knowledge. It is proposed that L1 bidialectals start at a higher level with better syntactic-semantic skills in L2 than their L1 monodialectal counterparts. This is because they have a better syntax-semantics interface awareness due to the complexities of their L1 dialects. That is, there is an L1 bidialectism benefit. Furthermore, the benefit of less L1 negative transfer does not necessarily come from learners' L2 proficiency or his/her amount of exposure to the target language.

As one of the few attempts to embed the L1 bidialectism in the L2 acquisition at the interface of syntax and semantics, the current study has shown that the bidialectism in the home language is a variable that researchers cannot afford to neglect. The value of this study, in the context of speech-language pathology and applied linguistics, in particular, is that it demonstrates that large groups of mono- and bidialectal speakers have different patterns at the syntax-semantics interface for L2. Therefore, there are multiple implications (methodological, theoretical and clinical) from this for future research.

Declaration

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Singed Weifeng Han

Date 6th February 2018

Acknowledgements

I wish to thank my supervisors, A/Prof. Chris Brebner, Ph.D., at Flinders University, South Australia and Prof. Sue McAllister, Ph.D., at the University of Sydney, but for whose tremendous support and consistent guidance, completion of my Ph.D. journey would be impossible. I appreciate all their contributions of time and ideas to make this journey challenging, stimulating, productive and rewarding. I could not have imagined having better mentors and friends. It has been an honor to be their student!

My gratitude also goes to the child participants and their parents/guardians from Beijing, Henan, Shanghai, and Shaoxing in China for their participation in the experiments and interviews. I also wish to thank the educational directors, school principals and teaching staff from these four places for allowing me to visit the schools, and for their assistance to help me to obtain language samples.

My sincere thanks go to my colleagues at Flinders University, who, through my annual seminars and reports, offered me insightful comments and ideas. I especially want to thank Prof. Rosalind Thornton and Prof. Stephen Crain for inviting me to share my research with colleagues at the ARC Centre of Excellence in Cognition and its Disorders, and the Centre for Language Sciences, Macquarie University, Sydney. I thank the colleagues from both centers for their valuable feedback from different perspectives as experimental linguists and speech-language pathologists. The clearer interpretation and more impartial application of the theoretical framework in this thesis, however, benefits a lot from my discussion with Prof. Thornton, Prof. Crain, and Prof. Klea Grohmann at the University of Cyprus. I thank them all!

I wish to acknowledge the following generous financial support, with which I could focus purely on the research itself: the Australian Government Research Training Program Scholarship (formerly the Australian Postgraduate Award, Department of Education and Training, Australia; CHESSN No.: 8610006901), the Ember Venning Research Scholarship in Speech Pathology (donation from Dr Elizabeth Kwan), and the Research Student Maintenance allowance (School of Health Sciences, Flinders University).

Last but not least, my special thanks go to my family. Thank you so much for sharing with me my laugh and tear, my excitement and frustration! Thank you for your love and support all the way through the journey! I dedicate this thesis to you!

[This page was intentionally left blank]

Chapter 1 Introduction

Accurately identifying language impairment in bilingual speakers is a primary concern in modern speech-language pathology studies and practice. This is true because no matter how “close” the two languages a bilingual speaks are, his/her second language (L2) is typologically different from the first language (L1) so that bilinguals, in terms of their linguistic knowledge, are definitively different from monolinguals. Therefore, diagnosis and assessment of bilingual speakers’ linguistic abilities is challenging, since measurement of bilinguals’ skills with monolingual norms will result in biased results (see Marinis & Chondrogianni, 2011; Oller, Pearson, & Cobo-Lewis, 2007; Paradis, 2005, 2010a; Patterson & Pearson, 2004; Thordardottir, Rothenberg, Rivard, & Naves, 2006 among many others).

Bilingual speakers are defined as people who speak two languages: L1 and L2. An L2 is conventionally understood as the second chronologically acquired language after the L1. In many studies today, however, it includes all other languages acquired. Therefore, some authors refer to L2 as “Ln” (i.e. the additional language) (e.g. Rothman, Cabrelli Amaro, & de Bot, 2013), or simply as the target language (TL) (e.g. Saviile-Troike, 2012). This study uses the term “bilingualism” to also refer to multilingualism, the ability to use one or more languages other than the L1.

Due to social, cultural, educational, or other demographic factors, a person speaking any language may take any other language as his/her L2, such as a Malay speaker learning Arabic, or a Tagalog speaker learning Cebuano. However, English is the language that has the largest number of L2 users. For example, Cook (2002, p. 3) estimated that there had been no less than one billion people worldwide having English as their L2. McArthur (2001) estimated the number to be up to 1.75 billion by including all varieties of English into consideration. While the biggest bilingual population takes English as a second language (ESL), the increase of Chinese immigration in English speaking countries and regions in the past few decades means that learners with Chinese as their L1 have become one of the biggest ESL populations in the world. For example, speakers using Mandarin or Cantonese as their home language have become the biggest bilingual population in Australia (combined up to 3.7% of all the Australian population; Australian Bureau of Statistics, 2016). This study, therefore, explores bilingualism with a particular consideration of Chinese L1 speakers learning English as an L2.

Child L2 learners are of major interest in both linguistics and speech-language pathology studies, not only because they represent a great number of ESL learners, it is also because of their “flexibility” in learning/acquiring languages in comparison to adult learners. Child second language acquisition (cL2A) refers to sequential bilingualism where the L2 acquisition happens after the age of three when fundamental rules in L1 have been established (see Lakshmanan, 2013, p. 71). From the cL2A perspective, this study is particularly interested in that while both child and adult learners enter the L2 acquisition after substantial L1 exposure, the learning outcomes may be very different (usually children are more successful L2 learners; see Chapter 2 for more details). Therefore, understanding child L2 learners’ acquisition of specific L2 properties, such as the acquisition at the syntax-semantics interface, is crucial to the understanding of language development in general (Unsworth, 2008). Also, an understanding of the role of L1 at the beginning of L2 acquisition will help inform speech-language pathologists (SLPs) in understanding and controlling L1 as a variable in language assessment and treatment. The aim, henceforth, is to contribute to the understanding of typical development in a previously unidentified group of bilingual-bidialectal children who may perform differently in the target language.

One challenge met by many cL2A studies, however, is when the child learners have “Chinese” as their L1. Although “Chinese” seems by default to refer to “Mandarin”, the term is usually used in a quite arbitrary manner. For example, Siu and Ho (2015) used “Chinese” to actually refer to “Cantonese”, a dialect of the former, in their study without proper definitions of either of the two terms. On the other hand, specific terms such as “Mandarin” and “Cantonese” are sometimes used instead of the vaguer term of “Chinese”. Only to single out such a handful of “representative” dialects, however, does not actually represent the big picture (see Chapter 3 for further discussion). Indeed, “Chinese” can be very different from each other. As Saville-Troike (2012, p. 9) has pointed out, for example, the typological differences between Taiwanese and Cantonese (both are southern dialects of Chinese) are so big that they are comparable to the differences between German and Swedish.

The above comparison is so true that some rather believe that Chinese dialects are indeed individual languages (Paul, 2007, p. 172). However, it is undoubted that a “Chinese” child L2 learner today can be Mandarin monodialectal or, quite possibly, bidialectal (Mandarin plus another non-standard dialect such as Cantonese or Wu, etc.). Therefore, to understand whether there are differences between the English-L2 outcomes of Chinese monodialectal and

bidialectal learners, and, providing there are differences, how and why L1 mono-or-bidialectism has an impact on the L2 acquisition, is indeed an imperative reality.

It is believed that L2 learners bring their L1 knowledge to the process of L2 acquisition, that is there is L1 transfer. The optimistic view is that bilinguals' L1 transfer can lead to advantages in linguistic awareness, which would be even better than those of the monolingual speakers'. For example, Korean learners of English are found to be more accurately aware of unreleased stops in English than English monolinguals (Chang & Mishler, 2012). Similar research also seemed to point to such an interlanguage speech intelligibility benefit, or native-language transfer benefit, stating that alignment of properties in L1 and L2 will favor the linguistic biases of the first language (see for example Bent & Bradlow, 2003; Best, McRoberts, & Goodell, 2001; Flege, 2002; Imai, Flege, & Walley, 2003; Pallier, Colome, & Sebastian-Galles, 2001; Smith, Bradlow, & Bent, 2003; van Wijngaarden, 2001; van Wijngaarden, Steeneken, & Houtgast, 2002 among many others). These studies, however, appeared to be overwhelmingly focusing on the positive transfer from the L1 phonological knowledge onto L2. Figure 1 below illustrates the L1 positive transfer:

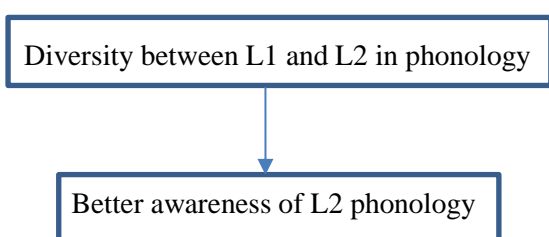


Figure 1: L1 positive transfer

(e.g. Korean (L1)-English (L2) bilinguals; Chang & Mishler, 2012)

On the contrary, there is no strong evidence proving the L1 transfer benefit in the L2 syntactic acquisition. Rather, many studies have implied that there are negative transfers of L1 on the L2 syntax. And the bigger the differences between L1 and L2 syntactically are, the more negative transfers there will be (e.g. Bransford, Brown, & Cocking, 2000; Nitschke, Kidd, & Serratrice, 2010). That is to say, when there are greater differences between L1 and L2, there will be more chances for the learner to apply knowledge from his/her native language to the target one(s) (Whitley, 2002), which will result in misuse, as presented in Figure 2. In this sense, Chinese-L1 learners will experience more negative transfers in syntax from their L1 in learning English as an L2, considering the huge syntactic typological differences between the two. This study explores if there is any difference in a monodialectal (e.g. Mandarin) learner's ESL learning

outcome in comparison with that of a bidialectal learner (e.g. Mandarin-Wu) when there are similarly large syntactic differences between the L1 and the L2.

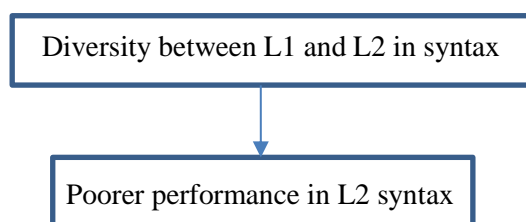


Figure 2: L1 negative transfer

(e.g. English (L1)-Spanish (L2) bilinguals; Whitley, 2002)

The interface between the language modules, such as the phonology-syntax, the morpho-syntax, or the syntax-semantics and syntax-pragmatics interfaces, is probably one of the most “non-transferrable” features in second language learning. While processing a sentence, one needs to combine all the lexical and grammatical meanings of each word and phrase and put them in a sequence (word order), that is the sentence is processed at the syntax-semantics interface.¹ The “closeness” between the syntactic modules and the semantic modules (Rothman & Slabakova, 2011) in L1, as well as the different processing models across L1 and L2, means such a syntax-semantics interface is not only at the core of first language processing, but, most possibly, an obstacle for L2 acquisition. In fact, the interface knowledge is believed to be vulnerable in the acquisition, which may result in developmental delays, or even fossilization (see Sorace & Serratrice, 2009; Tsimpli & Sorace, 2006). However, few studies in applied linguistics, even fewer in those of speech-language pathology, have provided a clear picture regarding the L2 syntax-semantics interface. For example, in Kaderavek’s (2011) discussion of issues of literacy, reading and writing for school-aged children, a whole chapter was spent on the intervention of aspects such as the phonological awareness, narrative skills, spelling, etc., but not syntax or semantics, let alone the interface between the two. One aim of this study, therefore, is to know if the L2 syntax-semantics interface is equally “vulnerable” in L1 monodialectal and bidialectal learners, and what this tells us about language disorders in bilingual children.

¹ Comparing to the syntactic-semantic interface, put in actual concrete contexts, the syntactic-pragmatic interface relates to how the multiple meanings of words and phrases are combined and used according to the specific situations where communication happens (Slabakova, 2010). The syntax-pragmatics interface, a rather dynamic feature more appropriately reflected by advanced learners (other than early/child learners), is not discussed in this study, however.

When talking about child language disorders, it seems that one predicament lies in its definition being more about what it is not than what it is (Paul & Norbury, 2007, p. 3). Language disorder study has a relatively “short” history. Language “problems” were traditionally viewed from the neurological perspective since the 19th century (e.g. Gall, 1825). It was not until the mid-20th century that the language deficits in children were taken into serious consideration by behavioral (e.g. Orton, 1937) and developmental (e.g. Gesell & Amatruda, 1947) scientists. It was only around 60 years ago that such “problems” or “deficits” in child language were reevaluated as “disorders”, when Myklebust (1954) established “language pathology”, a term of the distinct, and then new, field of study. Indeed, apart from obvious social communication inabilities, language disorder can be broadly defined as an impairment both receptive and expressive, which involves problems with the form (i.e. syntax) and/or content (i.e. semantics) of language (Paul & Norbury, 2007, pp. 3, 6). In this study, I observe such a broad definition of language disorder, and, therefore, use the terms “disorder” and “impairment” interchangeably without the intention to go into definitive issues of terminology.

Developmental language disorder (DLD) (see Bishop, 2017), therefore, refers to problems in child language development, which may arise from a wide range of causes, and cannot be simply accounted for by generally slow physical or psychological development (also see Bishop, 2004, 2008; Bishop & Norbury, 2008; Coady & Evans, 2008). Most children diagnosed with DLD are found to have primary deficits in syntax (Rescorla & Lee, 2001) and semantics (Ravid, Levie, & Avivi Ben-zvi, 2003). Most interestingly, children with language disorders, or impairments, are not found to make many syntactic errors in production (Paul, 2007). Rather, problems and deficits are often found in language comprehension, especially of sentences with complex syntax (see for example Catts, Fey, Zhang, & Tomblin, 1999; Scott, 2004; Tomblin, Zhang, Buckwalter, & O'Brien, 2003). For example, children with DLD are found to have particular problems in understanding sentences involving negation, passive voice, or relative clauses (RC) (Kuder, 1997). Such problems may very possibly come from the problems of processing and integrating meanings with syntax (Klein-Konigsberg, 1984), that is they arise from problems at the syntax-semantics interface.

DLD's prevalence is estimated at around 7% of children (Fox, Dodd, & Howard, 2002; Leonard, 2014). There is evidence that DLD has a genetic basis (Rice, 2000), and there is a gender difference (Leonard, 2014; Tomblin et al., 1997). However, as W. Han et al. (2016) pointed out, for bilingual speakers, while many problems with language production and

language comprehension in L2 are real disorders or impairments, others may simply be language differences, caused by the typological incongruence between L1 and L2 (also see Grech & McLeod, 2012; Kayser, 2002). Therefore, by examining bilingual children's performance at the L2 syntax-semantics interface I aim to reveal the similarities and/or differences of the L2 competence between the L1 monodialectal and bidialectal learners, and to provide both empirical and theoretical supports in future effort to separate differences from disorders.

The whole study is arranged as follows: after the current chapter of general introduction, Chapter 2 and 3 will review the key issues and theoretical foundations for the research. Specifically, Chapter 2 will begin with the definition and detail of second language development by comparing it with the first language development. Bilingualism and bidialectism will be introduced with a focus on the connection between L1 bidialectism and L2 acquisition, which is followed by the assessment of typically developing (TD) bilingual children and those with DLD. Issues such as the access to the Universal Grammar (UG) and the L2 initial state, cross-linguistic transfer and the syntax-semantics interface (one of the most vulnerable aspects in crosslinguistic transfer) will be discussed in detail in Chapter 3. Another key issue to clarify is the understanding, or rather the misunderstanding, of the term “Chinese” and its dialects. The rationale of the study will be explained, and the general research question will be presented, too. Chapter 4 deals with the methodological issues: the hypotheses, participant recruitment, the selection of mixed methods, etc. Following that, Chapter 5 and Chapter 6 present the detail of the quantitative and qualitative procedures and analyses. The results will be presented and initially interpreted. In-depth discussion will come after in Chapter 7. Specifically, it will explore the multiple relationships between UG, cross-linguistic transfer and L2 learning. The L2 initial state and L2 learners' access to the UG will be important issues to discuss. It will then investigate further issues such as language distance, multiple competence and input, the demographic factors, and, particularly, language differences and disorders in pluralistic contexts. Limitations of study will be identified and discussed in Chapter 8. After that, implications and directions for future research, both theoretical and clinical, will be provided. Specifically, the theoretical implications such as the definition of bilingualism, the cognitive and linguistic development, particularly at the interface level, as well as the clinical implications to SLPs with bilingual children as their clients, will be extended in full detail. The last chapter, Chapter 9, will summarize the whole study by reiterating its importance and contributions to both theoretical and applied linguistics and speech-language pathology.

Chapter 2 Language development and assessment

In this chapter, I will first review bilingualism and bidialectism by putting them in the context of first language and second language development. The relationship between typical bilingual development and that of monolinguals' will be further examined in comparison with bilinguals and monolinguals with language impairment. The weakness and bias in assessment and diagnosis of bilinguals through measurement of monolingual standards will be highlighted. Overall, this chapter is designed to help readers be aware that bilingualism and bidialectism are very common and can result in "language differences": the non-target-like performance caused by the negative influences from the existing linguistic knowledge. Bilingual children, however, might experience language disorder, either psychologically, neurologically or physically, in L1 or L2. While language differences and disorders can be difficult to differentiate, discriminating between the two is particularly important for L2 users, because it informs SLPs as well as language educators as when and to what extent "problems" in the target language need clinical intervention. In this sense, understanding the impact of L1 bidialectism on language differences in L2 is of great use for practitioners in a multicultural and multilingual context where their bilingual clients' L1 dialectal backgrounds are complex.

First, bilingualism and bidialectism are two different, yet closely related, topics in the studies of language acquisition and development. While bilingualism refers to the command of two distinct languages that differ in all levels of syntax, lexicon, pragmatics, writing systems etc. (see Bhatia & Ritchie, 2004), bidialectism, refers to the co-existence of knowledge of two similar linguistic varieties that share a great amount of the same lexicon and grammar (ibid; also see Richards, Platt, & Weber, 1985; Rickford, 1996). Broadly speaking, a bilingual speaker and a bidialectal speaker are both exposed to inputs from two different linguistic varieties. An L1 bidialectal speaker learning a second language, therefore, is typologically exposed to three different linguistic inputs. However, it is unclear if first language bidialectism has any impact on second language acquisition (SLA). In fact, even the relationship with respect to typically developing bilinguals and monolinguals, as well as to bilinguals with language impairments, has not received adequate attention (Paradis, 2010a), either.

Language disorder or impairment is another important issue to be considered. Generally, a speaker with language impairment is defined as having linguistic difficulties in language

production and/or comprehension as compared to their peers with similar linguistic exposure (Bedore & Peña, 2008). However, inaccurate assessment and misdiagnosis of language impairment are more common in second language learners (L2ers). For speech-language pathologists, unbiased language assessment of bilingual children can be complex (Gillam et al., 2013). It becomes even more complicated when involving bidialectal L1 speakers, since the L2 learning process involves learners' pre-existing knowledge of two, instead of one, linguistic systems distinctive to the target language system.

Overall, as mentioned earlier, for speakers with bidialectal and/or bilingual knowledge, to distinguish true language impairment from normal language difference has not been easy in practice due to inappropriate assessments and a lack of normative data (Kohnert, 2010; Teoh, Brebner, & McCormack, 2012). In fact, there are no unified understandings and/or standards for identification of bilinguals' language impairment (Broomfield & Dodd, 2004), except a general agreement that impairment will be evident in all languages (Kohnert, 2010). Therefore, an important determinant in differentiating cross-linguistic differences from disorder is to know that if the impairment is present then there is a chance it will be present in both languages.

Language development

Language development is an acquisition process specific to human beings, which even starts before birth (Graven & Browne, 2008). The processes of primary language (i.e. L1) acquisition and additional language (i.e. L2) acquisition, however, largely observe the same route and sequence (R. Ellis, 2008; R. Mitchell & Myles, 1998) whether one takes a behaviourist view (Ramscar & Yarlett, 2007), a nativist view (e.g. Hawkins, 2001a, 2001b), a connectionist view (e.g. N. Ellis & Schmidt, 1997; Sokolik & Smith, 1992), an empiricist view (e.g. Plunkett & Wood, 2004; Slater & Oates, 2005), or an interactionist (e.g. Gass, 1997; Long, 1996) and a sociocultural view (e.g. Lantolf, 2000; Vygotsky, 1986). Learners complete their first language development within the so-called "critical period", a period (starts from the age of two and ends around puberty) after which complete and native-like language acquisition is said to be impossible (see Krashen, 1981, 1982). Such a critical period is also "critical" to child second language learners. Therefore, a basic understanding of L1 development is important before a detailed discussion of L2 development.

L1 development

In the long history of evolution, for human beings, one of the quintessential traits is the biological and psychological readiness for language development or acquisition. Undoubtedly, the ability for language acquisition is one subset of human beings' ability to learn concepts and to acquire knowledge.² For example, the three mechanisms of sentence generation, that is complementization, relativization and coordination (Lightfoot, 2010) not only shape the way of language production but also reflect how logic and relations of events are organized.

There are quite a few established theories that try to explain the mechanism of first language development. From the psychological perspective, behaviorists believe that language acquisition is an interaction of stimuli (input) and responses (output) (Ramscar & Yarlett, 2007). Instructions, therefore, are considered as one key to successful language learning. Child-directed speech (CDS) (e.g. Tomasello, 2003), in the view of an empiricist linguist, is also believed to be critical in the process of acquisition. Social-interactionism, from the social/interactive perspective, believes that language acquisition is basically a process of learning forms of meaningful moves of communication that mainly involves syntax and function (Moerk, 1994). Therefore, they put the focus on feedback and reinforcement in the process of language acquisition. It is different from traditional (radical) behaviourism in that it views learners as active participants in the learning process through dynamic interaction with the learning environment rather than passive receivers of conditioning (Baum, 2011; Moxley, 2004). Researchers in the relational frame also agree that language is learned via a system of inherent reinforcement (e.g. Hayes, Barnes-Holmes, & Roche, 2001). On the other hand, emergentists, taking the biological and cognitive perspective, propose that the interactions between the environment, the biological pressures, and cognitive processes result in language acquisition. And one specific end result is the acquisition of grammar (MacWhinney, 1999). Furthermore, the universal-typological theory³ considers universal language principles (as contrary to "parameters" that are typologically different between individual languages) as the

² The question as to whether the linguistic ability is only a part of a more general cognitive competence as modern cognitive theories propose or it is indeed an independent ability, which is unique to human beings, that parallels other general cognitive abilities, is more of metaphysical arguments, and is not germane to the current discussion.

³ It should be noted that Universal Grammar is a mental construct, while the Universal Typology refers to the actual data ready for verification. As related as the two are, they should by no means be compared on the same basis.

key of language acquisition, under which interlanguage development is constrained or inhibited (VanPatten & Benati, 2010, p. 161).

Unlike the above theories, nativism attributes language acquisition to a set of Language Acquisition Devices (LAD), which human beings are naturally born with. It is believed that the LAD helps to build implicit and abstract syntactic and semantic rules of a particular language based on the very limited and sometimes ill-formed inputs (Baker, 2002; Chomsky, 1959, 1971, 1975; Pinker, 1994, 1995, 2007). In fact, the input is a critical aspect of the process of language acquisition. In the monitor model (see for example Krashen, 1981; Krashen, 1982, 1985, 1989), comprehensible input, rather than output, is proposed to be most beneficial for the language learners. As the “*i+1*” hypothesis claims, the input that equals to the existing knowledge of the learner (*i*; that is the interlanguage of a second language learner) plus a bit of new knowledge (*1*) is most helpful for learners to move onto the next stage of acquisition.

The “poverty of stimulus” argument (e.g. Chomsky, 1988; Clark & Lappin, 2010; Laurence & Margolis, 2001) points to the fact that children’s exposure to the limited inputs is not sufficient for the successful acquisition of the syntax in a language, unless there are some innate linguistic capacities that facilitate the whole process. In accordance with Montrul (2008, p. 269) I adopt the stance that input in language development consists of both physical and cognitive elements. While external factors such as the speech sound or the writing are physical inputs, it is our minds that perceive and organize the physical inputs and internalize and categorize them at the levels of lexicon, syntax, semantics, pragmatics, etc. The data are then computed at these different levels to form rules. That is the raw data of language are analyzed to form a grammar that learners later use to operate and execute linguistics operations at the multi-levels of morphology, syntax, semantics, etc., as well as the interfaces between them (see for example Murphy, 2015 for the latest development of linguistic computation).

Age is also considered to be critical in first language acquisition (FLA). For example, children between the age of three and five have been found to show the consistent development of grammatical morphemes and clausal structures, while it is from the age of six up to 10 that children begin to refine the complex structures in the L1 (R. Brown, 1973). Such developmental stages of language are universal, regardless of the child learner’s socio-cultural, or language backgrounds (Radford, Atkinson, Britain, Clahsen, & Spencer, 2009). Neuro-linguistically, however, studies have provided evidence that L1 acquisition and L2 acquisition are represented

differently in the cortex, that is the neuro-physical processes in FLA do not parallel those in the SLA (see Sakai, 2005).

L2 development

Broadly speaking, the “second language” in L2 acquisition can refer to any additional language other than the speaker’s first language. It can be a second, third or any subsequent languages (Gass & Selinker, 2008, p. 7). Generally, L2 acquisition develops and progresses through five stages (see J. Haynes, 2007, pp. 29-35), which are roughly comparable to those of the FLA (also see R. Ellis, 2008, pp. 73-75), that is the preproduction stage, the early production stage, the speech emergence stage, the intermediate fluency stage (during which complicated structures are used) and the advanced fluency stage (during which even more complicated structures are used).

Although there are many comparable aspects between L1 and L2 development, by nature, the L2 development has a few aspects unparalleled with that of L1. For example, while SLA also relies on the mechanism of input (Cook, 2008, p. 215), whether the input in the L2 acquisition is as important as that in the L1 acquisition remains questionable. Swain (1991), for example, proposes that input alone is far from being sufficient in L2 development. However, in the L2 learning process, the second language is not acquired in a vacuum, in which the learner’s first language is absent. Rather, there are consistent interactions between the two (Lightbown & Spada, 2006, pp. 93-96).

One noticeable issue in L2 development, therefore, is that L2 learners enter into learning the additional language with knowledge of at least one language. Although every second language learner will bring their L1 knowledge in the process of L2 acquisition (i.e. L1 transfer in L2), the extent to which they are influenced by the L1 varies, which leads to differential outcomes of acquisition and divergent performance among the learners (Montrul, 2008, p. 5). Unlike the outcome of L1 acquisition, that of the L2 acquisition often appears to be incomplete, and this is due to the L1 negative transfer (i.e. non-target-like influences by L1). When the L1 negative transfer persists and the corresponding target-language like performance is not ultimately achieved, fossilization happens and the L2 performance (the phonetics, morphology, syntax, etc.) is more L1, rather than L2, like (Montrul, 2008, p. 19).

It is a fact that any child with intelligence in the normal range and in normal circumstances will completely acquire the core rules of their L1 (phonology, morphology, syntax, semantics, etc.) before six years of age by simply being exposed to natural inputs (which are, by the way, filled with “mistakes”), disregarding their gender, personality, ethnicity, parental educational backgrounds, etc. In fact, L1 learners do not even need overt motivation to learn a language. Bearing such a fact in mind, one of the biggest questions about L2 development is why some learners turn out to be more successful than others? Age has always been considered as a factor (Singleton & Lengyel, 1995). It seems that child learners will more likely attain native-like competence than adolescent or adult learners in L2 (Birdsong, 1999). Such a general pattern has indeed raised debates as per whether adults and children access the second language in the same way.

Another distinct feature in L2 development is that L2 users are often found to have superior cognitive abilities and better metalinguistic awareness than L1 monolingual users. Singh et al. (2015), for example, find, at a very early age (6 months), infants exposed to both L1 and L2 demonstrate more efficiency in stimulus encoding and improved recognition memory for familiar stimuli than those exposed to only L1. Metalinguistic awareness is defined “as the ability to step back...so to speak, from the comprehension or production of language to analyze its form” (Romaine, 1999, p. 272). Meta-linguistically, L2 learners show a greater advantage of recall for concrete over abstract words (Paivio, Clark, & Lambert, 1988). They can select and integrate into a sentence the correct meanings of homographs by explicitly knowing why the meanings are “appropriate” (Hoversten & Traxler, 2016). Greater cross-trial consistency is also found in terms of phonetics: L2 users are found to show better performance in evoking responses in neural encoding tests (Krizman, Slater, Skoe, Marian, & Kraus, 2015). In Krizman et al.'s (2015) test, auditory brainstem responses were recorded to the synthesized syllables ‘ba’ and ‘ga’ in two groups age-matched children. The study found that increasing bilingual experience leads to more robust F0 encoding and greater neural consistency, which supported that bilingualism enhances both cortical and subcortical auditory processing (also see Krizman, Marian, Shook, Skoe, & Kraus, 2012; McNealy, Mazziotta, & Dapretto, 2011). Bialystok (2007), in her review of Bialystok (2006); Bialystok et al. (2005); Bialystok, Craik, and Ryan (2006); Bialystok and Martin (2004); McDowd and Shaw (2000); Park (2000), suggested that, cognitively, adult speakers, with normal cognitive aging, declined in their abilities of executive language processes. However, child speakers were suggested to have more enhanced attentional control in language than adult speakers, while child L2 users were found to be more

competent and more efficient in executing executive processing than their monolingual counterparts. Furthermore, proficient L2 users have the ability to selectively access information associated with the contextually cued language and dynamically adapt to contextual cues, such as context biased monographs (Hoversten & Traxler, 2016). The interdependence between L1 and L2 apparently facilitates the underlying proficiency in both languages a bilingual speaker uses (Cummings, 2000). Therefore, a re-examination of whether a second language learner still has access to some innate linguistic mechanisms in the process of SLA (Thomas, 1991), or not (Meisel, 1997), may provide the key as to the cognitive advantages L2 users may have.

Bilingualism, bidialectism and the relationship between them

Bilingualism and bidialectism

People use more than one language as the means of daily communication in most communities in the world today (Cook, 2002). This means bilingual people find themselves in most communities in the modern world. Bilingualism, therefore, refers to the speakers' knowledge of a second, or more, language(s), in addition to his/her L1. Such a command of the additional language(s), however, may not live up to the proficiency of the L1 (Montrul, 2008, p. 17).

Grosjean (1989) defined a bilingual speaker as one who speaks two or more languages in everyday life. Such a usage-based definition refers to bilinguals as those who demonstrate implicit knowledge of grammar, while perfect explicit knowledge is not required. Although termed as "bilingual", people who speak two languages can be either simultaneous bilinguals or sequential bilinguals. Usually, children who have exposure to a naturalistic linguistic environment that includes more than one language up to the age of three years are defined as being simultaneous bilinguals. According to Grech and McLeod (2012), simultaneous bilinguals can be further categorized into three sub-types, that is those who have exposure to two or more languages from birth, those who use two or more languages for basic everyday functioning, and those who show equal proficiency in two or more languages. In fact, bilingual children are either balanced simultaneous bilinguals or, in most cases, more proficient in one and less proficient in the other. Sequential bilinguals, on the other hand, refer to those who start to learn a second language after the age of three when their first language has been comparably acquired (Genesee, Paradis, & Crago, 2011). Realistically, immigrant children and children

learning English as a second language at school compose the majority of sequential bilinguals (Montrul, 2008, p. 30).

As bilingualism refers to the command of two different languages, bidialectism refers to the command of two different varieties within the same language. In fact, it is economic or socio-politic, rather than linguistic issues that are taken into consideration as to whether a linguistic variety in a community is characterized as a dialect or a language (Contossopoulos, 1994; Pavlou, 1990; Sciriha, 1995, 1996). This probably explains why while the German spoken in Berlin and Bonn are recognized as two dialects of the same language, Swiss German and High German are often compared as two languages. In this sense, although Chinese dialects may differ from each other in many linguistic aspects, such as phonology, syntax (especially word order) and lexicon, socio-politically as well as pedagogically, they form a relation of varieties under the same language of “Chinese”. Though one needs to be aware that Chinese dialects are more akin to what linguists would call distinct, but genetically related “languages”, I, following Han, Arppe and Newman (2013), defer to the common tradition of referring to the Chinese varieties under investigation (such as Mandarin and Wu) as “dialects”. A person who speaks both Mandarin and Wu is, therefore, recognized as a Chinese bidialectal speaker.⁴

L1 bidialectals are claimed to have more structural choices than L1 monodialectals to access the same structure in L2 (Giancaspro, Halloran, & Iverson, 2015). For example, Hermas (2014a) finds the relative complementizer phrase structures in the multiple L1 dialects can be used as structural references by an L1 bidialectal to approach to the same structure in L2, while L1 monodialectal were not found to be able to do the same in L2. The influence of L1 bidialectism on L2 syntactic-semantic acquisition, however, is an area that has not received adequate attention yet.

L1 bidialectism and L2 acquisition

As there are studies showing that bilingual speakers, compared to monolingual ones, have better language awareness and are less subject to cross-linguistic syntactic interference when there are high comprehension demands (see for example Filippi, Leech, Thomas, Green, & Dick, 2012; Leung, 2005), similar advantages are also found for bidialectals as opposed to their

⁴ Such a terminological consideration is not intended for theoretical argument and it does not affect the design of this study or the results.

monodialectal counterparts. Kouridou (2009), for example, finds that, overall, bidialectal speakers outperform monodialectal learners in tests of lexicon, morphology, and syntax in the target language. Multiple advantages, therefore, could be expected, if bilingualism and L1 bidialectism are combined. That is to say, L1 bidialectals may have advantages over L1 monodialectals in L2 learning. Therefore, research of L2 acquisition under first language bidialectism has been recommended (e.g. Kouridou, 2007; Sittisakpaiboon, 2008).

Learning in general, just as Ringbom (2007, p. 1) has pointed out, “is based on prior knowledge. When you learn something new, such as a foreign language, you try to connect the new elements to whatever linguistic and other knowledge you may have”. Previous knowledge, therefore, is of paramount importance in the L2 acquisition. A well-accepted view of the role of the existing L1 knowledge in the process of L2 learning is that the former constitutes the initial state of the latter (see Schwartz & Sprouse, 1996). The L1 knowledge, however, does not comprise the entirety of the L2 initial state. Under the UG framework, UG is what L2 learners have to first access the target language. Although there remain arguments as to whether L2 acquisition also involves cognitive acquisition devices, such as the UG, as the L1 acquisition does (see Schlyter, 1993; Schlyter & Håkansson, 1994), related research indicates that it is possible that L1 bidialectals are at a greater advantage than the monodialectals, to access the L2. For example, Kouridou (2009) found that bidialectal children who were able to use both Standard Greek and Cypriot Greek in Cyprus outperformed in all tests (vocabulary, grammar, phonology, etc.) in English as the second language than the age-matched monodialectals who only spoke Standard Greek. Therefore, the speakers’ existing L1 knowledge of syntax and semantics is particularly important since they are relied on to deduct the syntactic and semantic rules of the target language based on limited inputs. One implication from the related studies is that the more diversified previous linguistic knowledge is, the better the tasks are performed in the target language (cf. De Angelis, 2008).

A learner has syntactic awareness if s/he shows explicit knowledge and control of the syntactic rules in the language (Gombert, 1992, p. 39). Past studies of syntactic awareness of standard languages such as English (Sutter & Johnson, 1990), Spanish (Mayo, Ibarrola, & Liceras, 2005; Mayo & Olaizola, 2010), Italian (Rossi & Pontecorvo, 1989), Dutch (Cornips & Hulk, 2006), Portuguese (Flores, 1995), Swedish (Ostern, 1991), Kond (Dash & Mishra, 1992), etc., have confirmed that, overall, metalinguistic awareness is a key factor for L1 bidialectals to successfully acquire the L2.

Due to the two varieties that exist in their first language, as well as their active metalinguistic awareness, L1 bidialectals may show advantages in transferring the existing syntactic and semantic knowledge to the acquisition of the same knowledge in the target language (also see Kouridou, 2009). Therefore, exploration of the syntactic-semantic features in a language that is less studied, such as Chinese with multiple dialects, is helpful for the understanding of child language learners' meta-syntactic and meta-semantic development. Although little research has been published on the aspects of L2 syntactic-semantic awareness of L1 bidialectal learners, there are studies claiming that bidialectal speakers may improve their syntactic awareness in L2 more than those speaking only the standard variety (e.g. K. K.-S. Tsang & Stokes, 2001). It is also suggested (e.g. Papapavlou & Kouridou, 2007) that bidialectals are more syntactically and semantically sensitive than monodialectals. Such extra sensitivities may be of great help for L1 bidialectals to access the syntax and semantics in L2.

Language assessment of bilingual children

Assessment of typically developing bilingual children

The first question to ask is with what standard should bilingual children be assessed? An earlier study by Thordardottir and her colleagues (Thordardottir et al., 2006) found when being measured by monolingual measures, French-English bilinguals (age, 2;5) generally scored lower than the monolingual expectations on vocabulary and syntax. The researchers found that the French-English bilinguals scored lower in both languages by the monolingual measures, while the performance in English was consistently poorer than in French. Oller et al. (2007) then pointed to a “lag-behind” phenomena for bilingual children in vocabulary performance when tested by monolingual measures. Patterson and Pearson (2004) also found “difficulties” in their Spanish-English bilingual toddler participants' lexical development. Due to the fact that there has not been enough research that directly compares TD bilingual children and TD monolinguals as to their performances on linguistic tasks (see Paradis, 2010a), it is not conclusive that bilingual speakers actually “lag behind” in the performance of conceptual vocabulary. The fact is although bilinguals scored lower in early stages, they can later catch up quickly even in monolingual tests (Paradis, 2010a).

Paradis (2005) compared, based on their chronological age, bilingual children's ESL tense-morpheme performance using the TEGI (Test of Early Grammatical Impairment; see Rice & Wexler, 2001) criterion. The grammatical probes from TEGI in tense morphemes included separate probes for auxiliary (BE and DO), regular past tense (PASTREG) and irregular past tense (PASTIRREG), and third person singular (TPS). The elicited grammar composite scores yielded from TEGI represented an overall percentage correct score as an average calculation from the individual probe scores. The probe scores were raw scores and could be used independently from norm-referenced interpretations. The results showed that only three out of the 24 participants (12.5%) in the study performed within the criterion, while the rest (over 87%) yielded a score comparable to monolinguals with language impairment. The results indicated that there were overlapping linguistic characteristics between bilinguals' L2 and monolinguals with DLD. Therefore, using only monolingual tasks may lead to misidentification of bilinguals' L2 performance as language impairment.

There is evidence that bilingual children whose linguistic knowledge is still developing are not appropriately comparable with monolingual children using the same monolingual norms. For example, in a longitudinal study, Paradis (2010a) found that most TD sequential bilingual children's overall English performance at the age of 7;6 is similar to TD monolingual children at three years of age or those monolinguals with DLD at 5;6. Similarly, Muñoz et al. (1999) found a set of code switches typified as disorders by bilingual speakers with and without aphasia. Although most studies point to differences between rates of language development, some studies (e.g. Marinis & Chondrogianni, 2011) argue that the development stages in bilingual children resemble those in monolinguals. The above "discouraging" results, however, clearly show that bilingual children's L2 development is not comparable to monolingual children (even those with DLD) at a young age if assessed by monolingual criteria.

Language impairment

A child can be diagnosed as having language impairment⁵ if his/her language does not develop "normally" (see Bishop & Norbury, 2008), although there might be no apparent reasons for

⁵ It may be generally accepted that language impairment is mainly a genetic disorder (see Bishop, 2006). However, terms such as "developmental dysphasia" or "developmental aphasia" can be misleading since language impairment is not always caused by brain damage (Ingram & Reid, 1956). Other terms, such as SLCN (Speech, Language and Communication Needs) in the UK system, cover a wider range of causes in speech and language difficulties and thus less discriminating. However, it is not the purpose of the current study to argue about terminologies.

such a “non-normal” development. Language impairment is actually a term reserved for school children who have those common language difficulties such as misuse and/or misunderstanding of complex sentences (Thal & Katich, 1996). It is estimated that approximately 7% of the general population, including both monolingual and bilingual speakers, is affected by language impairment, or developmental language disorder, a disorder that can be neurodevelopmental (Leonard, 2014; Meir, Walters, & Armon-Lotem, 2016; Rice, 2004) and mainly genetically inherited (Bishop, 2006). Therefore, for children with DLD, their neurocognitive and linguistic development could experience severe disruption and thus could be very difficult (Rice, 2004). Although the hearing and intellectual abilities of children with DLD may fall within normal limits, and they usually exhibit no acquired neurological damage, or motor problems in producing speech (Leonard, 2014; Rice, 2004), their general language abilities are not comparable to age expectations.

Children with language impairment exhibit an overall linguistic competence, such as lexical and discourse-pragmatic abilities, below age-matched typically developing children. Tomblin et al. (1996), in particular, propose that grammar is one of the most important language domains and modalities to look into in the studies of language impairment. This is true since when it comes to morphosyntax, children with DLD are found to perform morphosyntactic tasks more poorly than younger TD children (see Paradis, 2010a for example), which suggests that morphosyntax is the linguistic domain most difficult to master for children with language impairment (see Kohnert & Ebert, 2010; Kohnert & Medina, 2009; also see Leonard, 2014; Rice, 2004 for further discussions).

The linguistic parallels found between TD sequential bilingual children and children with impairment, however, poses a major challenge for the studies of bilingual DLD (Crago & Paradis, 2003). For example, Armon-Lotem (2014) compared TD English-Hebrew (4;6) and Russian-Hebrew (6;0) bilingual speakers with impaired Hebrew monolinguals (7;9) and claimed that bilingual children have similar morphosyntactic competence as impaired monolinguals. Watkins and Rice’s (1991) study of the use of prepositions among TD English-Hebrew bilingual children, and their age-matched monolingual and bilingual peers with language impairment (4;5-5;7) also supports such a claim. Other studies (for example Dromi, Leonard, Adam, & Zadunaisky-Ehrlich, 1999; Paradis, 2007; Paradis, Crago, & Genesee, 2005; Paradis, Crago, Genesee, & Rice, 2003) suggest, however, bilingual children do not always lag behind monolinguals, even when both groups are identified with DLD. In fact, bilinguals may

even do better in some respects, such as their awareness at the morpho-syntax interface, compared to their monolingual counterparts.

Assessment of bilingual children with language impairment

Assessment and diagnosis of bilingual children with language impairment have always been challenging. One of the most recognized problems is that bilingual children are overrepresented in special education and in speech-language pathology services (see for example Chiat, 2010; Cummings, 2000; Donovan & Cross, 2002; Klingner & Artiles, 2003). Due to the overlap in linguistic characteristics and comparable features in language performance between TD bilingual children and monolingual children with DLD, and between bilingual children with and without DLD, the over-identification of typically developing bilinguals with DLD could happen (Paradis, 2010a).

However, there are more and more comparative studies between TD bilingual children and monolingual children with DLD, and those between bilingual and monolingual children with DLD, suggesting that monolingual standards could be misleading and are, therefore, not ideal for the measurement of bilinguals. Indeed, it is most complicated and challenging for an unbiased and accurate diagnosis of bilinguals with DLD.

For bilinguals (with or without DLD), it is suggested that they will draw on the structures in one language to acquire the related ones in the other (Döpke, 2000; Hulk & Müller, 2000). Such structural parallels can easily lead to the overuse (or misuse) of certain structures in the target language. For example, while English-Spanish child learners tend to overuse pronominal subjects in Spanish due to the obligatory subject in English (Silva-Corvalán, Johnson, Montes, & Sick, 2009), Spanish-English young learners appear to be over-sensitive to the BE verb in English because of the copular dichotomy, that is *ser* vs. *estar*, in Spanish (Fernández Fuertes & Kiceras, 2008). Also, the similar performance between TD bilinguals and monolinguals with DLD in the domain of morphosyntax (Chiat, 2010), especially tense and inflection, has also made the accurate identification of children with DLD “definitely problematic” (Gathercole, 2010). In theory, bilingual children can be diagnosed as experiencing language impairment or disorder only if they are impaired in both languages (Armon-Lotem, 2010).

Bilingual children are more vulnerable when assessed with monolingual standards, since, diagnosed against trends learned from monolingual data alone, bilinguals tend to have poorer

language skills than expected for monolinguals (Hope et al., 2015). It might be true that if there is impairment in lexical access, a language with more use of inflectional morphemes will also be impaired, or a language in which sentences are more organized through word order will be impaired if a deficit at the syntactic level occurs (Lorenzen & Murray, 2008). However, problems in lexical access or syntax in the second language do not necessarily suggest impairment in morphological inflections or word ordered structures in the first language. In fact, actual linguistic performance varies from person to person, and that is why abilities in each language for bilinguals should not be assumed as equivalent. In other words, being bilingual does not imply equal proficiency or accuracy in all modules of both languages (Muñoz & Marquardt, 2003). And as Ortega (2011, p. 4) has pointed out, the divergence among L2 learners should not be read as evidence of “failed” attainment.

Support for bilingual children in the process of assessment or diagnosis, as suggested, should differ from those given to monolinguals (Håkansson, 2010). This is particularly true considering the fact that four out of five bilingual children are assessed in L2 (which is the dominant language(s) of the communities where they live) with monolingual tests and standards (Jordaan, 2008). As the coexistence of multiple languages in a community represents a reality, therefore, monolingual assessment should no longer be implemented with the bilingual/multilingual population (Thordardottir, Cloutier, Ménard, Pelland-Blais, & Rvachew, 2015).

Summary

Some key issues and ideas of language development and assessment are introduced in this chapter. Both the first and second language development are reviewed. It is found that although L1 and L2 can be typologically very different from each other, the process of L2 development is comparable to that of the L1. However, bilingual users are believed to show both cognitive advantages and better linguistic awareness over their monolingual counterparts. The terms of bilingualism and bidialectism are then discussed. As L2 may refer to any additional language(s) acquired after the L1, bilingualism refers to the command of two or more languages. Bidialectism, however, means the ability to use two varieties of the same language. Bilingualism and bidialectism may co-exist. However, L1 bidialectism is proposed to be facilitative in L2 learning. Finally, issues in the assessment of bilingual children are briefly

reviewed. It is generally agreed that monolingual standards are not most suitable to use to assess bilingual children, with or without language impairment. Overall, review in this chapter has pointed to that although L2 development is not exactly the same as the L1 development, the two share a lot of similarities as per the developmental processes.

The next chapter, Chapter 3, therefore, will address the above two issues by closely looking into the initial stages in L2 learning, L2 learners' access to the innate capacity for language (i.e. UG), as well as the crosslinguistic transfer of L1 in the process of L2 learning. The syntax-semantics interface, and the possible form-meaning mismatch between L1 and L2 it may lead to, will also be discussed in detail. The rationale and the research question will then be presented after the clarification of the term of "Chinese" and its dialects.

Chapter 3 Further theoretical issues, the rationale, and the research question

Following the two major concerns the previous chapter has pointed out with regard to L2 learning, this chapter will first focus on L2 learners' ability to access UG, that is the innate capacity for language. Under the UG framework, therefore, it comprises the initial state of L2 learning before any L1 cross-linguistic transfer could happen. The role of the crosslinguistic transfer of L1 in L2 will also be explained in detail. After that, the syntax-semantics interface, and the typological differences across languages at the interface will be introduced, with a focus on the interaction between the syntax and semantics of L1 bidialectism and L2 learnability. It will be pointed out that English and other Romance languages, due to their richness in morphological inflections and/or derivations (Tsarfaty, Seddah, Kübler, & Nivre, 2013), have provided SLPs with great opportunities to study morphological markers that may signal language impairment across languages. In turn, most cross-linguistic studies of the morphosyntactic aspects of language impairment focus on morphological problems such as inflections and/or tense marking.

Findings regarding morphological markers, however, are not so helpful for the assessment of Chinese speakers as that of Romance language speakers. It is because Chinese and its dialects have very limited tense marking and inflectional devices, assessment of which, therefore, is not as informative as that of morphologically rich languages⁶. In fact, from a cross-linguistic perspective, the biggest typological difference between Chinese and English (or other Romance languages) is that, syntactically, the former is a "Topic-Prominent" language having "Topic-Comment" as its basic sentence/clause structure, while the latter belongs to "Subject-Prominent" languages that have a basic syntactic structure of "Subject-Predicate" (C. N. Li & Thompson, 1976, 1981). Such a typological distinction in syntax leads to different information structures (i.e. semantics) between the two languages. Therefore, there is a gap in the research of issues at the interface of syntax and semantics that needs to be filled (see Paradis et al., 2005).

⁶ It is not an uncommon belief, even among some Chinese scholars, that Chinese is a language without inflections and/or tense marking devices (e.g. Xu-Rattanasone, 2016). Such a (mis-)belief, however, shows, to some extent, syntax and semantics are more prominent features than morphological inflections to consider while comparing Chinese to English (and most other Romance languages).

Furthermore, “Chinese” has, unfortunately, been inaccurately defined in speech-language pathology studies. This, combined with the lack of applicable data on the (sequential) development of Chinese bidialectal children’s L1 development and subsequent L2 acquisition, means that the information emerging on clinical markers of language impairment for Chinese bilingual children may not be particularly informative for clinical practice. Specifically, definition and classification of the term “Chinese” are clarified at both the theoretical linguistic level and the clinical level. It is pointed out that the pervasive understanding that “Chinese” is a standard language used by Chinese people, or that the term “Chinese” equals to either “Mandarin” or “Cantonese”, is indeed a misunderstanding.

Finally, after the rationale of the research is elaborated and the general question presented, a general conclusion summarizes the literature review.

Access to UG and the initial state of learning in L2

It is generally recognized that any human cognitive activities involving learning are guided by some sort of innate faculty (e.g. Eckman, 1996, p. 398; Lardiere, 2012, p. 107; O’Grady, 2008, p. 620). In language acquisition, in particular, the Innateness Hypothesis (or Linguistic Nativism) proposes there is a language learning faculty (i.e. LAD) that is human species-specific, and is there for babies from birth to use to acquire (any) language (see Lightbown & Spada, 2006, p. 35). The universal patterns of language acquisition, the poverty-of-stimulus and the critical period hypothesis (CPH) have all supported the theory of UG, which facilitates language acquisition for infants, who are exposed to mostly not so well-formed inputs from adults. UG, therefore, which is proposed as “a component of the human mind, physically represented in the brain and part of the biological endowment of the species” (Chomsky, 2002, p. 1), is what is common to the acquisition of any human language.

Theoretically, the innate capacity, or the natural ability, is assumed as a predisposition to language learning to explain several complex facts: for example, children in any language, of any culture, start language acquisition at the same age; they develop the corresponding linguistic abilities (phonological, morphological, syntactic, semantic, etc.) through the same stages with the same rate; there is a cut-off age for language acquisition (or at least for L1 acquisition), which is not simply correlated to general cognitive abilities or intelligence, etc. Such an assumption also helps to answer how children can successfully acquire the rules of

their L1 considering how “incomplete”, or sometimes “ill-formed”, the inputs are around them. That is, the assumption of UG explains how children can produce (an almost endless number of) “grammatical” sentences while rejecting those “ungrammatical” ones, both of which they have never heard of. In the L2 acquisition context, however, a more important and relevant question is if the L2 acquisition process also involves such a natural ability and if L2 learners have the same access to the LAD, as the L1 acquisition does? UG will be the framework to use to understand and interpret the results in this study.

UG and L2 learning

In fact, UG, including the principles and parameters framework (Chomsky, 1981) and the minimalist program (Chomsky, 1995, 2001), has been laid as the basis for predominant work in the research of L2 syntax and semantics, at least for the last three decades (Lardiere, 2012, p. 106). Indeed, UG is suggested to offer the best linguistic approach and analytical tools for studying grammatical acquisition (Carroll, 2009). A question of great concern in the UG approach to L2 acquisition, as is in most transfer theories, is L2 learners’ departure state. Considering that non-target like performance that shares similarities with that of DLD monolinguals’ is a distinct characteristic of L2 acquisition (Ortega, 2011, p. 2), it seems that L2 learners’ L1 grammar plays a more important role than the UG. The question is, however, whether L2 learners still have access to UG in L2 acquisition as they acquire the L1 (White, 1996). To answer this question, let us first take a look at two interesting examples⁷. The first one comes from the work of Schreiber and Sprouse (1998) and Hopp (2005) investigating English-L1 speakers learning German as their L2, in which the finite verb appears in the second place of word order in a sentence, hence “V2 language”, as evidenced in [1] and [2] below:

⁷ The two examples, English-L1 speakers learning German in one and Japanese in the other, are adapted from the work of Schreiber and Sprouse (1998), Hopp (2005) and Marsden (2009). Readers can also refer to Schwartz and Sprouse (2013) for a brief history of these studies.

[1] Peter hat gestern den Wagen repariert.
 Peter has yesterday the car repaired
 “Peter repaired the car yesterday.”

[2] Den Wagen hat Peter gestern repariert.
 the car has Peter yesterday repaired
 “The car, Peter repaired yesterday.”

Syntactic theories propose that [2] is derived from [1]. Specifically, “den Wagen” (the car) is moved from on the right of the verb to its left, and landing in the sentence-initial position, a process called “Topicalization”⁸. However, in both cases, the verb is always in the sentence second position. Unlike [1] or [2], verbs in a German subordinating clause actually appear in the sentence-final, instead of the sentence second, position, as illustrated in [3] and [4]:

[3] Ich glaube, dass Peter schon den Wagen repariert hat.
 I believe that Peter already the car repaired has
 “I believe that Peter has already repaired the car.”

[4] Ich glaube, dass den Wagen Peter schon repariert hat.
 I believe that the car Peter already repaired has
 “I believe that the car, Peter repaired already.”

“Den Wagen” is also moved out from its underlying position in [4] as compared to [3]. This time, however, it remains in the right periphery, that is the Inflection Phrase (IP; i.e. the phrase without complement clauses)⁹, a process called “Scrambling”. To make things more complicated, apart from topicalization and scrambling, German also allows for a third “Remnant” movement, in which, in simple words, part of a phrase is moved out from its original position to somewhere syntactically higher leftward, while the rest of the phrase remains in situ, as is demonstrated in [5]:

[5] [XP t_{YP}]...YP...t_{XP}



⁸ To be more specific, “den Wagen” is moved (assuming movement is involved in the whole process) from within the right periphery to the left periphery (i.e. the complementizer phrase), landing in the position of Spec-CP.

⁹ That is, it lands in the position of Spec-IP, but not further to the domain of CP.

Now, combining topicalization and scrambling with remnant movement, German could potentially have the following four syntactic structures:

Intact Topicalization

- [6] [Den Wagen zu reparieren]₁
 the car to repair
 hat Peter schon *t*₁ versucht
 has Peter already tried
 “To repair the car, Peter has already tried.”

Intact Scrambling

- [7] Ich glaube, dass [den Wagen zu reparieren]₁
 I believe that the car to repair
 Peter schon *t*₁ versucht hat
 Peter already tried has
 “I believe that to repair the car, Peter has already tried.”

Remnant Topicalization

- [8] [*t*₁ Zu reparieren]₂ hat Peter [*den Wagen*]₁
 To repair has Peter the car
 schon *t*₂ versucht
 already tried
 ≈“Repairing Peter already tried to do to the car.”

Remnant Scrambling

- [9] *Ich glaube, dass [*t*₁ zu reparieren]₂
 I believe that to repair
 Peter [*den Wagen*]₁ schon *t*₂ versucht hat
 Peter the car already tried has
 “I believe that repairing Peter already tried to do to the car.”

As we can see from the above examples, while German flexibly accepts intact scrambling and intact and remnant topicalization, remnant scrambling is not grammatical. In English, however,

only intact topicalization is allowed. Table 1 presents such a comparison between the German and English:

Table 1: Topicalization, Scrambling and Remnant Movement in German and English

	Intact movement		Remnant movement	
	(German)	(English)	(German)	(English)
Topicalization	Yes	Yes	Yes	No
Scrambling	Yes	No	No	No

As we can see in the above table, while English agrees with German in the acceptance of intact topicalization and the rejection of remnant scrambling, it does not allow either intact scrambling or remnant topicalization as grammatical. The learners, in this case, have fewer choices in their L1 (English) than in the L2 (German). Comparing the two languages, we may expect that the English learners will accept the intact topicalization in German while rejecting the remnant scrambling since these two structures in the L1 align with those in the L2. But it is not sure about the other two structures. The results in Schreiber and Sprouse (1998) and Hopp (2005), however, showed that their intermediate and advanced adult participants aligned their choices of acceptance and rejection with those of German L1 speakers, which means the parameters of intact scrambling and remnant topicalization are “turned on” for the L2 learners, even if they remain “off” in the L1.

Still speakers of English as L1, in the second example from Marsden (2009), they learned Japanese as their L2. The structure under discussion involved double quantifiers, as shown in [10] below:

- [10] Dareka-ga dono hon-mo yonda
 someone-SUBJ every book-PRT read
 “Someone read every book.”

Semantically, such a double quantifier structure may have two readings: it can be read with a subject-wide scope, such as [11], or with an object-wide scope, such as [12]:

- [11] “There is some person x such that x read every book.”
(Subject-wide scope reading)
- [12] “For each book y , some person read y .”
(Object-wide scope reading)

The interesting part is while both readings are potentially possible in English, for Japanese, only the subject-wide scope reading is acceptable, as represented in Table 2. This time, however, the learners found themselves having more choices in their L1 (English) than in the L2 (Japanese). Again, it might be easily expected that the learners will accept the subject-wide reading in Japanese as their L2, but nothing is sure about the object-wide reading. The results, however, showed that advanced adult learners only accepted the subject-wide scope reading in Japanese as the native speakers would do.

Table 2: Readings of the double quantified structure in Japanese and English

	Japanese	English
Subject-wide reading	Yes	Yes
Object-wide reading	No	Yes

It seems, from the above two examples, that advanced learners would finally reset certain parameters to adjust to the L2 data, no matter whether the L1 had more or fewer choices for the same structure as compared to that in L2. Both results confirm there is UG access in SLA, especially considering that there were hardly great chances of formal instruction for the “wrong” structures or readings in the process of L2 learning.

Schwartz and Sprouse (2013) pointed out that one of the two biggest concerns of SLA within the generative approach is how, and to what extent, the whole process of SLA (or at least the development of interlanguage) is constrained by UG. Such a UG constraint is, therefore, “inherently interwoven with (the other concern of) what role(s) the L2 learner’s native language grammar plays in non-native language acquisition, on the assumption that the L1 grammar is constrained by UG” (p. 152).

Categorically, L2 learning has either access or no access to UG. If access to UG were entirely unavailable in SLA, the whole process would have followed a fundamentally different route as compared to what happened in L1. The no access theory does not hold due to the fact that even the interlanguage does not always deviate from UG, and that L2 learners’ performance in the target language cannot be accounted for by only the L1 transfer or only the L2 input.

If the L2 learning does involve, to a certain degree, the access to UG, logically, there would be complete access or partial access, while the access could be direct or indirect, as illustrated in Table 3:

Table 3: Categories of UG access

	Direct Access	No Direct Access
Completely	Full Access	No Access
Partially	Partial Access	Indirect Access

Therefore, apart from the No Access claim, the other three possible situations of UG access in L2 are Full Access, Partial Access, and Indirect Access, as summarized in detail in Table 4 below:

Table 4: UG access in L2

Access to UG	Details	Examples
<i>No Access</i>	L2 learners have no direct, or indirect, access to UG. Therefore, the process of SLA involves only general knowledge and abilities (such as learners' L1 knowledge or general cognitive abilities) rather than UG	Clahsen and Muysken (1986); Meisel (1997)
<i>Indirect Access</i>	L2 learners have indirect access to UG through the knowledge that is already realized in the corresponding L1s. Therefore, the process of SLA is guided by the L1 knowledge and the UG components that are already activated in the L1.	Bley-Vroman (1990); Tsimpli and Dimitrakopoulou (2007)
<i>Partial Access</i>	L2 learners have direct access to some individual components, but not the operations between them. Therefore, the process of SLA is partly guided by UG, and partly by other knowledge, such as the learners' L1 knowledge.	Beck (1998); Morales-Reyes and Gómez Soler (2016)
<i>Full Access</i>	L2 learners have direct access to UG. Therefore, the process of SLA has UG as the innate guide.	Dekydtspotter, Sprouse, and Swanson (2001); Herschensohn (2000); Slabakova (2008);

(see Saville-Troike, 2012, p. 53; Schwartz & Sprouse, 2013, pp. 137-138 for further details)

The L2 initial state

The partial access and the indirect access theories in Table 4 propose that L2 learners might approach the target language with existing knowledge of their previously acquired languages in addition to UG. That is to say, the “initial state” of L2 learning comprises UG and L1 knowledge (Grüter, Lieberman, & Gualmini, 2010).

In accordance with the four categories of UG access in L2, there are four possibilities for the SLA initial states, such as shown in Table 5:

Table 5: L2 initial states

Access to UG	L2 initial states	Representative theories
No Access	<i>Purely L1</i>	Full Transfer Hypothesis (e.g. Bohnacker, 2006; Grüter & Conradie, 2006)
Indirect Access	<i>Combination of L1 knowledge and L2 input</i>	Shallow Structure Hypothesis (e.g. Clahsen & Felser, 2006b)
Partial Access	<i>Only individual modules of UG (lexicon, morphology, syntax, etc., but not interfaces)</i>	Interface Hypothesis (e.g. Sorace & Filiaci, 2006)
Full Access	<i>Purely UG</i>	Full Access without Transfer Hypothesis (e.g. Grüter et al., 2010; White, 2003)

Generally, there are different theories that explain the role of the initial state of learning in SLA. One theory argues that UG is still the main factor that constrains the stages of L2 development, while L1 transfer, if there is any, only plays a minimal role (e.g. Epstein, Flynn, & Martohardjono, 1996), therefore, the Full Access without Transfer hypothesis (White, 2003). Under this hypothesis, the differences between L1 and L2 pose very little threat in L2 learning, that is as long as there is sufficient input, L2 learners will acquire, under the guidance of UG, the target language as the L1 natives do. The Full Transfer Hypothesis, however, is based on the premise that L2 takes all the L1 grammar, including the phonetic and phonological aspects, as the initial state (Bohnacker, 2006; Grüter & Conradie, 2006). It proposes a totally different scenario from the Full Access without Transfer hypothesis for SLA and states that the L1 knowledge has initially a maximal transfer on L2, while input is regarded as being of less help in the process of SLA.

The Shallow Structure Hypothesis, although admitting that learners follow a similar acquisition pattern in L2 as that in L1, proposes that L2 learners have more “shallow” access to the target language than L1 speakers do (Clahsen & Felser, 2006b). This is because they show more reliance on lexical and semantic strategies than morpho-syntactic cues in the process of L2 learning. The Interface Hypothesis (IH) proposes that, unlike the narrow acquirable syntactic properties in L2, it is the interface properties which involve cognitive domains other than the pure syntax that may not be fully acquirable (Sorace & Filiaci, 2006, p. 340). For example, the English-Italian bilingual participants (1;7-3;3) in Serratrice, Sorace and Paoli's (2004) study were found to overuse overt pronominal subjects, for example [13], in contexts where their Italian monolingual counterparts would use a null subject (*pro*), for example [14]. While the

overt pronominal subject is not syntactically wrong, pragmatically the anaphor is co-referential with the wrong antecedent (i.e. it wrongly refers to “Maria” instead of “Laura”). Therefore, problems arise at the syntax-pragmatics interface.

- [13] Laura ha abbracciato Maria
 Laura have-3S hugged Maria
 e poi lei è uscita
 and then she is-3S gone out
 “Laura hugged Maria and then she (Maria) went out.”

- [14] Laura ha abbracciato Maria
 Laura have-3S hugged Maria
 e poi pro è uscita
 and then she is-3S gone out
 “Laura hugged Maria and then she (Laura) went out.”

Cross-linguistic transfer and second language learnability

As pointed out earlier, evidence suggests that both L1 and L2 learning have access to UG. The main argument indeed lies in the way L1 and L2 learners access UG and the role L2 learners’ L1 knowledge plays in the process of learning. To compare the developmental processes and stages between L1 and L2, Table 6 (see Saville-Troike, 2012) shows it is evident that the L2 development resembles a great deal of that of L1: both start with the innate capacity and achieve, in the end-state, competence of the target language. The biggest difference, however, lies in the basic process of acquisition where L2 is also subject to the crosslinguistic transfer of L1.

Table 6: First vs. second language acquisition

L1 Acquisition		L2 Acquisition
INITIAL STATE		
UG		UG
INTERMEDIATE STATE		
Child grammar		Learner language
<i>Basic processes of acquisition</i>		
Maturation		L1 Transfer
<i>Necessary conditions of acquisition</i>		
Input		Input
FINAL STATE		
Native competence		Multilingual competence

(adapted from Saville-Troike, 2012, p. 17)

Generally, the term *crosslinguistic transfer* is used to describe and explain how different linguistic systems interact with each other, that is facilitate (positive transfer) or inhibit (negative transfer), and influence the individual speaker's L1 performance and/or L2 development (see Jarvis & Pavlenko, 2008, pp. 112-173; E. Kellerman & Smith, 1986; Odlin, 2003; Sharwood Smith, 1983; Sharwood Smith & Kellerman, 1986). There are many studies that have confirmed that crosslinguistic transfer is not only prevalent but also systemic in phonology, morphology, and syntax (see for example Hachohen & Schaeffer, 2007; Haznedar, 2010; Hulk & Müller, 2000; Müller & Hulk, 2001; Nicoladis, 2002; Paradis, 2001). Apart from positive transfer where bilingual children develop more advanced linguistic competence (in, for example, the metalinguistic awareness of the target language) than monolingual children (Goldstein & McLeod, 2012), there are reverse situations where the negative transfer occurs. For example, in Anderson's (2004) study, the child participants of different first languages (Korean, Russian and French) show negative influences of their respective L1 on the L2-English such that their L2 outputs are more L1-like and do not live up to the L2 standard. This and other similar studies (e.g. Simon, 2010; Yavaş, 2002) all suggest there are positive, as well as negative, cross-linguistic transfers from L1 onto L2.

Negative influences seem to occur for a bilingual speaker particularly when there are more typological deviances than similarities between L1 and L2. When L1 and L2 have different structural constructs, it is usually expected that negative influences from L1 are found in L2 outputs. For example, Pérez-Leroux et al. (2011) find that if a target structure is absent in L1 then syntactic problems would arise in L2. Such problems could even extend from syntax to discourse-pragmatics (Bohnacker & Rosén, 2007). Other examples include speakers of topic-

drop languages, as compared to those of pro-drop languages, being less likely to acquire the null expletives (Oshita, 2004). Learners of Chinese and its dialects, in this sense, would face more difficulties in L2 acquisition of a pro-drop language (such as Spanish or Italian) since Chinese and its dialects are neither typically pro-drop nor topic-drop. For example, speakers of English, a non-V2 (verb-second) language would find it much more difficult to acquire German, a V2 language than speakers of, for example, Swedish, which is also a V2 language (Bohnacker, 2006). Furthermore, the negative influences from L1 to L2 could even be long-term at the discourse-pragmatics level. For example, learners of English (with German or Dutch as the L1) would still prefer topicalization structures even after they have well mastered the syntax of English (Rankin, 2012).

The L1 influence can be positive, however. Such positive influences are found for bilinguals of two typologically “closer” languages. For example, O’Shannessy (2011) found Lajamanu Warlpiri and Light Warlpiri bilingual speakers acquired case marking devices more quickly and consistently than word order devices at the syntactic level because of the similar case marking systems between the two languages. In fact, even at the level of discourse-pragmatics, simultaneous bilinguals do not necessarily lag behind monolinguals (Serratrice, 2007). It seems that, as to how “negative” or “positive” L1 transfer will appear, the deterministic variable lies in the typological proximity between L1 and L2 (Rothman, 2010).

In fact, the crosslinguistic transfer is a topic that opens itself to multiple theoretical explanations. For example, the Word Association Model (H.-C. Chen & Leung, 1989; Kroll & Curley, 1988) suggests that learners at an early stage of L2 acquisition are subject more to L1 transfer, or at least depend more on L1 knowledge (of lexicons). It is pointed out that early bilingual learners perform better in picture naming tasks if the task is mediated through knowledge in their first languages than direct conceptual links in the second language, while proficient L2 learners perform equally in tasks as picture naming and word translation (Lorenzen & Murray, 2008).

So, how “positive” will the L1 transfer be on the L2 learning? The Cumulative Enhancement Model (CEM) proposes that L2 acquisition is such a cumulative process that all prior language knowledge may contribute positively in the ultimate learning of the target language (Flynn, Foley, & Vinnitskaya, 2004). For example, Kazakh (dominant)-Russian (non-dominant) learners of English acquire the lexically-headed relatives in English first, which later contributes to the acquisition of the free relatives, as compared to Kazakh learners of English, who do not benefit from a positive transfer of lexically-headed relatives from Russian (Hermas,

2014b), which is obviously due to the “positive” influence from the non-dominant Russian knowledge. The L2 Status Factor theory, on the other hand, claims that the chronologically most recent acquired knowledge, instead of all the existing knowledge, contributes to the successful acquisition of any additional languages (Falk & Bardel, 2011).¹⁰ The Typological Primacy Model (TPM) takes a different position from the perspective of psycho-typological closeness, that is learners’ perception of how distant or close L1 and L2 typologically are. It proposes that when there are multiple structural transfers available, it is the psycho-typological closeness that conditions which structure to select to facilitate the L2 acquisition process. The key, then, lies in the global proximity and the perceived linguistic distance between the existing structures in L1 and the structures to be acquired in L2 (Rothman, 2011, 2013, 2015; Rothman & Cabrelli Amaro, 2010).

The crosslinguistic transfer does not only emerge for typically developing speakers, but is also found in speakers with language impairment (Rothweiler, 2010). In the study of crosslinguistic comparisons of DLD, one important question is to what extent deviations in syntax in DLD across languages can be explained by the typological characteristics of the languages (ibid). In a study of Cantonese-English bilinguals with DLD, for example, Leonard (2010) found that Cantonese L1 speakers’ acquisition of the progressive aspect marker in English is hindered by crosslinguistic transfer independent of psychological issues. That is misuses of the progressive aspect marker in Cantonese ESL learners are prevalent, and it is not resulted from how the learner’s perception of the target language.

In the process of SLA, the L1 and L2 co-exist as two parallel yet closely connected systems (Weinreich, 1953). However, non-equivalence exists for both languages at all levels of representation so that negative transfer is inevitable not only for TD bilinguals but also for those with DLD (Athanasopoulos & Treffers-Daller, 2015). Phonologically, for example, bilinguals are found to coactivate the dual phonological systems in both L1 and L2, so that L1’s influence is omniscient in the production of L2 (Macizo, 2015). Such cross-linguistic influences, however, are found to extend from infancy to early childhood (Kidd, Chan, & Chiu, 2015). As for cognitively, developmentally impaired speakers, for example, a tendency is also found for more verbal productivity in L1 than in L2 (Smirnova et al., 2015).

¹⁰ Hermas (2014a), however, proposed a different picture, in which the older knowledge, rather than the newer, would influence on the acquisition of the target language. And such influences are negative.

One of the most common negative results from the syntactic transfer is the syntactic addition of the non-target like L1 structures onto L2 outputs. For example, in Italian, it is typical to have a double pronominal object in one sentence, as shown in [15] below.

- [15] L'ho letto, il libro.
 It-have-1sg read the book.
 'I have read it, the book.'
 (adapted from Devlin, Folli, Henry, & Sevdali, 2015)

Similarly, the additional *it* found in ill-formed examples of [16]-[19] by Italian English learners evidences that the “wrong” performances found in the target language are due to the crosslinguistic influences from their L1, that is Italian (see Devlin et al., 2015).

- [16] He forget it the teddy.
 [17] We will make it bed.
 [18] He's give it back the muffin.
 [19] Have to go touch it his tail.

Another most common result from the negative syntactic transfer is the syntactic reduction of the correct L2 structure by subtraction of the elements that are not L1-like. In languages that favor topicalization, such as German or Chinese, for example, subject-drop, as in the German example of [20], and object-drop, such as in the Cantonese example in [21], are both syntactically well accepted and pragmatically felicitous. However, German and Chinese English-L2 learners would be most susceptible to producing subject-drop or object-drop sentences in the target language, a phenomenon that attributes itself to the influences of their L1 (for more information, esp. for cases of learners of other L1s, see Hacoen & Schaeffer, 2007; Serratrice et al., 2004; Thordardottir & Namazi, 2007; Tsimpli, Sorace, Heycock, & Filiaci, 2004; White, 1985).

- [20] A: Kommst du mit zur *Titanic*?
 come you with to Titanic
 'Are you coming for *Titanic*?'
 B: Ø hab ich schon gesehen.
 Ø have I already see
 'I have already seen it.'
 (adapted from Müller & Hulk, 2001)

[21] fong³ (hai²) li¹ dou⁶.
 put at in here
 ‘Put (it) here.’

(adapted from Yip & Matthews, 2000)

Hulk and Unsworth (2010) have pointed out that the existing system in L1 may alter the representational knowledge and procedural mechanisms used in the acquisition of L2. Therefore, it is worth looking into whether crosslinguistic negative transfer influences bilingual children with DLD more than TD bilingual children (see Paradis, 2010b). It is, however, also important to understand the differences between L1 monodialectism and bidialectism, and their roles in the cross-linguistic transfer, in the process of L2 acquisition, since they represent different complexities of L1 knowledge that may exert different influences on L2.

Generally, cross-linguistic transfer is expected in L2 acquisition and can pose a challenge for SLPs distinguishing between differences arising from transfer and actual language impairment. Paradis et al. (2000) found that bilinguals were more sensitive to syntactic inconsistencies. This was most likely due to the distinctive grammatical features between L1 and L2. Therefore, bilinguals tend to be more syntactically aware of the language they use most (Bedore, Fiestas, Peña, & Nagy, 2006). Studies have also found that bilinguals, in order to balance the syntactic inconsistencies between L1 and L2, may use some “bridge” constructions, which are more like transitional structures an L2 learner may use to access the target structures. Or, they will replace the complex structure with several simpler ones in the target language (Gawlitsek-Maiwald & Tracy, 1996), or simply use a low-frequent or unusual construction (Bedore & Peña, 2008). Bedore and Peña found, for example, a Spanish child learning English tended to use more past progressive constructions in narratives while English monolinguals were more likely to use the simple past tense. Therefore, considering the topic-prominent nature of Chinese and subject-prominent nature of English, Chinese (L1)-English (L2) bilinguals may use more low-frequent or unusual topic-comment structures in English. Therefore, differentially diagnosing between syntactic differences arising from L1-to-L2 transfer versus language impairment relies on an understanding of the potential for these cross-linguistic transfers as well as an understanding of the characteristics of the different languages/dialects spoken.

It is understandable that language transfer often occurs when learners perceive that there are potential similarities between their first and second languages. Providing that this is true, for example, the same meaning has a more complicated form in the target language, learners then

may be delayed in acquiring such a complicated form due to the comparable simpler L1-like form. Therefore, those forms that are perceived as being too distant from L1 are more likely to be rejected by the learners (Lightbown & Spada, 2006, pp. 93-96). That is to say, in order to diminish the syntactic complexities in the process of L2 acquisition by the considerable linguistic differences between L1 and L2, learners will rather use simpler, but non-L2 like, forms that resemble their L1.

From the clinical perspective, it is also proposed that, rather than prediction, information from observations should serve to improve the accuracy of diagnostic decisions with regard to bilingual/bidialectal children (Gillam et al., 2013). The following examples [22]-[27] were observed and collected in mainland China and Hong Kong. The speakers under investigation were all bidialectal Chinese-L1 English-L2 learners (between five and twelve years of age for [22]-[26] and both young and adult learners for [27]). These outputs were usually labeled as “wrong” outputs. However, despite the fact that the examples are technically “wrong”, the production can be explained by cross-linguistic transfer and, therefore, does not sound so “wrong” for these individuals (Isurin, 2005). As the transfer is involved in all new learning activities based on previous knowledge (Bransford et al., 2000), these “wrong” sentences in L2 are the results of negative transfer from the learners’ L1. In other words, speakers of [22]-[26] transfer the L1 specific linguistic (syntactic) features onto the L2 structures, a process that occurs particularly when the two languages are typologically (especially syntactically) different (R. Ellis, 2008). Also, a reverse negative transfer, that is from L2 to L1, can happen (see Jarvis & Pavlenko, 2008) as evidenced in [27]. Therefore, understanding the influence of these types of cross-linguistic transfers will enable SLPs to avoid a diagnosis of language impairment where there is none, and/or intervention for incorrect structures that are results of language difference instead of disorder.

[22] 伊苹果欢喜。 (Shanghainese)

*He apple likes.

(adapted from W. Han, 2008)

[23] 你拿，我食。 (Cantonese)

*You get Ø, I eat Ø.

(adapted from Yip & Matthews, 2006)

[24] 落雨啦。 (Cantonese /Shanghainese)

*Ø raining.

- [25] 我先跑路。 (Shanghainese/Mandarin)
 *I first run.
 (adapted from W. Han, 2013)
- [26] 我喜欢打篮球。 (Cantonese /Shanghainese/Mandarin)
 *I like Ø play basketball.
- [27] I have had breakfast.
 我 *有 吃过早饭。 (Mandarin/ Cantonese /Shanghainese)
 (adapted from W. Han, 2012)

These “incorrect” structures include features such as word order in [22] and [25], object and subject dropping in [23] and [24], infinitival dropping in [26] and auxiliary adding in [27]. One can expect similar patterns to occur for the Chinese L1 speakers when producing English sentences, and these patterns may be subject to dialectal typologies of the L1 of the speakers. It may be the case that the structures of the target English sentences are influenced by several dialects for multi-dialectal Chinese speakers, or by only one dialect for monodialectal speakers of Chinese. However, there is currently no evidence that particular patterns of sentence structure in English are likely to indicate a primary language impairment that is also present in the speaker’s Chinese L1.

It is generally believed that bilingual children present with poorer performance on measures of L1 and L2 compared to monolingual speakers (Gillam et al., 2013). The above observations suggest, however, different dialectal backgrounds in L1 may also make a difference in children’s syntactic performance in L2. Thus, accurate information about the languages/dialects that a child speaks is essential to facilitate the diagnostic process.

Syntax-semantics interface and the form-meaning mismatch between L1 and L2

As the current study focuses on the interface that bridges syntax and semantics, which links the (clausal) form and its underlying meaning(s), in the context of SLA, it should be noted that the syntax-semantics interface is one of the most vulnerable aspects in L2 acquisition (e.g. Paradis & Navarro, 2003; Serratrice et al., 2004; Valenzuela, 2006; Zapata, Sánchez, & Toribio, 2005). Therefore L2 speakers are found to either often have incomplete grammar (Montrul, 2006), or have highly variable syntactic-semantic awareness and performance (Fruit, 2006; Montrul,

2004; Müller & Hulk, 2001; Platzack, 2001). By embedding the L1 mono-/bi-dialectism into the L2 syntax-semantics interface acquisition, however, there could have been a chance to blur the whole picture.

Syntax-semantics interface

While syntactic rules guide how words in a language are combined to form sentences, semantics is mainly of the study of meaning at morphological, lexical and syntactic levels. The interface between syntax and semantics, therefore, links the (clausal) form and its underlying meaning. For example, [28] below presents a very basic Subject-Predicate relation, in which “John” is the subject while “smart” is a description of “John”. The subject and the predicate are linked by the copula “is”, which agrees with the subject, so that it is syntactically well-formed. Semantically, “John” denotes a particular person shared by the interlocutors in the context, while the whole sentence makes a statement of the truth (at least from the speaker’s perspective). Syntax-semantics awareness, therefore, refers to the speaker’s ability to correctly pair the linguistic forms with the meanings, a tradition since Aristotle (Slabakova, 2012, p. 127).

[28] John is smart.

The syntactic and semantic representations, however, are not always linked in such a way that well-formedness is found at both levels. Take [29] for example, its ungrammaticality is easy to detect as compared to [28]: the subject and the verb do not agree with each other. However, there are still aspects such as denotation and truth value found at the semantic level, which make the whole combination as semantically assertive as sentence [28]. Therefore, semantic completeness does not presuppose syntactic well-formedness, or vice versa.

[29] John are smart.

Syntax and semantics are not always linked in a one-on-one manner. That is to say, the same meaning can be reached through different forms, while the same form can have different meanings. Such inequivalence between form and meaning, for example, the ambiguities in [30] and [31], however, poses particular difficulties for L2 learners. And that is why there is “a strong contemporary interest in the interface between syntax and semantics” in language acquisition studies (Ortega, 2011, p. 3).

[30] He hit the man with an umbrella.

[31] Every student read a book.

Previous knowledge, such as that in L1, is believed to account for the “incompleteness” in second language syntactic and semantic acquisition. As Belletti, Bennati, and Sorace (2007) proposed, for example, L2 learners either approach the target syntax with the semantics in both languages, or the other way round, but not both at the same time. If the same syntax has different semantics in both L1 and L2, there is a chance that L2 learners may pair the wrong semantics (i.e. the one in L1, but not in L2) with the same syntax in L2. Cognitive scientists, therefore, propose that the constraints of processing, in addition to syntactic and/or semantic representations, should be held accountable in SLA research (see for example Bley-Vroman, 2009).

The syntax-semantics interface does not only pose one big challenge for adult second language learners. Indeed, child and adult speakers will also show their different preferences in semantics in face of the mismatch between form and meaning. It has been argued since Inhelder and Piaget (1958, 1964) that children could perform very differently in sentence comprehension compared with adults. For example, children between six and seven years old may commonly but incorrectly respond “No” to questions involving universal quantifiers in certain contexts, a tendency known as “quantifier spreading” (ibid). These “symmetrical responses” (see Philip, 1995) indicate that children are more comfortable with a sentence with universal quantifiers if it covers all the participants in the context. For example, Philip (1995) reported that children tended to constantly deny the sentence “Every boy is riding a pony” while being shown a picture depicting three boys, each of whom rides a pony, and a pony without a rider on it. This is because, as Philip argued, children analyzed “boy rides a pony” as a quantifier spreading event by assigning the role of a participant of the event to all the three boys and the four ponies in the picture. Such “errors”, argued by Brooks and Sekerina (2006), are made indeed because universal quantifier is most problematic for children to select the matched quantification domain rather than that they have problems analyzing the syntax of universal quantifiers.

While adults’ judgment and understanding might be more direct and make more “sense”, by following the principle of *Referential Success* that, in an unambiguous situation, for example, adults will simply lean on the interpretation that refers to entities from the direct context (Crain, Ni, & Conway, 1994). Within a disambiguating context, children were reported not to necessarily follow the rule, however. Crain et al. (1992) found that after being presented a

picture of a bird holding a flag and a balloon and another picture of a cat and a dog holding a balloon respectively, no more than 10% of the participating children (3-to-6 year old) in their study correctly accepted [32] and rejected [33] and [34] (adapted from Crain et al., 1992). Sixty percent of the children accepted all three sentences by assigning the focus to the subject (i.e. “the bird”), while around 30% rejected all the sentences by assigning the focus to the object (i.e. “a flag”).

[32] Only the bird is holding a flag.

[33] The bird is holding only a flag.

[34] The bird is only holding a flag.

The situation becomes even more complicated when it comes to the decontextualization of an ambiguity. For an adult, it is found that a reader or a hearer would adopt an analysis of the information, which is absent in the discourse, with the least assumption. In other words, adults prefer easier “weak readings”, a principle called the *Principle of Parsimony* (Crain et al., 1994). Take [35] and [36] below for an example (adapted from Crain, 2008; Paterson, Liversedge, Rowland, & Filik, 2003; Paterson, Liversedge, White, Filik, & Jaz, 2006), under such a principle, an English adult speaker prefers to interpret [35] as “A hose is the only thing the fireman is holding” and [36] as “John speaks either French or Spanish, but not both”, although other readings are feasible.

[35] The fireman is only holding a hose.

[36] John speaks French or Spanish.

Child speakers, however, are believed to be subject to another principle, that is the *Semantic Subset Principle* (hereafter SSP) (Crain, 1992; Crain et al., 1994; Crain & Philip, 1993; Crain & Thornton, 1998). The principle proposes that children would rather read [35] as “Holding a hose is the only thing the fireman is doing” with a wider focus and [36] as “John speaks both French and Spanish” by overlooking the scalar implicature of exclusivity.

The form-meaning mismatch between L1 and L2

Based on Crain and his colleagues’ research, to take [35] with the “only” focus for example (hence the *ONLY* structure hereafter in this study), although there is a preference for the broad reading as in “A hose is the only thing the fireman is holding” among adult speakers, the same population will still acknowledge the narrow reading of “Holding a hose is the only thing that

the fireman is doing” given there are particular contexts. It is the same for [37] below with the negation of the universal quantification (UQ) “every” (hence the *EVERY* structure hereafter) that while the narrow reading of “No horse jumped over the fence” is preferred in a decontextualized situation, the broad reading of “Not every horse jumped over the fence” is not unacceptable providing there is a specific context.

[37] Every horse didn’t jump over the fence.

However, the pairing of the same forms and their meanings may vary from language to language. According to modern linguistic typological theories (e.g. Comrie, 1989; Croft, 2006), some certain structures may have different ranges of readings cross-linguistically. For example, there are mismatches between English and Mandarin for the ONLY and the EVERY structures. For example, the corresponding Mandarin ONLY structure in [38] has the narrow reading of “Holding a hose is the only thing that the fireman is doing”, but not the broad one, as compared to that in [35]. Similarly, [39] in Mandarin also has only the narrow reading of “No horse jumped over the fence” instead of the broad one, as contrasted in [37]. In both examples, there are more readings in English than in Mandarin for the same structure.

- [38] xiāofángyuán zhǐshì¹¹ ná zhe yī gēn guǎnzǐ.
 firefighter only-FOC hold PRT one Q¹² hose
 “Holding a hose is the only thing that the fireman is doing”
- [39] měi pī mǎ dōu méiyǒu tiào guò wéilán.
 every Q horse Q not jump over fence
 “No horse jumped over the fence”

The crosslinguistic form-meaning mismatch between [35] and [38], as well as that between [37] and [39], does not mean that, at the syntax-semantics interface, Chinese ESL learners will always face the reading “shortage” for the same structure in their L1 as compared to the L2. In

¹¹ It should be pointed out that “only” in Chinese may be realized as “zhǐ” (only) or “zhǐshì” (only-FOCUS). However, it should be “zhǐshì” that is employed in the Chinese “only” ambiguous focus structures corresponding to that of [35] in English. It is so not only because there is a focus marker “shì” involved (which conforms to the function of the ambiguous focus “only”), but also because that only “zhǐshì” can appear in positions of both the wide and narrow scopes (albeit the wide scope position does not entail a broad reading as the English structures do), while “zhǐ” can only place itself in the wide scope position. As per the purpose of the current study, however, it is least concerned whether the participants would pick “zhǐ” or “zhǐshì” in the process of “transferring” their L1 knowledge onto the L2 structures since neither of the two has the broad reading in the wide scope position in the Chinese dialects under discussion (i.e. Mandarin and Wu).

¹² The glosses of FOC, PRT and Q are used in this study to refer to Focus, Particle and Quantifier respectively.

fact, there are situations where the same structure in Mandarin and other Chinese dialects will have fewer readings in English. The ditransitive structure of the verb “buy” (hence the *BUY* structure hereafter) in [40], for example, has only the reading of “John bought a bouquet of roses for Jane” in English. The Mandarin equivalent [41], however, has, in addition, a second reading of “John bought a bouquet of roses from Jane”. Similarly, in an English topic-comment structure such as [42] (hence the *T-C* structure hereafter), the topic (i.e. “that young man” in the example) is always read as the object of the comment, that is read in the OSV order (i.e. Object-Subject-Verb), as in “Our department rejected that young man”. The Mandarin [43], with the same lexicons in the same order, however, has a potential SOV reading as “That young man rejected our department”, where the topic acts as the subject of the comment and the “subject” of the comment is actually the object.

- [40] John bought Jane a bouquet of roses.
- [41] yuēhàn mǎi le jiǎn yī shù méiguīhuā
John buy PRT Jane one bouquet rose
- [42] (As for) that young man, our department rejected.
- [43] nà ge niánqīng rén, wǒmen xì búyào le
that PRT young man our department reject PRT

Table 7 summarizes the crosslinguistic form-meaning mismatch of the above four structures of ONLY, EVERY, BUY and T-C between English and Chinese (i.e. Mandarin and Wu).

Table 7: The crosslinguistic form-meaning mismatch between English and Chinese (Mandarin and Wu)

Structures	Readings	English	Chinese
(1) <i>ONLY</i> (ambiguous focus) e.g. <i>The fireman is only holding a hose.</i>	A: Holding a hose is the only thing the fireman is doing. B: A hose is the only thing the fireman is holding.	Reading A and B	Reading A
(2) <i>EVERY</i> (negation of UQ) e.g. <i>Every horse didn't jump over the fence.</i>	A: No horse jumped over the fence. B: Not every horse jumped over the fence.	Reading A and B	Reading A
(3) <i>BUY</i> (ditransitive verb) e.g. <i>John bought Jane a bouquet of roses.</i>	A: John bought a bouquet of roses for Jane. B: John bought a bouquet of roses from Jane.	Reading A	Reading A and B
(4) <i>T-C</i> (topic-comment structure) e.g. <i>That young man, our department rejected.</i>	A: Our department rejected that young man. B: That young man rejected our department.	Reading A	Reading A and B

Sentence grammaticality and acceptability

Before talking about the “correct” reading(s) of a sentence, first and foremost, the “correctness” of a sentence should be clarified, that is the question: is the sentence grammatical and/or acceptable? Grammaticality and acceptability are two notions that are usually confounded with each other. While grammaticality refers to what a grammar (in a certain language) can produce into actual sentences, in fact, acceptability is more about the appropriateness of an utterance in varied contexts rather than absolute “correctness” (Bauer, 2014). Therefore, judging a sentence to be acceptable or unacceptable is more speaker-oriented and varies from person to person. When a native speaker says, “I don’t say this”, it does not necessarily mean that the sentence s/he talks about is ungrammatical in the language. In fact, although judging it as unacceptable (or less acceptable), when the speaker says “I don’t say this”, s/he should have already understood what ideas the sentence tries to convey, that is the meaning is successfully communicated (Chapman & Routledge, 2009).

Grammaticality and acceptability do not always match, the following two are famous examples of the mismatch between the two notions: [44] is grammatically well structured but unacceptable, while [45] is not grammatically correct yet well acceptable.

[44] Colourless green ideas sleep furiously.

(Chomsky, 1957, p. 17)

[45] (But if this ever-changing world in which we live in

Makes you give in and cry)

Say live and let die.

(Paul McCartney’s single *Live and Let Die*, Released: 1 June 1973, UK)

On one hand, acceptability is gradient. That is acceptability is gradable as we can say a sentence is “good”, “bad” or “terrible”, “acceptable” or “marginally acceptable”, etc. On the other hand, acceptability is also subject to frequency, that is the more frequently a sentence (or a structure) is used, the more acceptable it becomes. Obviously, the more acceptable, or the preferred, meaning of an ambiguous structure, such as the narrow reading of [35] for adults, or its wide reading for child speakers, is not, and should not be recognized as the “default” or the “one” reading of certain structures. Since one aim of this study is to test L1 mono- and bidialectal speakers’ L2 syntactic and semantic competence, it places grammaticality as a more important factor over varied acceptability between individual speakers.

Semantic role

The semantic role is a linguistic term used to describe the relationship of a noun phrase (NP) to the verb phrase (VP) in a clause. The semantic role is different from a syntactic role in a sentence. Or, in other words, an NP with the same semantic role may play different syntactic roles in a sentence. Two semantic roles are involved in the tests and discussion of this study, that is BENEFICIARY¹³ and SOURCE.

According to its name, a BENEFICIARY benefits from the action that occurs in the sentence, while a SOURCE (also called ORIGIN) is where the action originates. In the following examples, although the word “hometown” stays in the same object position, its semantic role changes from SOURCE in [46] to BENEFICIARY in [47]:

[46] Elton John started the tour from his hometown (SOURCE).

[47] Elton John dedicated the tour to his hometown (BENEFICIARY).

Now, go back to the BUY structure of [40] earlier, the indirect object “Jane” can only assume the semantic role of BENEFICIARY in English. In Chinese, it may also assume the role of SOURCE, providing there are specific contexts.

A theoretical dilemma

In the competition of the role of UG and that of L1 transfer in the process of L2 learning, an awkward problem arises that, on one hand, L2 acquisition research has consistently suggested that a second language learner is more sensitive to the existing linguistic features so that s/he relies more on the strategies of sentence processing effective in the first, rather than in the second, language (T. Brown & Haynes, 1985; Harrington, 1987; M. Haynes & Carr, 1990; Koda, 1989, 1990; Tzeng & Wang, 1983). For example, Chan’s experiment (2004) shows that Hong Kong ESL learners prefer structures that are comparable to the Cantonese syntax in English writing, even though these structures are incorrect or inappropriate in the target language discourse. On the other hand, semantic acquisition theories prescribe that for certain structures the broad semantics (such as the narrow scope reading for the ONLY structure) is always acquired after the narrow one (such as the wide scope reading for the ONLY structure) to avoid the semantic problem in the target language, a process which should be universally

¹³ The semantic role of BENEFICIARY is also known as BENEFACTIVE or RECIPIENT.

realized. To put it another way, the question is, in the process of L2 acquisition, are learners affected by the L1 interferences when there is a “gap” between the semantics of the “equivalent” structures and acquire the L1-like semantics, or do they follow the theoretical predictions and acquire the narrow semantics in the target language, in the first instance?

Indeed, the above arguments and questions urge us to take into consideration other factors than the simple computation of syntax and/or semantics in the study of language acquisition. One way to do that is to compare and to contrast existing L1 knowledge and similar L2 structures in SLA studies by observing how learners’ pre-existing knowledge (and the target language input) affect the learning process and outcome. Chinese ESL learners, who are the most populous ESL learners and, who, by great chances, may have multiple L1 dialectal knowledge comparable to that of the L2 at the syntax-semantics interface, offer good examples to investigate the above theoretical concern. But before that, a clear and accurate understanding of the terms of “Chinese” and “Chinese dialects” is needed.

Chinese and Chinese dialects¹⁴

It has been made clear that this study examines Chinese-L1 speakers’ syntactic and semantic competence of English as the L2. Unlike high mutual intelligibility between the English varieties (such as the Australian and the Canadian Englishes), a Chinese speaker of Mandarin only and another of Cantonese only, for example, will not understand each other without a translator. While Mandarin and Cantonese are the only two Chinese dialects recognized in most overseas Chinese communities, in fact, a Chinese migrant living in an English country or region may have a background of one or more of the hundreds and thousands of dialects under the umbrella term of “Chinese”. In this sense, before a proper research question can be raised, it is important and necessary to clear the long-standing misunderstanding of the term of “Chinese” and its dialects.

While some may argue that, for example, Mandarin and Wu are two distinct Chinese languages, they, and other varieties of Chinese, are accepted as “dialects” in modern linguistic research despite their typological differences. By definition, a dialect is “a regional or social variety of a language characterized by its own phonological, syntactic, and lexical properties” (O’Grady,

¹⁴ The majority of this section is based on Han et al. (2016).

Archibald, Aronoff, & Rees-Miller, 2001). A standard variety, such as Mandarin, is typically an official dialect that is selected through “arbitrary standards” and promoted by the authorities (Fasold, 2006). There are no absolute answers to the question of what constitutes a language and what constitutes a dialect. The fact is the differences among Chinese dialects can be quite considerable. Though Chinese dialectal differences can sometimes appear even bigger than those between many languages (Lyovin, 1997, p. 115), the current study follows the modern Chinese linguistic convention (e.g. W. Han et al., 2013) and refers to Mandarin, Cantonese, Wu, or others as dialects of Chinese.

Overview

To most historical linguists, Chinese is more like a language family that consists of a large number of dialects, most of which have co-existed since before the Qin dynasty (221-206 B.C.). The Chinese dialectal complexity is in many ways analogous to the Romance language family. For example, there is as much difference between the Peking dialect and the Chaozhou dialect as there is between Italian and French; or the Hainan Min dialect is as different from the Xiang dialect as Spanish is from Romanian (Norman, 1988, p. 187). Though politically or socially speaking Chinese dialects enjoy different status according to the “standard” criteria, linguistically, and clinically as well, they should be treated as equally important.

There are seven main dialects (or dialectal families) of Chinese, which consist of the majority of the language: Mandarin, Wu, Yue, Min, Gan, Xiang, and Hakka.¹⁵ Figure 3 below estimates the number of First-Language dialectal speakers of Chinese¹⁶ in China.

¹⁵ There are three other sub-groups of dialects (though each of which once belonged to one of the seven dialects) that are typologically categorized as distinct dialects of Chinese due to their “deviant” phonological and syntactical features other than other dialectal groups, that is Jin, Huizhou dialect and Pinghua.

¹⁶ “First-Language” speakers refer to those who acquire the corresponding dialect(s) as the mother tongue in the natural and informal contexts. Although Mandarin is the standard language and thus enjoys the political and social prestige, and most people born after the foundation of PRC were more or less educated to speak Mandarin, the numbers listed here, however, do not include those (native) speakers who acquire Mandarin after their “First” dialect.

[Figure 3 has been removed due to copyright restrictions]

Figure 3: Numbers of First-Language dialectal speakers of Chinese in China

Mandarin, also known as *Putonghua* in mainland China and *Guoyu* in Taiwan, is the standard variety of Chinese. It is the only standard variety used in China (including Taiwan) and one of the many official varieties used in Singapore, Hong Kong, and Macau. Mandarin phonology is mainly based on the Peking dialect (the dialect spoken in Beijing), while its vocabulary comes from dialects mainly spoken in northern, central and southwestern China (which are highly intelligible to each other). Very little is drawn from those dialects spoken in the South and Southeast, which are mutually unintelligible to each other and to Mandarin (refer to Figure 4 for a map of the dialectal distribution of Mandarin and other dialects).

[Figure 4 has been removed due to copyright restrictions]

Figure 4: Geographical distribution of Chinese dialects.

Mandarin grammar is linguistically prescriptive and is standardized to Modern Chinese literary works emerging at the turn of the twentieth century. This means there are prescribed “correct” ways to use Mandarin such as rules for pronunciation, syntax, and semantics (sometimes even pragmatics and functions). This is in sharp contrast to non-standard Chinese grammar, which is considered to be incorrect, improper, illogical, or even of low aesthetic value (Edwards, 2009, p. 259). Mandarin (as well as other Chinese dialects) is a tonal language with five tones: level, rise, fall-rise, fall and neutral. Tones distinguish meanings in Chinese. For pedagogical purposes, *Hanyu Pinyin*, a Romanization system with tone marks, is used to represent the pronunciation and tones of each Chinese character. A conservative estimate of Mandarin speakers worldwide is over one billion. However, it should be noted that “Mandarin speakers” refer to those who have native or near-native competence in the language and that many Mandarin speakers in China speak at least one other Chinese dialect. Unlike English, which is a “subject-prominent” language, typologically, Mandarin belongs to the “topic-comment” category (C. N. Li & Thompson, 1976, 1981), while preserving a basic SVO word order. SVO means the verbal elements in a sentence are arranged through the Subject-Verb-Object order, such as in [48] below:

[48] 我 正在 学 言语病理学。

I PRES study speech pathology

“I’m studying speech pathology.”

A topic-comment structure, on the contrary, places the most important information at the beginning of a sentence. The pre-posed element can come before the subject as in [49], or after it as in [50]:

- [49] 言语病理学 我 正在 学。
 speech pathology I PRES study
- [50] 我 言语病理学 正在 学。
 I speech pathology PRES study

Table 8 below has more examples of dialectal differences between the topic-comment structures.

Table 8: Difference in the degree of topic-prominence between Mandarin and Wu

Topic-Comment Structure	Mandarin	Wu
我呢，不吃千层面。 I _{TOPIC MARKER} don't eat lasagne.	✓	✓
千层面呢，我不吃。 Lasagne _{TOPIC MARKER} I don't eat.	✓	✓
我千层面呢，不吃。 I lasagne _{TOPIC MARKER} don't eat.	✓	✓
我呢，千层面呢，不吃。 I _{TOPIC MARKER} lasagne _{TOPIC MARKER} don't eat.	✓ ¹⁷	✓
急急忙忙呢，我吃了千层面。 Quickly _{TOPIC MARKER} I eat lasagne.	×	✓
和我儿子呢，我吃了千层面。 With my son _{TOPIC MARKER} I eat lasagne.	×	✓
吃呢，我千层面。 Eat _{TOPIC MARKER} I lasagne.	×	✓

Henan dialect is used for everyday communicative purposes spoken in the urban area of Zhengzhou, the capital city of Henan Province (as well as in most other remote regions in the province). Although, a Mandarin speaker can distinguish its phonetic features from Mandarin without much difficulty, syntactically both the Henan dialect and Mandarin are subvarieties of the Northern dialect (Z. Zhang, 2013). It is estimated that there are over 90 million native speakers of Henan dialect.

¹⁷ The double topic marker use is grammatical in Mandarin but is not very often used in actual speech (see L. Liu & Han, 2015)

Shanghainese, that is the Shanghai dialect, is the standard variety of Wu, which is the most populous dialect in China second only to Mandarin. Shanghainese is mainly spoken in the Municipality of Shanghai and has been widely communicated in the surrounding regions in the Yangtze Delta. Shanghainese, like other Wu dialects, is basically unintelligible to other Chinese dialects out of the Yangtze Delta area. Its vocabulary comes from the entire northern Wu area (i.e. southern Jiangsu and northern Zhejiang) and has served as the regional lingua franca since its opening up in the early nineteenth century (W. Han et al., 2013). In English, the term “Shanghainese” is sometimes used to refer to Wu. Narrowly speaking, Shanghainese is estimated to have over 20 million speakers all over the world, while, broadly, Wu (including standard Shanghainese) has more than 80 million users worldwide.

Shaoxing dialect refers to the socially more prestigious variety spoken in the great Shaoxing municipal area. Although the Shaoxing dialect may phonetically sound “exaggerated” to most Shanghainese ears, as a member of the Wu family, and being geographically close to Shanghai, the Shaoxing dialect indeed shares a very high degree of lexical and syntactic similarities with Shanghainese. There are around five million Shaoxing dialect speakers around the world.

The number of overseas “Chinese” speakers has also been increasing in recent years. The 2016 National Census of Australia (Australian Bureau of Statistics, 2016), for example, shows that a number of 1 213 903 people in Australia, up to 3.9% of the Australian population, claim Chinese ethnicity by ancestry, while 2.2% of the total Australian population was born in Mainland China (after only Australia, England and New Zealand). According to the Census, there are 280 943 speakers of Cantonese dialect (as L1), around 1.2% of the Australian population, and 596 711 speakers of Mandarin (as L1), around 2.5% of the Australian population in Australia, which respectively ranks the fifth and second major languages in the country. Furthermore, 3% of the Australian population (704 658) have their fathers’ country of birth as Mainland China, and 3% have their mothers’ country of birth as Mainland China (699 074), both after only Australia and England. This means such a population may use the Chinese dialects, along with English, to communicate with their fathers or mothers, even though such Chinese dialects are not identified as their L1.

The phonological system

While the purpose of the current study is not to discuss in detail the phonological characteristics across the Chinese dialects, a general overview is provided here. Further information on the

similarities and differences across Chinese dialects in phonology can be found in Zee (1999, 2003), Duanmu (1990, 2000) and Xu et al. (1988).

Vowels and tones are equally important in Chinese. There are altogether twenty-two consonants and nine vowels in Mandarin. A Chinese character is monosyllabic and most of them start with a consonant. However, only /n/, /ŋ/ and, very rarely, /ɿ/ can occur in the final position in Mandarin. Vowels can be monophthongs or diphthongs and function as rimes, the final element in a syllable, such as /a/ in *lā* (pull), or /ao/ in *lāo* (fetch).

The phonological role of tones is a somewhat challenging concept for monolingual English speakers and a useful one for SLPs to understand so that they exercise caution when speaking Chinese words when working with ESL Chinese speakers as tones are inextricably bound to the meaning of a word, a phrase, or an utterance. That is, a change in tone can completely change the meaning of a word and therefore a sentence. Traditionally, there are four tones in Mandarin, that is the level, the rise, the fall-rise and the fall (Zhu, 2007). It should be pointed out that a fifth tone, that is the neutral or light tone, is not simply the “neutral” pronunciation of one of the other four tones. Instead, it also differentiates meanings, for example, *lǎozǐ* (the god of Taoism) and *lǎozì* (father). Therefore, in practical terms, there are altogether five defining tones in Mandarin. Again, tones are as important as vowels in the language since both are indispensable to make a syllable and to distinguish meanings. The phonological and tonal aspects of Henan dialect are interpretable by typically developing Mandarin speakers, although users of the former may sound much “exaggerated” in both vowels and tones (see Cao, 2008c; Z. Zhang, 2013). There are no definitive differences in the phonetics and phonology between Mandarin and Henan dialect.

Shanghainese is rich in vowels and consonants. In fact, it has the most vowels among all world languages (Wang, Ding, Tao, & Li, 2012). Unlike Mandarin and Henan dialect, a Shanghainese syllable may start with voiced initial stops and affricates. Its tonal system is also largely different from other Chinese dialects. It has seven tones with five in active use and two level tonal contrasts (high and low), while other major dialects such as Mandarin are fundamentally contour tonal. The Shaoxing dialect could sound sub-standard to Shanghainese, but communication between the users of the two dialects would not experience much disruption since the two share the basic phonetic and tonal system (see Cao, 2008c; Z. Zhang, 2013).

The writing system

The basis of Chinese writing is a set of logogram systems, or “characters”. In mainland China and Singapore, and recently in Canada, it has promulgated a set of simplified forms, while in other places (e.g. Hong Kong, Macau, Taiwan, and most overseas Chinese communities) a traditional writing system is mainly used. Generally speaking, the most obvious difference between traditional and simplified writing systems is the former tends to use more strokes to compose a character. [51] below presents a visual comparison between the simplified and the traditional systems:

[51] Speech-Language Pathology and Audiology

言语病理学与听觉学 (Simplified)

言語病理學與聽覺學 (Traditional)

In Mandarin and Henan dialect, a simplified writing system is solely used, while in Shaoxing dialect and modern Shanghainese, though a simplified writing system is mandatory by law, many words that are absent in Mandarin are still written in the traditional way.

The vocabulary

The vocabulary in modern Chinese dialects largely shares the same basic reservoir with some dialectal-specific idiomatic expressions (Cao, 2008b). Some dialects have been influenced by different foreign languages. And this is due to contact between languages which occurred in big cities in China due to their being colonies from mid-19th to mid-20th century. In that time, the “suzerain” languages became so dominant that they easily found their way to integrate themselves with the regional dialects. However, modern Shanghainese and Shaoxing dialect are believed to retain and use more frequently the old (archaic) and middle Chinese lexicons than Mandarin or other subvarieties under the Northern dialect. Some of the archaic lexicons still exist in today’s Mandarin and Henan dialect but are only used in very formal contexts. Therefore, even in writing, Shanghainese and Shaoxing dialect can look unusual and be very “informal” to Mandarin eyes. For example, vocabulary in Shanghainese and Mandarin has only 30% overlap. Such lexical similarity (or dissimilarity) is roughly the same as that between English and French.

The syntax

The syntax of Chinese is much more complicated as compared to its vocabulary, especially when one takes dialectal differences into consideration (Cao, 2008a). For example, although typologically characterized as being topic-prominent (Li & Thompson 1976), Chinese dialects differ in the degree of topic prominence. For example, while in Shanghainese almost all parts of speech can be topicalized with a wide range of active and multifunctional topic markers (see for example W. Han & Shi, 2014; W. Han & Shi, 2016), Mandarin is most comfortable with the topicalization of nominal (or pronominal) subjects and objects, as illustrated in Table 8.

Word order is, however, the one most important typological parameter in the classification of languages (Joseph H. Greenberg, 1966), since it is one of the most discernible syntactic variations. Word order is particularly important when it comes to topic-prominent languages without much subject-verb agreement and/or case marking devices (W. Han, 2013).

In determining the linguistic relationship between dialects, linguistic distance, which refers to the general degree of differences between languages or dialects (W. Li, 2000; Renfrew, McMahon, & Trask, 2000), is usually considered. Syntactically, some dialects share more common features and similar performance than others. One measure widely used to determine linguistic distance is to check the mutual intelligibility between the dialects (Thije & Zeevaert, 2007). In this sense, Henan dialect is quite intelligible to Mandarin speakers so the linguistic distance between them is much shorter than that between Shanghainese and Mandarin, which are highly mutually unintelligible. Therefore, there are differences between the syntactic distance among Chinese dialects due to their typological and geographical relatedness, as illustrated in Figure 5.

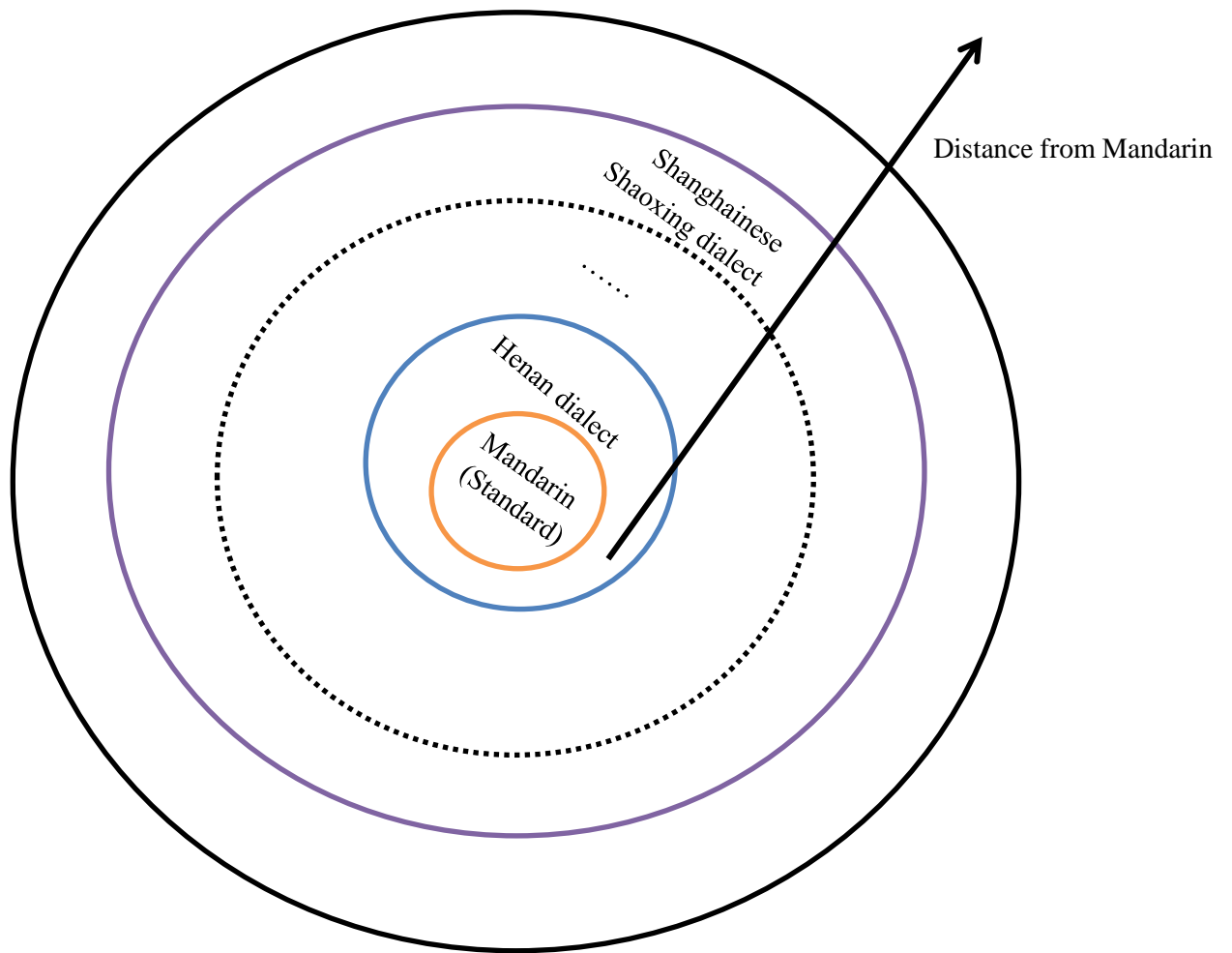


Figure 5: Syntactic distance between the Chinese dialects

Box 1 summarizes the differences in terms and definitions between Chinese and its dialects.

<i>Chinese</i>	A term usually misused to refer to one common language that is used by the “Chinese people”. Modern Chinese linguistics generally considers “Chinese” to be a general language category that consists of many varieties, that is Chinese dialects, which are typologically different from each other.
<i>The Northern dialect</i>	The dialect that is the phonetic, phonological, as well as tonal, basis for Mandarin. It is mainly spoken in the Northern (including the Northeastern and Northwestern) part of China. The Northern, Eastern, and Southwestern dialects share most linguistic characteristics with Mandarin and are mutually intelligible with each other.
<i>Mandarin</i>	One of the many varieties of Chinese dialects. Mandarin is not only the standard variety of the Northern dialect but also more of a standard variety of major Chinese speaking communities (e.g. mainland China, Taiwan etc.). Linguistically, Mandarin grammar is prescribed and consequently has no sub-varieties as most other major dialects in China do.
<i>Henan dialect</i>	A dialect used in Henan Province. A non-standard variety of the Northern dialect.
<i>Wu dialect</i>	The most populous Chinese dialect second only to Mandarin. It is mainly spoken in the East and Southeast part of China (i.e. Jiangsu, Shanghai and Zhejiang).
<i>Shanghainese</i>	A dialect used in Shanghai. A standard variety of Wu.
<i>Shaoxing dialect:</i>	A dialect used in Shaoxing. A non-standard variety of Wu.

Box 1: Terms of Chinese and its dialects

Generally, different dialects are spoken by residents in different regions (hence their names), while Mandarin is used across regions. Due to it being the standard teaching variety in schools, e.g. in mainland China and Taiwan, Mandarin has the most users compared to other Chinese dialects.¹⁸

¹⁸ Using a standard variety for political unity in dates to the Qin Dynasty (221-207 B.C.) (P. Chen, 1999; Coblin, 2000), and successive rulers of China maintained a standard and shared system for communication (W. Li & Zhu, 2010). Since foundation of PRC, the dominance of Mandarin, that is *Putonghua*, has been reinforced by *The Law of the National Commonly Used Language and Script of the People’s Republic of China* (X. Zhang & Guo, 2012). The dominance and law-forced promotion of Mandarin in mainland China, however, did make the existence of regional dialects “precarious” (Gao, 2015).

Problems existing in current “Chinese” studies

The Chinese language has at least 2 000 distinct dialects or subdialects in everyday use among Chinese people. Despite this, however, apart from a very limited number of clearly and correctly claimed studies of Chinese dialects (e.g. Yip & Matthews, 2000), most studies of “Chinese” are, actually, either studies of Mandarin but neglect to specify this (e.g. Ooi & Wong, 2012; Q. Zhang, Liang, Yao, Hu, & Chen, 2017), or studies of Chinese dialects other than Mandarin but incorrectly defined as general “Chinese” (e.g. Tse & Pu, 2013). In fact, most comparative studies take Cantonese as the “default” control dialect of Chinese as opposed to the standard Mandarin (e.g. Law & So, 2006) while paying little attention to other populous, yet typologically very different dialects of Chinese.

Without having considered the demographic factors (especially the dialectal backgrounds) of the “Mandarin-Chinese” speakers, the findings reported by those studies can be compromised. For example, many “Mandarin” studies use the term to refer to Mandarin spoken in a particular area, that is where it is co-used with other Chinese dialects, so that the results might not be applicable to Mandarin speakers in other dialectal areas with different dialectal backgrounds (e.g. Gui, Berry, & Zheng, 2012; D. Zhang, 2010). In fact, most cross-linguistic studies involving “Chinese” do not pay too much attention to their research participants’ dialectal knowledge.

For example, Zhang (2010) examined the linguistic effect of cross-linguistic transfer (positive and negative) on morphological awareness of Chinese-English bilingual children by selecting participants from a county in Northeast China, which, to quote Zhang, is “the business and political center” (p. 922). However, due to the great labor migration since the “Reform and Opening-up Policy” starting from the late 1970s, business and/or political centers in China have seen an increasing inflow of migrant workers whose native dialects are not even close to Mandarin or other Northern dialects (Gui et al., 2012). Cross-dialectal and typological interferences between these dialects are likely to occur. Not identifying the linguistic backgrounds of the participants or the assumption that participants currently living in Northern China are mono-dialectal Mandarin speakers could lead to biased results. For example, according to Zhang’s consistent analysis of Chinese as a head-final language, its construction of compound nouns should be in the manner of *Det. + N.*, such as 公鸡 “male-chicken”. In some dialects in Zhejiang and Fujian (two Southeastern provinces in China), however, the expression changes to “chicken-male” (鸡公), which fits in with a head-initial analysis. Uses like the latter

are, therefore, identified as “wrong” performances as per the standard rules, which, in fact, are just normal dialectal variations.

Misuse of the notion of “Chinese” could be particularly misleading in applied and clinical studies. For example, Meng et al. (2015) found, after a comprehensive study of “Chinese”-English bilingual children, there were positive correlations between the English and Chinese reading abilities. That is typically developing Chinese children (that is, in Meng et al.’s definition: “not clinically impaired readers in Chinese”), who were impaired in English reading abilities were found to have poorer reading abilities in “Chinese”. Therefore, clinically, they should be “diagnosed as children with impairments in both English and Chinese” (Meng et al., 2015, p. 4). Such a claim is strange not only because of the way that TD L1 children were unfortunately assessed as being impaired in both languages by only monolingual standards but also that the study failed to consider the L1 dialectal backgrounds of the participants. To claim the participants as “Mandarin-speaking” does not by default categorize them as “Mandarin-monodialectal” (or even “Mandarin-dominant”) Chinese speakers. The risk of assessing potential bi-/multi-dialectal children with materials of only the standard variety is much comparable with measuring bi-/multi-lingual children with only monolingual norms. At least, there is a big question as to why it was so certain the participants in Meng et al.’s (2015) study understood the Mandarin verbal instructions of the test if they were diagnosed as impaired with reading and comprehension abilities in both English and Chinese.

Similarly, K. Xu et al. (2015), rather than being more linguistically and typologically neutral, claimed that Mandarin and Southern non-Mandarin branches are the two branches in the Sinitic family (also see Tang & van Heuven, 2007, 2009), and put all speakers in their study who understood Mandarin in the same group as they have the “same” L1 background. In fact, Mandarin is intelligible to most speakers in mainland China due to decades of standardization of the dialect in media and education, but not because how close the speakers’ first dialects are to the standard. Such intelligibility between the standard variety and regional dialects, however, is usually not mutual. Therefore, assuming the participants in Xu et al.’s (2015) study understood Mandarin meant they had the same linguistic competence in Mandarin as Mandarin monodialectals would bias the results.

Furthermore, a large proportion of studies of “Chinese” are interested in phonological and/or lexical differences rather than syntactic-semantic dissimilarities (e.g. Ng, Hsueh, & Leung, 2010). As two core aspects of language, however, syntax and semantics govern and represent

the methodical and logical sequence of words and phrases to form meaningful sentences. Studies at the syntactic-semantic interface are important in many ways including providing us with a comprehensive understanding of human languages. It is particularly important to point out that syntactic studies from a cross-linguistic perspective are critical in understanding learners' cognitive and bilingual development (Cook & Bassetti, 2011).

Considering the complexities of Chinese dialects and the complicated linguistic background a Chinese client may have, it is necessary that clinicians and researchers have accurate linguistic information about the clients. Development of reliable threshold indicators of possible language impairment is thus urgently called for so that accurate diagnosis can be achieved. Therefore, it is important that a more nuanced understanding of “Chinese” as a language with multiple dialects with distinct syntactic-semantic differences is developed by SLPs working with people who have “Chinese” as their L1.

Study Rationale

To summarize the literature review above, I argue that SLA studies and bilingual studies, especially those in respect of the L1 cross-linguistic transfer, have shown that typological differences between L1 and L2 are of primary significance. In speech-language pathology studies, the comparison of TD bilinguals to TD monolinguals, or that of TD bilinguals and/or bilinguals with DLD to age-matched monolinguals with DLD, may easily lead to bias in assessment tasks and misdiagnosis when providing only tasks with monolingual norms.

While the efforts to link bilingual studies and research in language disorder are still inadequate, most existing studies focus on the phonological, lexical, or the morphological aspects between the topics. The interface of syntax-semantics is, however, unfortunately, overlooked.

In terms of Chinese speakers and clients in speech-language pathology services, neither the term “Chinese” is accurately defined, nor is the multidialectal nature of the language recognized. That is to say, a bilingual “Chinese” client is at risk of being wrongly identified as monodialectal in his/her L1, even before the assessment and diagnosis of the L2 begin. In fact, there is enough evidence to show that bidialectism is as important to understand as bilingualism as per the developmental mechanism and stages. Not only theoretically, but also clinically, therefore, it is important to understand the possible benefits of first language bidialectism on

L2 acquisition, especially when the L1 negative transfer is believed to be inevitable in the process of L2 learning.

In summary, there are a couple of concepts that motivate this study. First of all, the current research concerns the mismatch between typical bilingual development and developmental language disorder. Therefore, it is motivated by the need to further the understanding at the interface of TD bilinguals and bilinguals with DLD. Studies summarized in the literature review indicate that, in general, children who have difficulties in any aspect of language (such as syntax, semantics, pragmatics, morphology, and phonology, etc.), especially school-age children who have those common language difficulties such as misuse and/or misunderstanding of complex sentence structures are considered to experience developmental language disorder. In fact, such a kind of delayed or disordered development seems to occur for no apparent reason (Bishop & Norbury, 2008). However, due to the “lag behind” effect that occurs in bilingual children, as compared to age-matched monolingual children, and the use of tests with monolingual norms among bilinguals, clear identification of bilinguals with DLD has not been easy.

Second, the study is motivated by the need to understand the role of L1 bidialectism in L2 syntactic-semantic acquisition. Although most everyday language (i.e. object language) is used to refer to the non-verbal world (both the real and the possible ones), “metalinguage” is used to refer to the object language itself (see Lebrun & Buysens, 1982). The explicit knowledge of metalinguage, that is metalinguistic awareness, is used by speakers to monitor their language use. Metalinguistic awareness is a type of metacognition (i.e. to think about thinking), and, therefore, is a cognitive process, which allows language users to think and discuss meanings and structures of language consciously and objectively (see for example Gombert, 1992; Ransdell, Barbier, & Niit, 2006; Tunmer, Herriman, & Nesdale, 1988). Speakers with established metalinguistic awareness will display the ability to “peel” content from form. There are multiple layers of metalinguistic awareness, which can be defined and identified through speakers’ performance regarding certain features of the language. For example, a child speaker’s syllabic awareness can be measured through his/her performance in counting the syllables in words, or his/her ability to correctly pronounce the combination of the rest syllables if one (onset or coda) is omitted (see Nagy & Anderson, 1995, p. 2). Unfortunately, there have been limited studies that specifically looked into metalinguistic awareness at the syntactic-semantic interface, especially in speech-language pathology studies.

The study is also motivated by the need to explore the effect of language distance in L2 acquisition by L1 bidialectal learners. Language distance is in inverse proportion to the similarities between the first and the second language, that is the first and second languages are more distant from each other if there are fewer similarities between them and vice versa. However, it is believed that the smaller language distance between the first and the second language, the more likely the acquisition process in the L2 is facilitated (see E. Kellerman, 1995). In other words, learners from a typologically closer language tend to outperform those from a typologically more distant language in a second language (Sjöholm, 1976). However, there are few studies paying much attention to how the complexities of the first language (resulting from bidialectism/multidialectism) play a role in second language learning, even if the learners' first languages remain quite "distant" from the second language. Take Mandarin and Wu for example, although each of the two dialects of Chinese seems equally "distant" from English, the typological distinctions between the two are complex enough that we have reason to believe a bidialectal speaker of both has a more complex typological knowledge (as compared to the universal knowledge (see Croft, 2006)) of language than a Mandarin, or Wu, monodialectal speaker. The question is whether such complex language knowledge in L1 makes a difference in the L2 acquisition, especially at the syntax-semantics level.

Research Question

This study is designed to inform speech-language pathologists of the need to obtain an accurate and clear definition of their clients' linguistic backgrounds and of the need to develop accurate threshold indicators. It is expected that understanding the impact of bidialectism for Chinese learners of English will assist in distinguishing crosslinguistic transfer from language impairment. Therefore, more accurate diagnoses can be provided. The study is motivated by the question below:

Q: Does first language bidialectism in Chinese impact on child learners' second language syntactic-semantic interface awareness in English?

Summary

Within the UG framework, it is proposed that UG is common to all language learners. The process of L1 acquisition, at least, is guided by UG, which computes and develops rules (phonological, morphological, syntactic, semantic, etc.) through only inputs (which are often incomplete and inaccurate). However, there are arguments as per whether L2 learners have the same access to UG in L2 as L1 learners do, and whether they start their L2 initial stages as L1 learners start their L1s. While it is evident in Table 6 that the biggest difference between the processes of L1 and L2 acquisition is that there is L1 transfer in SLA, what Table 6 does not answer is to what degree L2 learners may access UG. The main argument, therefore, is whether L2 learners have direct access to UG, or is the access indirect (in that it is subject to the learners' L1 knowledge). And if the access is direct, is there full access or partial access to UG?

At the syntax-semantics interface, one needs to understand that ambiguities of the “equivalent” structures (with the same word order) across languages are not necessarily the same. When put in the SLA context, it is believed that the greater differences between the first and second languages there are, the more chances negative transfer happens (Whitley, 2002). Unfortunately, most of the L1 knowledge applied could be expected as “negative transfers” or “interferences” in the way that learners of a second language are inclined to use more L1-like but non-L2 structures or fail to acquire those L2 structures which are absent in L1 (see for example Bransford et al., 2000; Jarvis & Pavlenko, 2008; Nitschke et al., 2010).

In summary, this study is motivated by the need to link speech-language pathology and syntactic-semantic typological studies in a bidialectal/multidialectal vs. bilingual/multilingual context and to bridge the gap in the research of syntactic-semantic awareness as the very important (yet underrepresented) aspect in both studies of bilingualism and speech-language pathology. Under the UG framework, it endeavors to reveal the interactive (whether positive or negative) relations between L1 bidialectism and L2 acquisition by laying special emphasis on early L2 learners' syntactic-semantic awareness.

Chapter 4 Methodology

This chapter focuses on the methodological aspects in general. A general hypothesis in response to the research question is proposed. Specifically, two sub-hypotheses are proposed in accordance with the two different types of form-meaning mismatches between Mandarin, Wu, and English. Then the mixed methods, as well as the two phases of test design, are explained. In the section of participant recruitment, the recruitment criteria and procedures are explained after a detailed discussion of the Language Background Questionnaire (LBQ) (adapted from Tan, 2008). A summary concludes the whole chapter.

General Hypothesis

As proposed in the general question, it is important for both clinicians and applied linguists to answer if first language bidialectism has any positive or negative influences on child L2 acquisition.

Contra the null hypothesis that there is no correlation between L1 dialectal background and L2 syntactic-semantic awareness, and, therefore, there is no difference between monodialectal and bidialectal groups in learning a second language, the alternate hypothesis is as follows:

H1: First language bidialectism has a positive impact on child learners' second language syntactic-semantic interface awareness.

The expected outcome of L1 bidialectism on L2, therefore, is that the more syntactically different the dialects of the first language are from each other, the better awareness the learner will have at the syntax-semantics interface in the second language.

Sub-Hypotheses

The general hypothesis proposes that Chinese bidialectal speakers (with one dialect being the standard dialect of Mandarin), due to the typological complexities among the dialects, may show more advanced metalinguistic awareness, and therefore may appear more sensitive to the syntax-semantics interface in English as the second language. However, such an extra

syntactic-semantic sensitivity does not limit to situations where L1 bidialectals are more inclusive of the structures and/or meanings that are absent in their L1. Rather the L1 bidialectal advantage will also be found in the ability to exclude in the second language the structures and/or meanings found in the L1 but not applicable in L2.

Considering the different types of form-meaning mismatches between the L1 and the L2 in this study (see Chapter 3), the general hypothesis is refined as in the following two sub-hypotheses:

Sub-H_a: For the structures that have two readings in L2 (English) but only one reading in L1 (Mandarin and Wu) (i.e. the ONLY structure and the EVERY structure), the L1-bidialectal group will accept both the narrow and broad readings, while the L1-monodialectal group will accept only the narrow reading, in L2.

Sub-H_b: For the structures that have only one reading in L2 (English) but two readings in L1 (Mandarin and Wu) (i.e. the BUY structure and the T-C structure), the L1-bidialectal groups will reject the reading that is not included in the L2, while the monodialectal groups will accept both readings, in L2.

As reviewed in Chapter 3, many cross-linguistic transfer theories propose that second language learners are subject to the influence of negative transfer, that is they tend to apply the syntax and/or semantics that are only possible in L1 in the target language. The above hypotheses, however, propose that L1 bidialectals may be not, or, at least, less, constrained by such a negative transfer at the syntax-semantics interface, as compared to L1 monodialectals. The expectation of the test results, in other words, is that Mandarin-Wu bidialectals will likely to be less susceptible to L1 effects, and that is they will be more aware of the L2 syntax and semantics. And this is due to the bidialectals having more complex syntactic-semantic awareness, that is they are more sensitive to the syntactic-semantic deviations between L1 and L2. The sub-hypotheses are aimed to be answered through both the quantitative and qualitative research processes, in consideration that a mixed process provides clearer, and more importantly, less biased interpretations and explanations.

Based on Table 7, Table 9 serves as a summary of the four test structures. Their readings of the corresponding structures in the different Chinese dialects under study are illustrated. The sub-hypotheses for each test structure are given before a summary of the expected results.

Table 9: Summary of the test structures and predictions

Structures	Readings	English	Mandarin	Wu	Sub-Hypotheses	General Hypothesis
(1) <i>ONLY</i> e.g. <i>The fireman is only holding a hose.</i>	A: Holding a hose is the only thing the fireman is doing. B: A hose is the only thing the fireman is holding.	Reading A and B	Reading A	Reading A	<i>Sub-Ha:</i> The Mandarin-Wu bidialectal group will accept both the narrow (A) and broad (B) readings, while the Mandarin monodialectal group will accept only the narrow reading (A).	Mandarin-Wu bidialectals are less susceptible to L1 negative transfer, that is they are more aware of the L2 syntax-semantics. This is due to the bidialectals having more complex syntactic-semantic awareness, that is they are more sensitive to the syntactic-semantic deviations between L1 and L2.
(2) <i>EVERY</i> e.g. <i>Every horse didn't jump over the fence.</i>	A: No horse jumped over the fence. B: Not every horse jumped over the fence.	Reading A and B	Reading A	Reading A		
(3) <i>BUY</i> e.g. <i>John bought Jane a bouquet of roses.</i>	A: John bought a bouquet of roses for Jane. B: John bought a bouquet of roses from Jane.	Reading A	Reading A and B	Reading A and B	<i>Sub-Hb:</i> The Mandarin-Wu bidialectal group will accept reading A but reject the B reading, while the Mandarin monodialectal group will accept both readings.	
(4) <i>T-C</i> e.g. <i>That young man, our department rejected.</i>	A: Our department rejected that young man. B: That young man rejected our department.	Reading A	Reading A and B	Reading A and B		

Selection of the mixed method

It is a recent trend that mixed methods are more promoted and their use advocated in applied and clinical linguistic studies (Dörnyei, 2007; Hashemi, 2012). This is because a mixed method, by producing more valid and reliable data, enhances the researcher's knowledge of language learning (Hashemi & Babaii, 2013). This study was designed so that both the quantitative and qualitative data were collected for side-by-side comparison rather than for the purpose of data transformation or one dataset leading/building into the other. Specifically, the quantitative data were collected and analyzed to test the hypotheses as to whether first language bidialectism in Chinese would impact on child learners' second language syntactic-semantic interface awareness in English. Unlike the quantitative analysis that sees statistical significance on numbers as data, qualitative analysis is more about meaning, instead of numbers, with words and discourse as data (Braun & Clarke, 2012, pp. 3-4). It does not provide a single answer (p. 20). Therefore, the qualitative data, in addition, were collected and analyzed to show how first language bidialectism in Chinese impacted on child learners' second language syntactic-semantic interface awareness in English (providing that L1 bidialectism does have an impact). Therefore, a mixed method was employed for the data collection, analysis, and interpretation.

The quantitative and the qualitative data were collected concurrently as per the methods Creswell (2014, p. 230) suggests. Therefore, the convergent parallel mixed method design was chosen (see Creswell & Plano Clark, 2011), considering that the two datasets (quantitative and qualitative) were to be collected and analyzed separately (see Table 10 for details).

Table 10: Choosing a mixed methods design

Reasons for choosing mixed methods	Expected outcomes	Recommended mixed methods design
Comparing different perspectives drawn from quantitative and qualitative data	Merging the two databases to show how the data converge or diverge	<u>Convergent parallel mixed methods design</u>

(Adapted from Creswell, 2014, p. 231; Creswell & Plano Clark, 2011)

By definition (see Johnson, Onwuegbuzie, & Turner, 2007), the mixed method approach involves the collection and analysis of both close-ended (quantitative) and open-ended (qualitative) data, which are embedded (within each other), connected and merged in response to the research question(s) and hypotheses. Although such an approach requires extensive, time-intensive data collection and analysis, choosing a mixed method design for the current

study was based on the consideration that it provides a more complete and less biased understanding of the research questions and problems, as well as minimizing the limitations of only quantitative or only qualitative inquiries (also see Creswell, 2014, p. 218). Access to both qualitative and quantitative data also helps future research with a more impartial consideration of related questions. Therefore, a mixed method is a practically and procedurally better choice.

The convergent mixed methods originated as early as Campbell and Fiske's (1959) proposal that different types of data should be gathered for a better understanding of psychological traits. In the current study, the participants' scores on the test were analyzed quantitatively and their detailed views on the motivation for choosing particular semantics for certain syntax qualitatively. The two datasets were compared side by side and were interpreted for their divergence and convergence (see Figure 6) (also see Classen et al., 2007 for an example). Although a large number of participants (N) is needed for meaningful statistical tests, usually a much smaller group will suffice the purposes of qualitative data collection due to its intent "to locate and obtain information (i.e. "what" and "how") from a small sample but to gather intensive information from this sample" (Creswell, 2014, p. 222). The data analysis and discussion sections in this study follow Creswell's proposal.

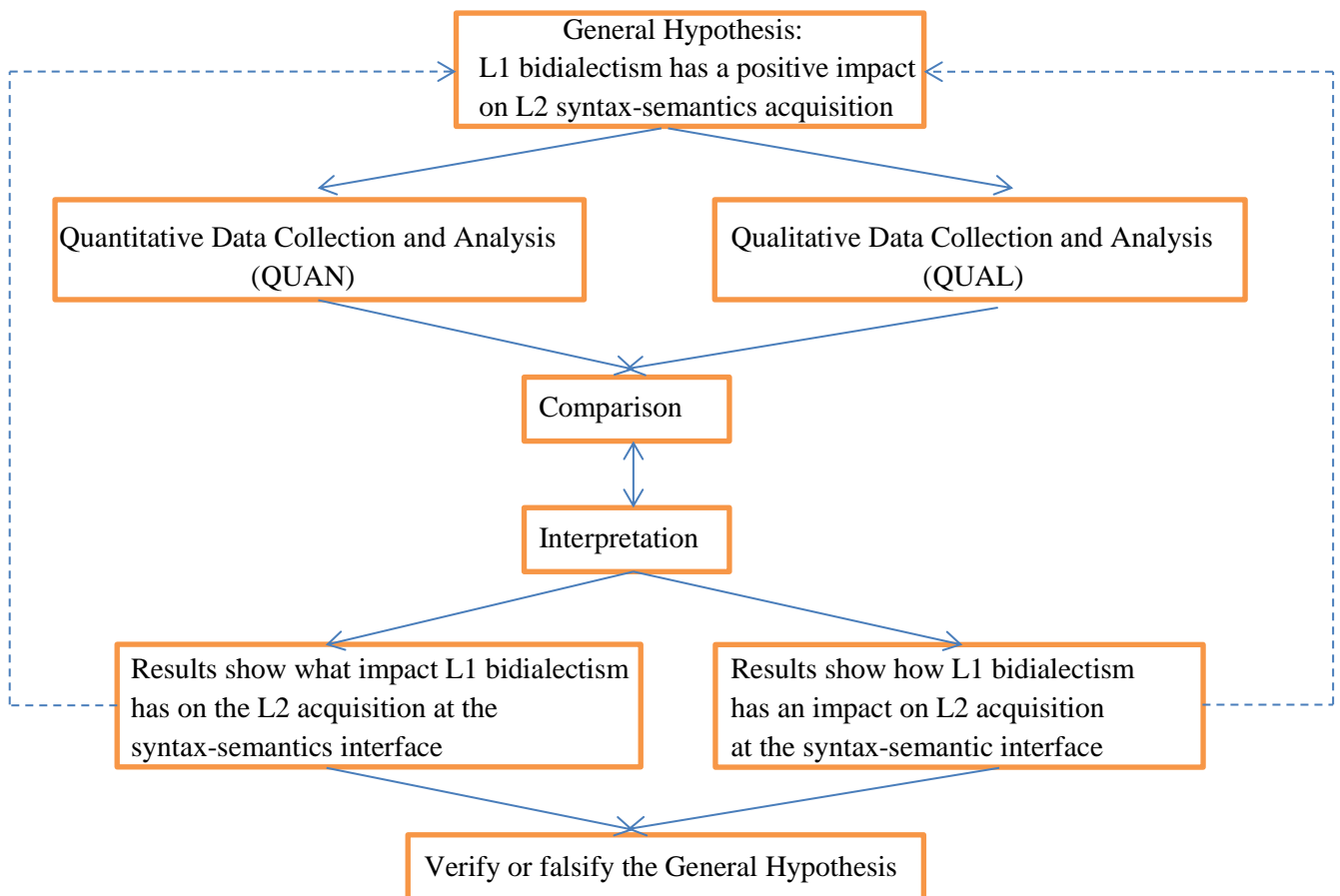


Figure 6: Convergent parallel mixed methods

(Adapted from Creswell, 2014, p. 220)

The two-phase design

There were two phases of the test, that is phase one – the Sentence Picture Matching Task (SPMT), and phase two – the interview. Through the comparison between the first language mono- and bidialectal groups, with analysis of the data collected by interview, the design aimed to enable the research question to be better answered (i.e. does first language bidialectism have a positive impact on children’s second language syntactic-semantic comprehension?). Examinations of each bidialectal group as per their performance in both phases of the test will provide us clearer understandings of the way first language dialectal background influences second language syntactic-semantic awareness. This can be achieved through typological comparisons and the analysis of the linguistic features among the participants’ native dialects and their corresponding performance in the second language. The focus on language comprehension was selected to provide more detailed and specified information that can lead

to a comprehensive and clearer understanding of syntactic-semantic transfer theories regarding second language syntactic and semantic impairment.

Figure 7: presents a flowchart of the two phases of design:

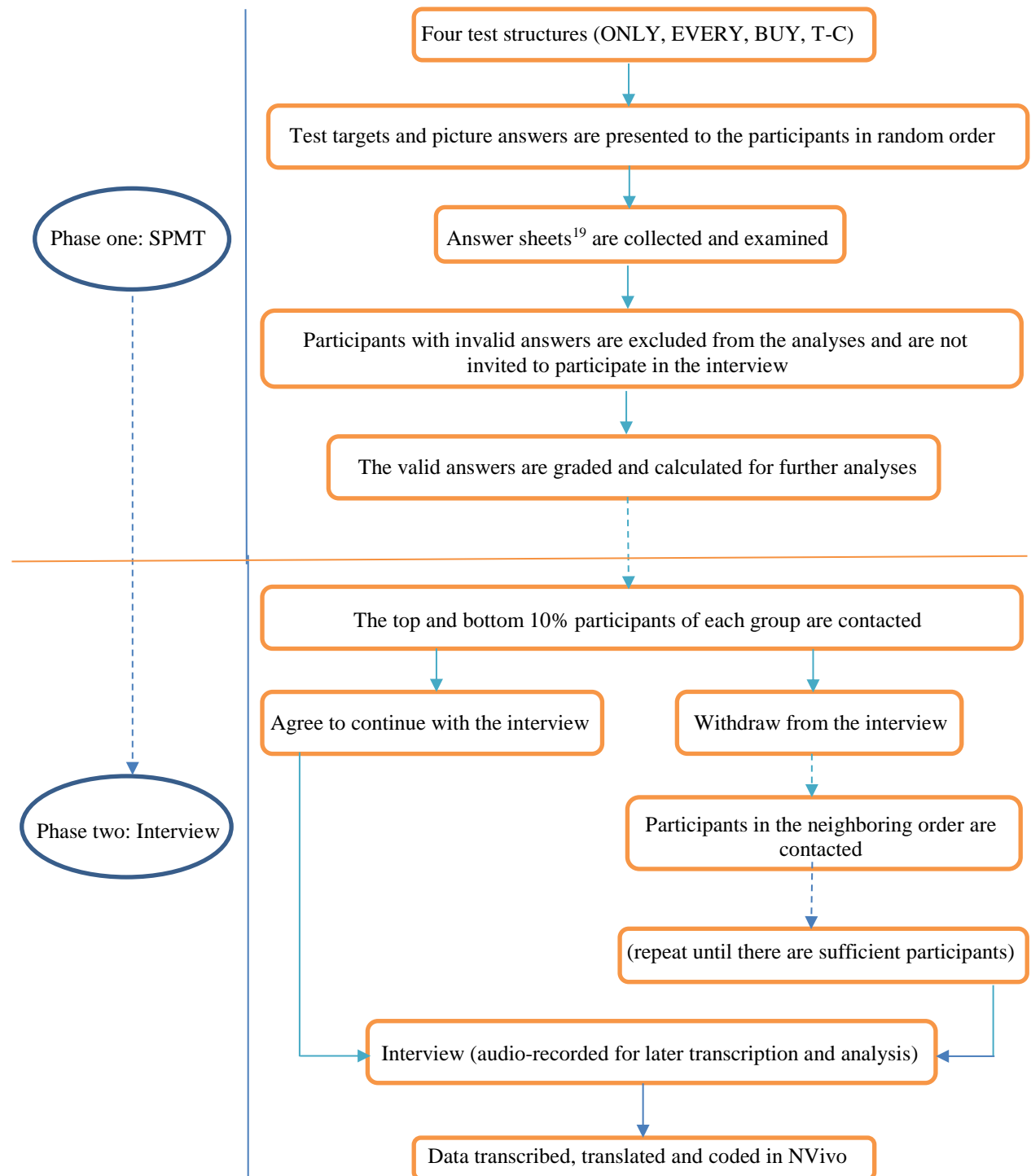


Figure 7: The two phases design

¹⁹ See Appendix I for an example of the Answer Sheet.

Participant recruitment

Ethical clearance

Before data collection commenced, ethical clearance for the project was obtained through the Social and Behavioural Research Ethics Committee of Flinders University (Project No. 7071).

Places of recruitment

All the participants were recruited from public schools in Beijing, Henan (the city of Zhengzhou), Shanghai and Shaoxing. Beijing and Henan belong to the Mandarin-speaking region of China, and Shanghai and Shaoxing belong to the Wu-speaking region²⁰. The map below presents an illustration of the places of recruitment.

[Figure 8 has been removed due to copyright restrictions]

Figure 8: Location of the four places of recruitment

Language background questionnaire (LBQ)

The Language Background Questionnaire (LBQ; adapted from Tan, 2008) was employed in the study. The LBQ was designed for the collection of the language history of child participants to determine their language status (e.g. mono- or bi-dialectal), language exposure, etc. The questionnaire was used as part of the measures to include, as well as exclude, participants (see the recruitment criteria section below). Other demographic information from the participant and family, such as occupation and educational level of the parents, was also collected through the LBQ (see Appendix II).

The LBQ was translated by the researcher and proofread by a translator accredited by the National Accreditation Authority for Translators and Interpreters, Australia so that the

²⁰ It can be argued that the Beijing participants speak Pekingese (the local variety of Mandarin used by the residents in Beijing). However, as Pekingese is the phonetic and phonological basis for Mandarin and the differences between the two, especially at the syntactic and semantic levels, are minimal as compared to that between Mandarin and Shanghainese or the Shaoxing dialect, the Beijing group is identified as being Mandarin monodialectal. In the same sense, although the Henan dialect (the local variety of Mandarin used by the residents in Henan) sounds like exaggerated Mandarin, syntactically and semantically, the two belong to the same dialect of Chinese. Therefore, the participants from Henan are also recognized as Mandarin monodialectal speakers. And this is the reason for the motivation of the regional, dialectal distinctions of the North Mandarin monodialectal vs. the South Mandarin-Wu bidialectal in the following comparisons and analyses.

equivalence of the English and the Chinese versions of the questionnaire was ensured (see Dörnyei & Csizér, 2012).

Parents/guardians of the participants were required to complete the questionnaire designed to gather data that would support the determination of their child's demographic and linguistic background. The questionnaire was conducted on the same day and in the same location before the phase one test started. The researcher first explained the test and questionnaire and answered any questions from the parents/guardians. The parents/guardians were reminded verbally that they could withdraw without incurring any negative consequences to them or their children. However, only those students whose parents/guardians completed the questionnaire participated in the test. Based on the LBQ information, test results of those participants who did not meet the inclusion criteria (e.g. due to age or dialectal background), were excluded from the analysis. These participants were not selected for the interview.

Altogether, there were 28 independent variables collected through the LBQ, as summarized in Table 11.

Table 11: Independent variables

	Label	Description
1	Dialect	The L1 dialectal background of the participants, that is monodialectal vs. bidialectal
2	Gender	Participant gender
3	Age	Participant age
4	Years of School	Years of formal schooling of the participant
5	Lived in Other Places	Whether the participant had lived in other places than the place of data collection
6	Time Lived in Other Places	How many years and months the participant had lived in other places than the place of data collection
7	Mother's Education	Participant's mother's highest education
8	Mother's Birth Place	Participant's mother's birthplace
9	Mother's Years Residing in Current City	How many years and months the participant's mother had lived in the place of data collection
10	Mother's Work Type	Whether the participant's mother worked full-time, part-time, casual, etc. at the time of data collection
11	Father's Education	Participant's father's highest education
12	Father's Birth Place	Participant's father's birthplace
13	Father's Years Residing in Current City	How many years and months the participant's father had lived in the place of data collection
14	Father's Work Type	Whether the participant's father worked full-time, part-time, casual, etc. at the time of data collection
15	Main Dialect Used by Mother	The main (L1) dialect used by the participant's mother in general situations
16	Main Dialect Used by Father	The main (L1) dialect used by the participant's father in general situations
17	Main Dialect Used by Mother and Father	The main (L1) dialect used between the participant's mother and father in general situations
18	Sibling	Whether the participant had siblings
19	Number of Siblings	How many siblings the participant had
20	Main Dialect Used by the Sibling(s) to the participant	The main (L1) dialect used by the sibling(s) to the participant
21	Main Dialect Used by the Participant to the Siblings	The main (L1) dialect used by the participant to the sibling(s)
22	Main Dialect Used by the Participant and his/her friends	The main (L1) dialect used by the participant to his/her friends
23	Other Carers	Whether there were other carers of the participant than his/her parents/guardians
24	Main Dialect Used between the Participant and other carers	The main (L1) dialect used between the participant and his/her other carers
25	Dialectal Competence Rating (Mandarin Comprehension)	Parent/guardian rating of the participant's receptive ability in Mandarin
26	Dialectal Competence Rating (Mandarin Production)	Parent/guardian rating of the participant's productive ability in Mandarin
27	Dialectal Competence Rating (Wu Comprehension)	Parent/guardian rating of the participant's receptive ability in Wu
28	Dialectal Competence Rating (Wu Production)	Parent/guardian rating of the participant's productive ability in Wu

Participant demographic and linguistic factors

The demographic factors

There were 78 participants in the monodialectal group (37 from Beijing and 41 from Henan), and 79 in the bidialectal group (39 from Shanghai and 40 from Shaoxing). There were more male participants ($n=42$) than female participants ($n=36$) in the monodialectal group, while there were more female ($n=51$) than male ($n=28$) participants in the bidialectal group. As per their dialectal profile, all the 78 participants from the monodialectal group categorized themselves through the LBQ as being Mandarin monodialectal. And all 79 participants from the bidialectal group were recognized as being Mandarin-Wu bidialectal.

The monodialectal group had an average age of 9;5 (i.e. 9 years; 5 months) and the average age of the bidialectal group was 9;9. The monodialectal group had attended formal schooling for an average of 3.7 years, and the bidialectal 4.0 years. Almost half ($n=27$) of the monodialectal group had lived in other places (average duration 2.9 years), but only twenty% ($n=12$) from the bidialectal group had done so (average duration 0.7 years).

From the monodialectal group, 57 had a sibling/s, but only 22 from the bidialectal group had sibling/s. Besides the parents, grandparents cared for the participants in both groups in most situations (38 cases from the monodialectal group and 66 from the bidialectal group). There were more participants attending after-school care in the monodialectal group ($n=10$) than in the bidialectal group ($n=2$). Participants were also cared for by other family members such as aunts, uncles, cousins (19 from the monodialectal group and nine from the bidialectal group). There were five participants from the monodialectal group, and none from the bidialectal group, that had only their parents as the carers. Table 12 below summarises the participants' demographic factors by the group.

Table 12: Participant demographic factors

		Monodialectal Group	Bidialectal Group
Gender	<i>Male</i>	42	28
	<i>Female</i>	38	51
Dialect	<i>Mandarin</i>	78	
	<i>Mandarin-Wu</i>	0	79
Age (mean)		9.4	9.8
Mean Years of Formal Schooling		3.7	4.0
Lived in Other Places	<i>Yes</i>	27	12
	<i>No</i>	29	44
	<i>No Answer</i>	22	23
Mean Years of Living in Other Places (than that of the data collection)		2.9	0.7
Sibling	<i>Yes</i>	57	20
	<i>No</i>	19	57
	<i>No Answer</i>	2	2
Mean Numbers of Siblings		1.5	1.5
Other Carers	<i>Helper</i>	0	0
	<i>Grandparents(Maternal)</i>	14	30
	<i>Grandparents(Paternal)</i>	24	36
	<i>After School Care</i>	10	2
	<i>Nanny</i>	0	0
	<i>Other</i>	19	9
	<i>No Other Carers</i>	5	0
	<i>No Answer</i>	6	2

The background information of the participants' parents were also collected, considering that the parental demographic, as well as linguistic, background may influence their child(ren)'s language development (see for example Hoff, 2006; Huttenlocher, Waterfall, Vasilyeva, Vevea, & Hedges, 2010; Lugo-Gil & Tamis-LeMonda, 2008; Sameroff, 2010).²¹ Mostly, the mothers were born in Beijing or Henan ($n=31$) or other Mandarin regions ($n=33$) for the monodialectal group, or Shanghai or Shaoxing ($n=37$), or other Wu regions ($n=17$) for the bidialectal group. On average, the mothers from the monodialectal group had lived, cumulatively, in the place of data collection for 22 years, and those from the bidialectal group 22.8 years. On the paternal side, most fathers from the monodialectal group were born in Beijing or Henan ($n=30$), or other Mandarin regions ($n=35$), and those from the bidialectal group were mostly born in Shanghai

²¹ Although, even in the comparably quite similar situations, whether the influence is positive or negative remains arguable (e.g. Pancsofar & Vernon-Feagans, 2010; Song, Spier, & Tamis-LeMonda, 2014).

or Shaoxing ($n=44$), or other regions of Wu ($n=10$). On average, the fathers from the monodialectal group had lived, cumulatively, in the place of data collection for 23.2 years, and those from the bidialectal group 25.8 years.

Regarding educational background, most mothers ($n=57$) from the monodialectal group were educated at high school level or below, while 36 from the bidialectal group had a similar educational background. Fifteen mothers from the bidialectal group had university degrees at the undergraduate or postgraduate levels, almost double those from the monodialectal group ($n=8$). The fathers' educational backgrounds were similar to that of the mothers: there were more fathers educated at or below high school level from the monodialectal group ($n=59$) than from the bidialectal group ($n=42$), while the number of fathers who had university degrees from the bidialectal group ($n=26$) was triple of those from the monodialectal group ($n=8$).

Regarding parent employment, there were more parents working full-time (Mother, $n=39$; Father, $n=47$) in the bidialectal group as contra those in the monodialectal group (Mother, $n=24$; Father, $n=34$). In contrast, there were more unemployed mothers ($n=13$) and fathers ($n=4$) in the monodialectal group than in the bidialectal group (Mother, $n=9$; Father, $n=1$). Table 13 summarizes parental demographic factors.

Table 13: Parental demographic factors

		Monodialectal Group	Bidialectal Group
Mother's Birth Place	<i>Beijing</i>	3	0
	<i>Shanghai</i>	0	24
	<i>Henan</i>	28	0
	<i>Shaoxing</i>	0	13
	<i>Other (Mandarin)</i>	33	12
	<i>Other (Wu)</i>	0	17
	<i>No Answer</i>	14	13
Mother's Years Residing in Current City		22	22.8
Father's Birth Place	<i>Beijing</i>	4	0
	<i>Shanghai</i>	0	24
	<i>Henan</i>	26	0
	<i>Shaoxing</i>	0	20
	<i>Other (Mandarin)</i>	35	12
	<i>Other (Wu)</i>	0	10
	<i>No Answer</i>	13	13
Father's Years Residing in Current City		23.2	25.8
Mother's Education	<i>Junior High School</i>	38	27
	<i>Senior High School</i>	19	19
	<i>Junior College</i>	12	17
	<i>Undergraduate</i>	5	13
	<i>Postgraduate</i>	3	2
	<i>No Answer</i>	1	1
Father's Education	<i>Junior High School</i>	37	24
	<i>Senior High School</i>	22	18
	<i>Junior College</i>	11	9
	<i>Undergraduate</i>	6	24
	<i>Postgraduate</i>	2	2
	<i>No Answer</i>	0	2
Mother's Work type	<i>Part-time</i>	6	4
	<i>Full-time</i>	24	39
	<i>Casual</i>	30	25
	<i>Unemployed</i>	13	9
	<i>No Answer</i>	5	2
Father's Work type	<i>Part-time</i>	1	5
	<i>Full-time</i>	34	47
	<i>Casual</i>	34	21
	<i>Unemployed</i>	4	1
	<i>No Answer</i>	5	5

The linguistic factors

Participants' dialectal competence was rated by their parents. As is shown in Table 14 below, the receptive competence was rated as better than expressive for both groups.

As to their dialectal use habits, 62 from the monodialectal and 41 from the bidialectal group indicated which dialect(s) were used between participants and their friends. Evidently, only three from the bidialectal group used Wu as their main means of communication with friends, while the rest in both groups preferred Mandarin. Also, for those who had given answers to which dialect(s) used between the participants and their siblings, only one sibling reportedly chose to use Wu to the participant, and only seven participants used Wu to their sibling(s), in the bidialectal group. The rest all favored Mandarin (in either way).

The main dialect(s) used between participants and other carers than their parents presented a slightly different picture. While 100% of respondents indicated they used Mandarin as the main dialect, 52 from the bidialectal group reported Wu as the main dialect used by other carers. This is because, as mentioned earlier, around 66 "other carers" for the bidialectal group were either the participants' grandparent/s, most of whom were born before the National Standardisation Programme of Mandarin began. Therefore, it is the case that the participants' grandparents were either only, or quite heavily, dependent on their own dialects (i.e. Shanghai-Wu or Shaoxing-Wu) for communication. In this sense, the "choice" of Wu as the main dialect used with their carers was not actually a choice for those bidialectal participants. Table 14 below has the detail of the participant language factors from both groups.

Table 14: Participant language factors

		Monodialectal Group	Bidialectal Group
Mean Scores of Dialectal Competence	<i>Mandarin (Comprehension)</i>	6.0	6.4
	<i>Mandarin (Production)</i>	5.6	6.2
	<i>Wu (Comprehension)</i>		5.4
	<i>Wu (Production)</i>		4.3
Main Dialect Used between the Participants and their Friends	<i>Mandarin</i>	62	38
	<i>Wu</i>		3
	<i>No Answer</i>	16	38
Main Dialect Used by the Participants to their Siblings	<i>Mandarin</i>	51	11
	<i>Wu</i>		7
	<i>No Answer</i>	6	2
Main Dialect Used by the Siblings to the Participants	<i>Mandarin</i>	56	17
	<i>Wu</i>		1
	<i>No Answer</i>	1	2
Main Dialect Used between the Participants and their Other Carers	<i>Mandarin</i>	61	22
	<i>Wu</i>		51
	<i>No Answer</i>	6	4

As for the dialectal profiles of the participants' parents, up to 77 mothers from the monodialectal group reported Mandarin as their main dialect used, while 41 and 37 mothers in the bidialectal group favored Mandarin and Wu as their main dialect respectively. The situation for the fathers was almost the same: all the 78 fathers in the monodialectal group used mainly Mandarin in their everyday communication, and 40 and 37 from the bidialectal group used Mandarin and Wu respectively. Altogether, 76 couples from the monodialectal group and 29 from the bidialectal group used mainly Mandarin between each other, while there were 48 from the bidialectal group considering Wu as their main means of communication with each other. Table 15 summarizes the parental language situations.

Table 15: Parental language factors

		Monodialectal Group	Bidialectal Group
Main Dialect Used by Mother	<i>Mandarin</i>	77	41
	<i>Wu</i>		37
	<i>Other</i>	0	1
	<i>No Answer</i>	1	0
Main Dialect Used by Father	<i>Mandarin</i>	78	40
	<i>Wu</i>		37
	<i>Other</i>	0	1
	<i>No Answer</i>	0	1
Main Dialect Used by Mother and Father	<i>Mandarin</i>	76	29
	<i>Wu</i>		48
	<i>Other</i>	0	1
	<i>No Answer</i>	2	1

A most important reason for collecting the demographic and linguistic background information of the participants (as well as their guardians) was to check and confirm that the two groups (monodialectal and bidialectal) were distinctly Mandarin or Mandarin-Wu, justifying the sampling from the regions of recruitment and removing the necessity for individual testing of each participant's dialectal competency.

Recruitment criteria

Dialectal profiles

Based on the LBQ information collected, it was ensured that all the participants selected from Beijing and Henan were native speakers of Mandarin, and those from Shanghai and Shaoxing native Mandarin-Wu speakers. At least one of the parents/guardians was also a native speaker of Mandarin or Wu in the corresponding groups. The linguistic environment could be complex. For example, the parents of both groups might have knowledge of an additional dialect other than Mandarin or Wu, or an additional language other than Chinese or English. Daily communication between the participants and their parents/guardians, however, was only achieved by Mandarin and/or Wu in the corresponding groups. Participants were not reported to be exposed to inputs of other Chinese dialects or other languages than Chinese or English. In other words, the monodialectal group was only able to use Mandarin and English while the bidialectal groups were only able to use Mandarin, Wu, and English.

Expectations of participants' L2 competence

All groups were studying in the fourth grade in a public primary school and had been exposed to a formal English learning environment for four years at the time of data collection (four 40-minute long classes plus four hours of homework a week, 30 weeks a year). All public schools in China follow a standardized curriculum for English, that is the *National Curriculum for Primary School English – NCPSE* (Ministry of Education [MOE], PRC, 2008, www.moe.edu.cn). According to the NCPSE, the minimum learning outputs of English for grade four students are described in Table 16 below:

Table 16: Expected ESL competence of grade four students in primary schools in China

MOE Expectations	
1	Be able to communicate in English in general situations;
2	Be able to read simple English stories with pictures;
3	Be able to write note-like messages and be able to answer questions in writing;
4	Be able to understand and correctly use the following tenses: simple present, simple future, simple past and present progressive;
5	Be able to understand and use the correct English pronunciation;
6	Be able to use and spell at least 400 words from the basic vocabulary list and understand and use the correct forms of their inflections and derivations.

Although different textbooks may be used in different regions, it is illegal to use teaching materials uncensored by the government in any public (or private) school in China. Therefore, all textbooks were censored by the Ministry of Education against the National Curriculum, and the *Curriculum* was used as the sole guideline for assessment. Therefore, there was consistency in the teaching materials and the curriculum covered by the students nationally.

Participant age

The participant age range was 8 to 10 years, the typical age of grade four students in public primary schools in China.²² Such an age range selection was based on the consideration that children at this age would cope better with the test environment than younger children while being less vulnerable to more frequent errors in the target language (such as morpho-syntactic errors) than older children (see Thordardottir, 2005). Also, participants at this age had already had regular contact with English as the second language for four years at the time of data

²² Occasionally some children are not assessed as academically competent as per the MOE expectations. Those children remain in their present grade until they meet the minimum requirement to progress. These children were not included in the final selection of participants.

collection. For children who have started to experience regular contact with the second language, the estimate of their current use of the L2 is suggested to be a more important predictor of their L2 performance (see Bedore et al., 2012).

Recruitment criteria

In general, the participant selection criteria are presented in Table 17 below:

Table 17: Participant recruitment criteria

Recruitment criteria
<ul style="list-style-type: none"> • Grade four student in a public primary school in China; • Aged between 8 and 10 years; • Have learned English in formal settings for four years and studying English at school for no less than six hours a week (including face-to-face contact and homework);²³ • Meet the ESL expectation of grade four students in primary schools by the MOE of China; • The teaching language at school is Mandarin and English only; • Speak only Mandarin both at school and at home (for participants from Beijing and Henan); • Speak only Mandarin or Wu, or both, at school and at home (for participants from Shanghai and Shaoxing); • Parents and guardians use only Mandarin to communicate with the participant (for participants from Beijing and Henan); • Parents and guardians use only Mandarin or Wu to communicate with the participant (for participants from Shanghai and Shaoxing)

Sample size and power

Statistically, using the software of PASS and G3Power, the estimated number of participants for each group was approximately 40 (effect size=.25; α err p =.05; power=.8). Such a sample size is considered as appropriate for the current research, since it meets the threshold of a valid sample size of over 30 (see Hatch & Lazaraton, 1991), and can be compensated by non-parametric statistical procedures even if the sample size is reduced (Dörnyei, 2007) due to uncontrollable factors, such as participants withdrawing, or being excluded due to other unforeseeable factors. I acknowledge random sampling would be theoretically a better choice than convenience sampling. However, the resource needed for a truly random sampling was beyond the scope of this study, so convenience sampling was the most realistic option.

²³ This criterion was set specifically for transfer students from other less developed places other than the places of recruitment (such as migrant workers' children). Usually, there would be special programmes for transfer students to keep up with local students in public schools in these places. Due to their previous ESL experience (often very little), they were not considered as typical samples to recruit.

The p -value

The significance level, that is the p -value of the statistical tests, was set at 0.01 in this study. It is not only because, as a “starting point” only (American Psychological Association, 2010, p. 33), the p -value is more reliable as significant if there is a big enough sample size (see Kline, 2004; Larson-Hall, 2010, 2012). More importantly, a stricter p -value of significance is used because bilingual/bidialectal children may vary greatly in their demographic and linguistic backgrounds, and one main purpose of this study is to inform SLPs working with bilingual/bidialectal children of their possible significant differences in L2 performance. Therefore, results and conclusion drawn from the data should be as accurate as possible. The interpretation and implication of the results should be as cautious as possible so that there is minimal chance of misdiagnosis if applied to practice.

Recruitment procedure

Source and basis for recruitment

As explained in the recruitment criteria, the bidialectal participants were recruited because of their native bidialectal L1 knowledge and the systematic L2 learning environment, and the monodialectal group was recruited to compare with the bidialectal ones. By recruiting participants from the two different yet most populous and representative dialectal backgrounds, it was possible to answer the research question following consideration of the mechanism of cross-linguistic transfer of L1 bidialectism in the L2 acquisition. Children who met the requirements specified in Table 17 were invited to participate in the study via the support of their schools.

The researcher did not have any role, or relation to, the source from which participants were recruited. The researcher did not know the participating schools and individuals before the research and both sides had no potential interest in each other's teaching, research or other activities. Therefore, there was no conflict of interest (financial or other interest or affiliation) at the time of research.

Participant contact and recruitment

The researcher first contacted regional directors of the local education department, and the principals of local schools through email contact, in Beijing and Shanghai for their agreement

of assistance in participant contact and recruitment. The directors and principals then received a *Letter of Introduction* that guided them in how to recruit participants. Upon the directors’/principals’ agreement to permit the schools to participate (by signing the director/principal consent forms), the class teachers were invited to help forward a recruitment package (including the *Introduction Letter*, *Information Sheet*, and *Consent Form*) to parents/guardians of potential participants. The school principals did not contact or recruit potential participants on the researchers’ behalf. Selected participants’ parents/guardians were sent an *Information Sheet* and were invited to participate (see Appendix II for detail of the *Introduction Letter*, *Information Sheet*, and *Consent Form*).

The steps outlined in Table 18 below were followed during the participant contact and recruitment process:

Table 18: Steps in participant contact and recruitment

Steps	Description
1. Seek approval from regional directors of the local education department	Email letter of introduction and project information to the regional directors and obtain a list of contact information of local school principals after the directors’ approval (see Appendix II for example of the email text and letter of introduction).
2. Seek approval from principals	Email letter of introduction and project information to the principals and obtain a list of contact information of class teachers whose students meet the selection criteria of the research (see Appendix II for example of director/principal consent form).
3. Seek approval from class teachers	Email letter of introduction and project information to the class teachers. After their approval, email through the information sheets, consent forms, recruit guideline and verbal script of recruitment (see Appendix II for examples).
4. Seek approval from parents and participants	Class teachers help forward a recruitment package (including the introduction letter, information sheet, and consent form) to potential participants and their parents. The class teachers inform the potential participants and their parents that it is completely voluntary to take part in the study and they can withdraw at any time before or during the test (see Appendix II for an example of the verbal scripts prepared for recruitment).
5. Gather consent forms	Potential participants (both the children and their parents/guardians) agree to voluntarily take part in the study and sign the consent forms and return the forms to the class teachers. The class teachers gather the consent forms and keep them in a safe place before handing over to the researcher before the tests commence.

Informed consent

After the directors of the regional education department and school principals gave their permission for the class teachers to assist in participant recruitment, parental/guardian consent was sought before the research. Potential participants were asked for their willingness to participate. They were asked to give their assent, too (see Appendix II for examples of parental/guardian consent forms and participant assent forms). The data collection process would be terminated if the participants decided to discontinue or not to proceed. In such cases, substitute participants would be sought (based on the same criteria) until the minimum data was collected.

Following receipt and review of the signed parental consent forms and the participant's assent, it was indicated that the participant was willing to participate in the study.

Information given to the participating parties

Table 19 below summarizes information given to, as well as relevant consent (assent) sought from, each party in the research.

Table 19: Information provided to the participating parties

Participating parties	Information of the study	Consent forms
Directors/Principals	-Email text -Letter of Introduction	-Director/Principal consent form
Class teachers	-Letter of Introduction -Recruitment Guideline -Verbal Script of Recruitment	
All participants (including their parents/guardians))	-Information Sheet (parental/guardian) -Information Sheet (participant) -LBQ	-Consent Form (parental/guardian) -Assent Form (participant)

(see Appendix II for examples of all the information and consent forms given to each participating party)

Anonymity, confidentiality, and withdrawal from the study

Neither the test and interview nor the LBQ was anonymous. However, the participants and their parents were told that any information that would identify the participants would be kept

digitally in password-protected university computers, which only the researcher of the study could access (see Table 20).

Table 20: Anonymity and confidentiality

Research Components	Participation Anonymous?	Participation Confidential?
Test	No	Yes
Interview	No	Yes
Questionnaire	No	Yes

All participants (and their parents/guardians) were allowed to discontinue or withdraw their consent/assent to participate in the study at any time. Participants were reminded before and throughout the study that participation in the study was voluntary and refusal to participate would have no effect on their studies at the recruiting school, and that participants could withdraw from the study at any time, without consequence (see *Information Sheet* in Appendix II for detail).

Summary

The current study was motivated to find out if first language bidialectism impacts on the acquisition at the syntax-semantics interface in a second language. It aspires to provide a further understanding of language development and the factors involved in first language bidialectal children's L2 acquisition. It is hypothesized that there will be discernible differences in second language syntactic-semantic awareness between children from different first language dialectal backgrounds. Specifically, the greater complexities between the first language dialects, the more helpful it is to raise the awareness at the syntax-semantics level in the second language.

In order to provide an impartial, or less biased, account for any role L1 bidialectism may have onto the L2 learning at the syntax-semantics interface, a mixed method with both quantitative and qualitative analyses was used. Correspondingly, there was a two-phase design (i.e. phase one - SPMT and phase two - Interview). Following the recruitment criteria and procedures strictly, there were 78 monodialectal and 79 bidialectal participants recruited for the phase one SPMT. Chapter 5 and 6, therefore, will then go to the detail of the quantitative and the qualitative analyses and results.

Chapter 5 Quantitative Analysis

To answer the general question, that is whether L1 bidialectism has an impact on child L1 learners' syntax-semantics interface awareness, the data collected were first analyzed quantitatively. The general and the sub-hypotheses, therefore, predict a positive impact of L1 bidialectism in this regard in both situations where the same structure has more readings in L2 than in L1, and that has more readings in L1 than in L2. This chapter begins with the instrument design, which will explain in detail the SPMT and the test structures. The validity of the instrument is then justified. An explanation of the administration and scoring procedures of the test is given before issues such as the independent variables and missing data are clarified. The analysis plan then outlines and justifies the statistical tools used. Specifically, an independent t-test was first performed, after an overall description of the data, to offer an overview of how the bidialectal groups (Mandarin-Wu speakers living in Shanghai and Shaoxing) performed differently from the monodialectal ones (Mandarin speakers living in Beijing and Henan). The dialectal differences between the groups are to be further explored by one-way ANOVA. The General Linear Model (GLM) then offers a comprehensive picture of the interactions between the dependent and the independent variables. The results of the multiple statistical analyses are summarized after the analysis plan and then interpreted. Finally, a short summary concludes the whole chapter.

Instrument design

The sentence-picture matching task

Although second language learners' naturalistic production is traditionally used in L2 acquisition studies, especially of morphosyntax (e.g. Lardiere, 1998; Prévost & White, 2000), experimental methodologies involving grammaticality judgment and interpretation tasks are also helpful in formal language acquisition studies. Rather than production tasks, tests of syntactic and semantic well-formedness judgments might provide a more accurate measure of a bilingual child's linguistic knowledge (Paradis, 2010b). The sentence-picture matching task (SPMT) is one of the most effective to measure learners' meta-competence at both the syntactic and semantic levels when there are two or more pictures involved in the task (also see Schmitt

& Miller, 2010). Therefore, SPMT fits best in the purpose of this study, because it is the syntactic structure assigned that decides whether the correct picture(s) is/are successfully matched (Ionin, 2012), especially when certain structures have double readings. In the situation of an ambiguous structure, the SPMT is most helpful in the explanation of the sentence-picture mismatch, since it could happen when the learner assigns the sentence the interpretation in his/her first languages rather than in their second languages. Finally, the SPMT fits particularly with the needs of child participants, who have a short attention span, thanks to its engaging nature.

Therefore, the SPMT with the component of sequential sentence-picture verification was employed in this study. Such a research instrument was designed to elicit the required data for the follow-up quantitative analysis. Specifically, in each task, the participants heard a sentence in English. It is important for participants to also hear the spoken sentence rather than just to read it because the “auditory modality” is most effective and essential in SLA studies with young children (see Ionin, 2012). They were shown three pictures describing the sentence and were asked to choose the picture(s) that correctly described the event that matched the sentence. Also, this study aimed to infer learners’ second language linguistic competence from the test of their implicit grammatical knowledge.

Test structures

Again, four structures were tested in the study, that is the ambiguous focus (ONLY), the negation of universal quantification (EVERY), the ditransitive (BUY) and the topic-comment (T-C). The purpose of the selection of the four sentence structures was to compare the bidialectal speakers with those monodialectal speakers to show if there would be more complex syntactic-semantic knowledge exhibited for the former group, who, therefore, would appear to be more sensitive to the syntactic-semantic differences between the first and the second languages.

The current study focuses on the second language syntactic-semantic interface awareness (i.e. the receptive, rather than the productive, aspects) of first language bidialectal speakers, and therefore, the examples involved are all grammatical and understandable sentences.

The ONLY structure

There were 10 test sentences involving the ambiguous focus “only” (see Appendix I for detail). As evidenced in the example of [52], the focus can be assigned to the whole VP or the NP as the object. Therefore, it has both a narrow reading as A and a broad reading as B in English:

[52] The master only holds a stick.

Reading A: Holding a stick is the only thing the master does. (TRUE)




Reading B: A stick is the only thing the master holds. (TRUE)

The same structure has only the A reading for Mandarin and Wu. For the Mandarin group, it was expected that they would only identify the pictures with the narrow readings as correct. Sub-hypothesis-a (Sub-Ha) predicted, however, that the Mandarin-Wu bidialectal groups would accept the pictures with narrow readings as well as those with broad readings as correct.

Participants were given the 10 sentences in a random order along with other test structures. For each sentence, there were pictures with both the narrow reading (Picture A) and the broad reading (Picture B) alongside a third distracting reading (Picture C). The three pictures were presented to the participants one by one in a random order to avoid a potential order effect (see the procedural section below for detail).

Table 21 below illustrates an example of the test sentences and corresponding picture answers for the ONLY structure:

Table 21: Examples of test sentences and pictures for the ONLY structure

<i>Test sentence</i>	The master only holds a stick.			Notes: English has both A and B readings, while only the A reading is possible for Mandarin and Wu. Picture A corresponds to the A reading and Picture B the B reading, while Picture C is the wrong reading.
<i>Readings</i>	Reading A: “Holding a stick is the only thing the master does.”			
	Reading B: “A stick is the only thing the master holds.			
<i>Test pictures</i>				
	Picture A	Picture B	Picture C	

The EVERY structure

There were 10 test sentences involving the negation of the universal quantification, that is “every...not” (see Appendix I for details). Each sentence had two readings, the narrow reading A and the broad reading B in English, as shown in [53].

[53] Every man doesn’t wear a hat.

Reading A: Nobody wears a hat. (TRUE)




Reading B: Not everybody wears a hat. (TRUE)

The same structure has only the narrow A reading for Mandarin and Wu. For the Mandarin monodialectal groups, it was expected that they would only identify the pictures with the narrow readings as correct. The sub-hypothesis-a (Sub-Ha) predicted, however, that the Mandarin-Wu bidialectals would also identify pictures with the broad readings as correct.

Participants were given the 10 sentences in a random order along with other structures. For each sentence, there were pictures with both the narrow reading (Picture A) and the broad reading (Picture B) alongside a third distracting reading (Picture C). The three pictures were presented to the participants one by one in a random order (see the procedure section below for detail).

Table 22 below illustrates an example of the test sentences and the corresponding pictures for the EVERY structure:

Table 22: Examples of test sentences and pictures for the EVERY structure

<i>Test sentence</i>	Every man doesn't wear a hat.			Notes: English has both A and B readings, while only the A reading is possible for Mandarin and Wu. Picture A corresponds to the A reading and Picture B the B reading, while Picture C is the wrong reading.
<i>Readings</i>	Reading A: "Nobody wears a hat."			
	Reading B: "Not everybody wears a hat."			
<i>Test pictures</i>				
	Picture A	Picture B	Picture C	

The BUY structure

There were 10 test sentences similar to [54] that involved the ditransitive structure of BUY (see Appendix I for detail). For each sentence, the indirect object always precedes the direct object. Correspondingly, the A reading (where the indirect object is read as BENEFICIARY) is the correct reading in English, as opposed to the B reading (where the indirect object is read as SOURCE).

[54] Tony buys Sam a helmet.

Reading A: Tony buys a helmet for Sam. (TRUE)

Reading B: Tony buys a helmet from Sam. (FALSE)



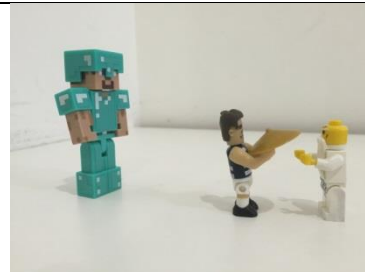
The same structure in Mandarin and Wu has both the BENEFICIARY and the SOURCE readings of the indirect object.²⁴ Sub-hypothesis-b (Sub-Hb) predicted that the Mandarin-Wu bidialectal groups would only identify the pictures with the BENEFICIARY reading as correct, while the Mandarin monodialectal groups would also accept the SOURCE reading.

Participants were given the 10 test sentences in a random order along with other structures. For each sentence, there were pictures with both the BENEFICIARY reading (Picture A) and the SOURCE reading (Picture B), alongside a third distracting reading (Picture C). The three readings were presented to the participants one by one in a random order (see the procedure section below for detail).

Table 23 below illustrates an example of the test sentences and the corresponding pictures for the BUY structure:

²⁴ For the Chinese dialects under study, the SOURCE reading, however, is the more prominent reading of a BUY structure than the BENEFICIARY reading, especially without context.

Table 23: Examples of test sentences and pictures for the BUY structure

<i>Test sentence</i>	Tony buys Sam a helmet.			<p>Notes: English has only the A reading. Mandarin and Wu have both the A and B readings. Picture A corresponds to the A reading and Picture B the B reading, while Picture C is the wrong reading.</p>
<i>Readings</i>	Reading A: “Tony buys a helmet for Sam.”			
	Reading B: “Tony buys a helmet from Sam.”			
<i>Test pictures</i>				
	Picture A	Picture B	Picture C	

The T-C structure

There were 10 topic-comment sentences like [55] tested (see Appendix I for detail). For each test sentence, the topic is always the object in the comment in English. Therefore, the correct reading of [55] in English is the OSV reading (i.e. Reading A), rather than the SOV reading (i.e. Reading B), as evidenced below:

[55] Tony, the soldier kicks down.

Reading A: The soldier kicks Tony down. (TRUE)

Reading B: Tony kicks the soldier down. (FALSE)




The corresponding structures in Mandarin and Wu, however, can also be read as in Reading B.²⁵ The Sub-hypothesis-b (Sub-Hb), however, predicted that Mandarin-Wu bidialectals would experience less negative transfers from their first languages, as compared to the monodialectal group and would identify only the OSV reading as the correct reading, while the monodialectal group were expected to also accept the SOV reading.

Participants were given the 10 test sentences in a random order alongside other structures. For each sentence, there were pictures with both the OSV reading (Picture A) and the SOV reading (Picture B) alongside a third distracting reading (Picture C). The three pictures were presented to the participants one by one in a random order (see the procedure section below for detail).

Table 24 below illustrates an example of the test sentences and the corresponding pictures for the T-C structure:

²⁵ For the topic-comment structures, without context, the OSV reading is usually the more prominent reading in the Chinese dialects.

Table 24: Examples of test sentences and pictures for the T-C structure

<i>Test sentence</i>	Tony, the soldier kicks down.			Notes: English has only the A reading; Mandarin and Wu have both the A and B readings. Picture A corresponds to the A reading and Picture B the B reading, while Picture C is the wrong reading.
<i>Readings</i>	Reading A: “The soldier kicks Tony down.”			
	Reading B: “Tony kicks the soldier down.”			
<i>Test pictures</i>				
	Picture A	Picture B	Picture C	

Instrument consistency and validity

To make sure the instrument was reliable, its consistency, that is whether the measurement device would consistently measure what it was designed to measure (Riazi, 2016, p. 151), was checked. The process of checking the instrument consistency, therefore, was in large part focused on reducing errors in instrumentation, that is the process of measurement (along with the development and use of the instrument), which is a crucial component of research quality in health and social science studies (Kimberlin & Winterstein, 2008).

A series of strategies were employed to check and ensure the instrument consistency. First, the test targets, that is the test sentences, were proofread and checked by English native speakers and language teachers before the data collection started. This was to make sure that the English sentences were limited to the readings as described in Table 9. The corresponding dialectal structures were then proofread by native speakers of the individual dialects to make sure they were reliable across different observers/raters (see Bryman & Cramer, 2004; Cormack, 2000; Robinson Kurpius & Stafford, 2005). It was also ensured that the test sentences were limited to the readings for each group, as Table 9 (as well as Table 21 to Table 24) illustrates, so that the appropriateness and content of the instrument were ensured. The test pictures were checked both by language teachers and by a 9-year-old Mandarin, Wu, and English speaker to make sure that each picture (e.g. each character in the picture, their postures) was recognizable and described only one event which is distinct from the other two pictures provided for each sentence. Therefore, the data collection instruments were considered consistent and stable in eliciting data from the participants (Riazi, 2016, p. 271). Table 25 summarizes the strategies employed.

Table 25: Strategies to ensure instrument consistency

Strategies	Purposes
1. The test sentences were proofread and checked by English native speakers and language teachers.	To make sure that the structures were grammatical and were limited to the corresponding reading(s) for each group (as exemplified in Table 9 and Table 21 to Table 24).
2. The corresponding Mandarin structures were proofread and checked by native speakers of Mandarin.	
3. The corresponding Wu structures were proofread and checked by native speakers of Wu.	
4. The test pictures were checked by both language teachers and a 9-year-old Mandarin, Wu and English speaker.	To make sure that the test pictures were recognizable and described only one event.

The instrument validity was also checked. As the participants were selected against the selection criteria and through the procedures described in Chapter 4, the test results from such a sample could be generalized and applied to a big population, so that the external validity was ensured (see Black, 1999; Eby, 1993; Punch, 1998). Two types of validity, however, were particularly considered for the test targets (as well as for the LBQ), that is the construct validity and the statistical conclusion validity. The construct validity is the extent of generalization of the operationalization (i.e. how generalizable the application) of the construct of measurement, and the statistical conclusion validity refers to the statistical covariation (i.e. what relationship) between the instruments and the results (Edmonds & Kennedy, 2013, pp. 6-7).

Sometimes there may be conditions that could compromise the validity related to the design, that is “threats” (ibid, p. 4). For example, one threat in the test procedure is that while the test targets were presented to the participants in Shanghai, Shaoxing, and Henan through computers and electronic projectors, the Beijing participants were tested in a classroom where only an old optical projector was available. The image qualities projected were not always perfect so that some of the original, printed targets had to be presented to each participant individually. The whole test process was therefore a little more prolonged than for the other three groups. Therefore, there could be a chance that the Beijing participants got tired and turned out to be less interested in doing the test.

Realistically, the design of the test targets, the mono-method bias, attention with participants, novelty effects and reactivity to assessment, test sensitization, etc. are all potential threats to the construct validity. In response, the sentence-picture matching task was designed so that the

test targets would best meet with the aim of the test, while a mixed-method design was employed to eliminate the mono-method bias. Also, the tests were administered using the same procedures and in similar contexts across each group so that novelty effects, reactivity to assessment and test sensitization were not varied between the participants of different groups. Similarly, threats to the statistical conclusion validity, such as subject heterogeneity, were checked through the control of participants' demographic and linguistic backgrounds (through the LBQ), and the unreliability of measuring devices was eliminated by checking and ensuring there was instrument consistency. A list of threats was, therefore, investigated with corresponding strategies provided to ensure the construct and the statistical conclusion validity of the instruments. Table 26 below summarizes the threats and the strategies.

Table 26: Threats to validity and the strategies

Validity	Threats	Strategies
Construct Validity	Test targets	Validated by the design of SPMT
	Attention and contact with participants	The test was administered face-to-face and was limited within 15 minutes' time so that the amount of attention was not differentiated between groups.
	Experimenter expectancies	There was no mention of the participants' L1 dialectal background (as per its possible relation to the L2 performance) during the test. There were no biases as per the researcher's expectancies or beliefs. That is the researcher's expectancies or beliefs of the results did not impact the data collection process, in that he followed the same procedures ²⁶ , and remained neutral and impartial, for all the four groups.
	Cues of the experimental situation	The test items were randomized and there was nothing in the test format and administration that could accidentally direct participants to the expected answer. Also, only the researcher had knowledge of the test content, so there were no sources of information or influences re the test accidentally passed onto the participants (by school teachers or parents/guardians for example).
	Novelty effects	The tests were administered through the same procedures and in a similar context across the groups. The novelty effects were expected to be the same among the participants.
	Mono-method bias	A mixed-method design was employed to eliminate the mono-method bias.
	Reactivity to assessment (i.e. the acquiescence bias)	The tests were administered through the same procedures and in a similar context across the groups. The reactivity to assessment was expected to be the same among the participants.
	Test sensitization	The tests were administered through the same procedures and in a similar context across the groups. The test sensitization was expected to be the same among the participants.
	Resentful demoralization	The test was limited to 15 minutes' time and participants received a reward for their participation in the test. Also, the tests were administered through the same procedures and in a similar context across the groups. The resentful demoralization was expected to be the same among the participants.

²⁶ The way targets were presented to the Beijing participants was a bit different. They were presented through an optical, rather than an electronic, projector. Therefore, it took a bit longer for the Beijing participants to complete the phase one test. Such a small difference, however, was not considered as big enough to threaten the construct validity.

Table 26: Threats to validity and the strategies (Continued)

Validity	Threats	Strategies
Statistical Conclusion Validity	Subject heterogeneity	The participants' demographic, as well as linguistic, backgrounds were controlled and there was high reliability.
	Power	Ensured by the corresponding statistical measures (See the Sample Size and Power section in Chapter 4).
	Assumption violation of statistical tests	Ensured by checking the missing values and the data normality (see corresponding sections below).
	Extraneous variance in the experimental setting	The tests were administered through the same procedures and in a similar context across the groups. The extraneous variance was expected to be the same among the participants.
	Variability in the procedures	The tests were administered through the same procedures and in a similar context across the groups. Therefore, there was no variability in the procedures.
	Unreliability of the measures	The instrument consistency was ensured (see above), so there was reliability of the measures.
	Multiple comparisons and error rates	Only one dependent variable (i.e. the participants' test performance/scores) was tested, and all the tests (t-test, ANOVA, and GLM) in the study focused on this one and only dependent variable so that there was a minimum chance for error variance.

(adapted from Edmonds & Kennedy, 2013, pp. 8-10)

Administration and scoring procedures

The phase one test took place in the recruiting schools of each group. The test was conducted after normal teaching hours. The non-participating students, therefore, either went home or attended any extra-curricular activities organized by the school as usual.

Table 27 below summarizes the administration procedures of the phase one test.

Table 27: Administration procedures of the phase one test

Procedures	People present
1. Class teacher collected the parental/guardian consent forms before the study.	The researcher Class teachers Parents/guardians
2. The researcher collected the parental/guardian consent forms from the class teacher, checked they were correctly signed and kept them in a safe place.	
3. Parents/guardians arrived at the test room (a multimedia classroom provided by the recruiting school) 45 minutes earlier before the phase one test started. Parents/guardians were arranged to be seated at the back of the room.	
4. The researcher explained the test and reminded the parents/guardians that they could withdraw from participation without any negative consequences.	
5. The researcher gave parents the LBQ to complete. Parents/guardians who decided to withdraw or discontinue were asked (very politely) to leave the classroom and were thanked for their time.	
6. The researcher collected the completed LBQs and checked if they were appropriately completed. It was made sure that at least 80% of the child participants' LBQ information (including the dialectal and gender information), and at least 80% of the parental/guardian LBQ information, was provided.	

Table 27: Administration procedures of the phase one test (Continued)

Procedures	People present
7. Participants, whose parents/guardians appropriately completed the LBQ, were guided to the test room (with the help of their class teachers) and were seated at the front of the room. It was explained to parents/guardians that they could stay in the room but should not interfere with the test (class teacher helped to ensure the order).	The researcher Class teachers The Participants Parents/guardians
8. The researcher showed the assent form on the big screen and checked with the participants (one by one).	
9. The researcher explained the test and reminded the participants that they could withdraw from participation without any negative consequences.	
10. Participants who decided to withdraw or discontinue were asked (very politely) to leave the classroom and were thanked for their time.	
11. The researcher gave each participant an answer sheet and checked each of them had a pen/pencil to tick their answers on the answer sheet.	
12. The researcher showed the test targets (read the test sentences and presented the corresponding pictures) in a random order and asked the participants to choose the picture(s) with the correct reading(s) of the corresponding sentence. Participants then ticked the corresponding boxes on their answer sheet. This was repeated until all the 40 test targets were presented to the participants.	
13. The researcher collected the answer sheets and kept them in a safe place.	
14. The researcher thanked all the participants and their parents/guardians for their time and gave each participant a present as a token of appreciation.	
15. The researcher thanked the class teachers for their time and help and gave each of them a present as a token of appreciation.	

The scoring of the participants' answers started later, on the same day of the phase one test, by the researcher. The scoring criteria were based on the reading(s) of each structure in English (as per Table 9 describes). Specifically, for the ONLY and the EVERY structures, one (1) point was awarded for choosing both picture A and picture B (and only picture A and B), and zero (0) points for other choices; while for the BUY and the T-C structures, one (1) point was awarded for choosing only picture A, and zero (0) point for other choices. Points awarded for each test target were inputted in a spreadsheet for each participant by the researcher for statistical analysis later, as well as for the purpose of selection of participants for the phase two interview. Table 28 summarizes the scoring procedures of the phase one test.

Table 28: Scoring procedures of the test

Procedures	Scoring plan
1. The researcher checked the answer sheets. Participants with invalid answers (i.e. whose answers were incomplete or were in specific patterns ²⁷) were excluded from further scoring procedures and were not invited for the phase two interview.	
2. Valid answers were scored.	Structures: ONLY and EVERY One point for choosing, and only choosing, picture A and picture B; 0 point for other choices
	Structures: BUY and T-C One point for choosing, and only choosing, picture A; Zero points for other choices
3. For each participant, scores of each test target were inputted into a spreadsheet for further analysis.	

Analysis

Altogether, 157 participants' data were collected as valid and ready for analysis. The following ID tags were assigned to the participants from the four places of data collection: "BJ"-the Beijing participants, "HN"-the Henan participants, "SH"-the Shanghai participants, and "SX"-the Shaoxing participants. Specifically, there were 37 valid data collected from Beijing (BJ-1 to BJ-37), 41 from Henan (HN-1 to HN-41), 39 from Shanghai (SH-1 to SH-39) and 40 from Shaoxing (SX-1 to SX-40). As for the dialectal background, the monodialectal group consisted of all the 78 participants from Beijing and Henan, while those from Shanghai and Shaoxing belonged to the bidialectal group for a total of 79 participants.

Independent variables

Altogether there were 34 independent variables collected through the LBQ, as explained in Table 11, Chapter 4. Among all the independent variables, whether the participants had lived

²⁷ Examples of specifically patterned answers include choosing the same answer for one structure and a different answer for other structures, or the answers are chosen so that they form specific shapes on the answer sheet, such as a star or a butterfly, etc.

in other places than those of data collection was the factor that showed a significant difference between the participating groups (see Table 29). The direction of the group difference indicated (see Table 12) that more of the monodialectal group (27) had lived in other places than the bidialectal group (12).

Table 29: Significant factors between groups

Pearson Chi-Square Tests

	Place of data collection	
Lived in Other Places	<i>Chi-square</i>	19.289
	<i>df</i>	3
	<i>Sig.</i>	.004*

* The Chi-square statistic is significant at the .01 level.

Missing data

It is common that there are missing data in experimental studies including predictive studies (Masconi, Matsha, Echouffo-Tcheugui, Erasmus, & Kengne, 2015), longitudinal studies (Dinh & Yang, 2011), studies involving repeated measures (Kalaycioglu, Copas, King, & Omar, 2015) and assessments (Masconi et al., 2015). However, excluding participants with missing data, even when there is a big sample size, should be done with caution, because it could lead to biased estimates, loss of statistical power and inaccurate analysis and inferences. Therefore, it was recommended that missing data be described and explained, and this included in the final report (Steyerberg, 2009). In health-related research, in particular, missing data are recommended to be investigated before any main body analysis commences (see for example Sterne et al., 2009; Vandenbroucke et al., 2007; von Elm et al., 2007).

Table 28 explained that each of the final 157 participants provided answers to all the 40 test targets. Therefore, there were no missing data for the test results as the independent variable. Also, as explained in Table 27, all the LBQ data collected included the child participants' L1-dialect and gender information, and at least 80% of the rest of the child participants' LBQ information, and at least 80% of the parental/guardian LBQ information. Therefore, this study does not exclude data with missing values in the subsequent analyses.

Table 30 below presents the descriptive statistics of the variables that have missing values.

Table 30: Missing values

	Missing		Mean	Std. Deviation
	Count	Percent(%)		
Age	6	3.8	9.609	.5535
Years of School	5	3.2	3.878	1.2070
Time Lived in Other Places	47	29.9	1.764	3.1770
Mother's Years Residing in Current City	20	12.7	22.387	13.6167
Father's Years Residing in Current City	18	11.5	24.511	14.5245
Number of Siblings	5	3.2	.724	1.0242
Dialectal Competence Rating (Mandarin Comprehension)	4	2.5	6.229	1.0606
Dialectal Competence Rating (Mandarin Production)	8	5.1	5.893	1.2365
Dialectal Competence Rating (Wu Comprehension)	17	10.8	5.350	1.5264
Dialectal Competence Rating (Wu Production)	19	12.1	4.471	1.6750
Lived in Other Places	45	28.7		
Mother's Birth Place	27	17.2		
Mother's Education	2	1.3		
Mother's Work Type	7	4.5		
Father's Birth Place	26	16.6		
Father's Education	2	1.3		
Father's Work Type	10	6.4		
Main Dialect Used by Mother	1	.6		
Main Dialect Used by Father	1	.6		
Main Dialect Used by Mother and Father	3	1.9		
Sibling	4	2.5		
Main Dialect Used by The Siblings to The Participants	7	4.5		
Main Dialect Used by The Participants to Their Siblings	10	6.4		
Main Dialect Used Between the Participants and Their Friends	54	34.4		

As we can see from the above table, some of the missing data consists of a small fraction as compared to the non-missing data, such as mother's education, number of siblings, or the main dialect used between the mother and the father. Other factors, such as the dialects used between other carers and the participants, seemed to have a large number of missing values. However,

it was because of the values of other predetermined variables. For example, if there were no other carers for the participants there would be no values for the dialects used between other carers and the participants. Results of the Little's MCAR test (e.g. Table 31 and Table 32) suggested that the missing scale values were random, and they were statistically significant enough to take further investigations (Chi-Square=353.848, DF=310, Sig.= .044).

Table 31: Missing values - Summary of estimated means²⁸

	All Values	EM	Regression
Age	9.609	9.617	9.617
Years of School	3.878	3.902	3.889
Time Lived in Other Places	1.764	1.415	1.804
Mother's Years Residing in Current City	22.387	22.194	21.893
Father's Years Residing in Current City	24.511	24.448	24.839
Number of Siblings	0.724	0.74	0.732
Dialectal Competence Rating (Mandarin Comprehension)	6.229	6.177	6.222
Dialectal Competence Rating (Mandarin Production)	5.893	5.841	5.934
Dialectal Competence Rating (Wu Comprehension)	5.35	5.245	5.342
Dialectal Competence Rating (Wu Production)	4.471	4.407	4.487

Table 32: Missing values - Summary of estimated standard deviations

	All Values	EM	Regression
Age	0.5535	0.5465	0.5514
Years of School	1.207	1.2513	1.2011
Time Lived in Other Places	3.177	3.6383	3.0865
Mother's Years Residing in Current City	13.6167	13.8578	13.3917
Father's Years Residing in Current City	14.5245	14.7211	14.3351
Number of Siblings	1.0242	0.8164	1.014
Dialectal Competence Rating (Mandarin Comprehension)	1.0606	1.1178	1.0588
Dialectal Competence Rating (Mandarin Production)	1.2365	1.3515	1.2279
Dialectal Competence Rating (Wu Comprehension)	1.5264	1.4852	1.5149
Dialectal Competence Rating (Wu Production)	1.675	1.6747	1.6249

²⁸ All variables with missing values were used to estimate the missing data.

Considering that the missing values of the independent variables were random, there was no evidence that they were directly related to other independent variables, or the dependent variable. Therefore, as the most common technique to control missing values (Peugh & Enders, 2004), where appropriate, “pairwise deletion” was elected in further statistical tests involving variables with missing values. Pair-wise deletion is the default for procedures such as DESCRIPTIVES, CORRELATIONS, FACTOR and REGRESSION in SPSS, which are some of the main procedures this study employs. Also, unlike in listwise deletion where a case is dropped from an analysis as long as it has a missing value, the procedure of pair-wise deletion can still use the case when analyzing other factors with non-missing values (i.e. the participants’ performance for each structure in this study). Therefore, the power of analysis increases in a pairwise deletion.

Analysis plan

The following statistical analysis was used to test the general as well as the sub-hypotheses. First, an independent sample t-test was employed to show whether there was a significant difference between the monodialectal and the bidialectal groups’ overall performance for all four test structures. This was to test the general hypothesis, that is L1 bidialectism has a positive impact at the L2 syntax-semantics interface. Furthermore, in order to show the typological structural differences at a clearer and more detailed level, ANOVA and GLM (the general linear model) tests were employed to test Sub-Ha and Sub-Hb. That is, they tested whether the bidialectal group performed better than the monodialectal group on the structures that had more readings in the target language (i.e. the ONLY and the EVERY structure) and those that had fewer readings in the L2 (i.e. the BUY and the T-C structure). Table 33 summarizes the tests and their purposes. The next section will present the detailed results of these tests.

Table 33: Statistical tests employed and their purposes

Hypothesis	Test	Purpose
There are positive impacts of L1 bidialectism on the L2 learning at the syntax-semantics interface in general	Independent sample t-test	To test the general hypothesis
There are positive impacts of L1 bidialectism on the L2 syntax-semantics interface awareness	ANOVA and GLM	To test the sub-hypotheses
a) where the same structure has more readings in L2 than in L1, and		
b) when the same structure has more readings in L1 than in L2		

Results

As explained previously, altogether, there were four sentence structures tested. As for the ONLY and the EVERY structures, there are logically two possible readings (the narrow and the broad readings) in English, but only one reading (the narrow reading) in Mandarin and Wu. There is, however, only one reading for the T-C structure (the OSV reading) and only one reading for the BUY structures (the BENEFICIARY reading) in English as contra both the OSV and the SOV readings for the T-C structure and both the BENEFICIARY and the SOURCE readings for the BUY structure in Mandarin and Wu. Answers to each test target were dependent on each participant's actual understanding of the sentences in the test.

As explained in the scoring procedures section previously, each participant was awarded points for their choices against the English readings for each test target. The descriptive results show that while the participants showed a tendency for choosing the narrow reading for the ONLY and the EVERY structures in the monodialectal group (638 cases for the ONLY structure and 740 cases for the EVERY structure), many from the bidialectal group picked both the narrow and the broad readings (1065 cases from the bidialectal group; see Table 1 and 2 in Appendix III for detail). However, there were much smaller differences in their answers for the BUY and the T-C structures (1101 cases from the bidialectal group compared to 844 cases from the monodialectal group; see Table 3 and 4 in Appendix III for detail).

Table 34 below shows the overall, as well as the individual structural, points awarded for each group. It seems obvious that the bidialectal group outperformed the monodialectal group with their overall points (2166) as more than twice that of the latter (999). As for the individual structures, however, although the bidialectal group did much better for the ONLY structure and the EVERY structure, there was much less difference found for the BUY and the T-C structures. It was also found that performance not only varied between the dialectal groups but also within the groups based on the testing sites. For example, the participants from Shanghai did, overall, the best among the four groups, while the Beijing group got the fewest points in all the four structures. On the other hand, while the Shaoxing group outperformed the Henan group in the ONLY and the EVERY structures with both the narrow and the broad readings, the Henan participants did better than the Shaoxing participants for the BUY and the T-C structures where only one reading is possible in English. Structure-internally, however, it is found that each group (except for the Shaoxing participants) did better for the BUY and T-C structures than they did for the ONLY and the EVERY structures.

Table 34: Overall points for each group

Structures	Monodialectal			Bidialectal		
	<i>Beijing</i>	<i>Henan</i>	<i>Total</i>	<i>Shanghai</i>	<i>Shaoxing</i>	<i>Total</i>
ONLY	12	51	63	275	283	558
EVERY	40	52	92	246	261	507
BUY	180	287	467	319	200	519
T-C	107	270	377	341	241	582
Overall	279	660	999	1181	985	2166

The t-test results

To test to the general hypothesis, that is whether the L1 bidialectism has a positive impact on the L2 acquisition at the syntax-semantics interface, the differences between the monodialectal and the bidialectal groups' overall performance were tested. Results of an independent sample test (and Table 36) revealed a significant difference between the two groups ($t[2, 155]=-15.37$, $p<.001$). Overall, the bidialectal group ($M=27.42$, $SD=6.84$) outperformed the monodialectal group ($M=12.04$, $SD=5.63$) in their ability to distinguish the multiple meanings of the four structures.

Table 35: Group statistics – initial comparison (overall performance)

	L1 Dialectal Background	N	Mean	Std. Deviation	Std. Error Mean
Overall Performance	<i>Monodialectal</i>	78	12.04	5.630	.638
	<i>Bidialectal</i>	79	27.42	6.840	.770

Table 36: Independent sample test – initial comparison (overall performance)

t-test for Equality of Means							
	<i>t</i>	<i>df</i>	<i>Sig. (2-tailed)</i>	<i>Mean Difference</i>	<i>Std. Error Difference</i>	<i>95% Confidence Interval of the Difference</i>	
						Lower	Upper
Overall performance	-15.371	155	.000	-15.379	1.001	-17.356	-13.403

A further independent sample test was performed to compare the two groups to see if there was the same difference in performance at the structural level (see Table 37 and Table 38). As predicted by the hypothesis, there were significant differences between the monodialectal and

the bidialectal groups' performances for the ONLY, the EVERY and the T-C structures. However, there was no such difference found for the BUY structure ($t[2, 155]=-1.52, p=.13$).²⁹

Table 37: Group statistics – initial comparison (structural performance)

Structure	L1 Dialectal Background	N	Mean	Std. Deviation	Std. Error Mean
ONLY	<i>Monodialectal</i>	78	.81	1.495	.169
	<i>Bidialectal</i>	79	7.06	2.132	.240
EVERY	<i>Monodialectal</i>	78	1.18	.659	.075
	<i>Bidialectal</i>	79	6.42	2.720	.306
BUY	<i>Monodialectal</i>	78	5.99	2.288	.259
	<i>Bidialectal</i>	79	6.57	2.495	.281
T-C	<i>Monodialectal</i>	78	4.83	3.609	.409
	<i>Bidialectal</i>	79	7.37	2.874	.323

Table 38: Independent sample test – initial comparison (structural performance)

Structure	t-test for Equality of Means					
	<i>t</i>	<i>df</i>	<i>Sig. (2-tailed)</i>	<i>Mean Difference</i>	<i>Std. Error Difference</i>	<i>95% Confidence Interval of the Difference</i>
						Lower Upper
ONLY	-21.258	155	.000	-6.256	.294	-6.837 -5.674
EVERY	-16.533	155	.000	-5.238	.317	-5.864 -4.612
BUY	-1.524	155	.130	-.582	.382	-1.337 .172
T-C	-4.869	155	.000	-2.534	.52	-3.562 -1.506

The ANOVA test results

The results in Table 34 show that there was varied performance between the four regional groups, even though the bidialectal groups (Shanghai and Shaoxing) scored overall more points combined in the test than the monodialectal groups (Beijing and Henan). For example, the Shaoxing participants (Mandarin-Wu) showed a performance closer to that of the Henan participants (Mandarin), rather than that of the Shanghai participants (Mandarin-Wu) (for the T-C structure), which is not in line with Sub-Hb. Therefore, before answers to the sub-hypotheses were sought, a better understanding of the regional groups' performance at the

²⁹ The small Cohen's *d* effect size ($d=0.24$) also suggests there were not big between-group differences for the BUY structure.

structural level was needed. A one-way ANOVA testing for differences between the four regional groups for their performance at the structural level was performed. It was found in the results (Table 39), however, that there were significant between-group differences for all the four structures.

Table 39: ANOVA - Dialectal differences at the structural level

Structure		Sum of Squares	df	Mean Square	F	Sig.
ONLY	<i>Between Groups</i>	1552.346	3	517.449	155.131	.000
	<i>Within Groups</i>	510.342	153	3.336		
EVERY	<i>Between Groups</i>	1078.555	3	359.518	90.309	.000
	<i>Within Groups</i>	609.088	153	3.981		
BUY	<i>Between Groups</i>	301.601	3	100.534	25.633	.000
	<i>Within Groups</i>	600.068	153	3.922		
T-C	<i>Between Groups</i>	663.230	3	221.077	27.368	.000
	<i>Within Groups</i>	1235.930	153	8.078		

Such significant results were confirmed by further robust tests of equality of means with the Welch adjustment, that is even disregarding the homogeneity of the variances (see Dalgaard, 2002), as shown in Table 40.

Table 40: Robust Tests of Equality of Means (Welch adjustment)

Structure	Statistics ^a	df ₁	df ₂	Sig.
ONLY	193.310	3	79.274	.000
EVERY	94.989	3	72.670	.000
BUY	26.129	3	84.839	.000
T-C	88.048	3	84.324	.000

a. Asymptotically F distributed

Although such an initial result is not in absolute conformity to that found in Table 38 (for the BUY structure), the large eta squared effect sizes ($\eta^2 > 0.25$) in Table 41 confirm that the differences of performance for each structure were accounted for by each group's different L1 dialectal background (see J. D. Brown, 2008; J. Cohen, 1988; Pierce, Block, & Aguinis, 2004; Tabachnick & Fidell, 2001).

Table 41: Measures of association - Dialectal differences at the structural level

Structure*L1 dialects	R	R Squared	Eta	Eta Squared
ONLY	.432	.187	.868	.753
EVERY	.374	.140	.799	.639
BUY	-.049	.002	.578	.334
T-C	.360	.129	.748	.559

To further compare the four regional groups' structural performance, the LSD post-hoc test found that for the ONLY structure, the Beijing monodialectal participants ($M=0.32$, $SD=0.85$) performed significantly differently from the bidialectal participants from Shanghai ($M=7.05$, $SD=2.11$) and Shaoxing ($M=7.08$, $SD=2.18$), but not so from the monodialectal Henan participants ($M=1.24$, $SD=1.80$). The same scenario happened to the EVERY structure in that while the Beijing ($M=1.08$, $SD=0.36$) and Henan participants ($M=1.27$, $SD=0.84$) displayed more homogeneous performance, they did not achieve the high performance of the Shanghai ($M=6.31$, $SD=2.65$) and Shaoxing participants ($M=6.53$, $SD=2.82$). The situations for the BUY and the T-C structures, however, appeared to be more complex. As for the BUY structure, the Beijing participants ($M=4.86$, $SD=1.81$) had a much closer performance to that of the Shaoxing participants ($M=5.00$, $SD=1.83$), rather than those of the Shanghai participants ($M=8.18$, $SD=2.02$) or even the Henan participants ($M=7.00$, $SD=2.21$). However, as for the T-C structure, The Shaoxing participants ($M=6.03$, $SD=3.03$) displayed a similar performance as that of the Henan participants ($M=6.59$, $SD=2.39$). Table 42 shows the detail:

Table 42: Post Hoc multiple comparisons - Dialectal differences at the structural level

LSD

Structural Performance	(I) Place	(J) Place	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
ONLY	Beijing	Shanghai	-6.727*	.419	.000	-7.56	-5.90
		Henan	-.920*	.414	.028	-1.74	-.10
		Shaoxing	-6.751*	.417	.000	-7.57	-5.93
	Shanghai	Beijing	6.727*	.419	.000	5.90	7.56
		Henan	5.807*	.409	.000	5.00	6.61
		Shaoxing	-.024	.411	.954	-.84	.79
	Henan	Beijing	.920*	.414	.028	.10	1.74
		Shanghai	-5.807*	.409	.000	-6.61	-5.00
		Shaoxing	-5.831*	.406	.000	-6.63	-5.03
	Shaoxing	Beijing	6.751*	.417	.000	5.93	7.57
		Shanghai	.024	.411	.954	-.79	.84
		Henan	5.831*	.406	.000	5.03	6.63
EVERY	Beijing	Shanghai	-5.227*	.458	.000	-6.13	-4.32
		Henan	-.187	.452	.680	-1.08	.71
		Shaoxing	-5.444*	.455	.000	-6.34	-4.54
	Shanghai	Beijing	5.227*	.458	.000	4.32	6.13
		Henan	5.039*	.446	.000	4.16	5.92
		Shaoxing	-.217	.449	.629	-1.10	.67
	Henan	Beijing	.187	.452	.680	-.71	1.08
		Shanghai	-5.039*	.446	.000	-5.92	-4.16
		Shaoxing	-5.257*	.443	.000	-6.13	-4.38
	Shaoxing	Beijing	5.444*	.455	.000	4.54	6.34
		Shanghai	.217	.449	.629	-.67	1.10
		Henan	5.257*	.443	.000	4.38	6.13

* The mean difference is significant at the 0.01 level.

Table 42: Post Hoc multiple comparisons - Dialectal differences at the structural level (Continued)

LSD

Structural Performance	(I) Place	(J) Place	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
BUY	Beijing	Shanghai	-3.315*	.454	.000	-4.21	-2.42
		Henan	-2.135*	.449	.000	-3.02	-1.25
		Shaoxing	-.135	.452	.765	-1.03	.76
	Shanghai	Beijing	3.315*	.454	.000	2.42	4.21
		Henan	1.179*	.443	.009	.30	2.05
		Shaoxing	3.179*	.446	.000	2.30	4.06
	Henan	Beijing	2.135*	.449	.000	1.25	3.02
		Shanghai	-1.179*	.443	.009	-2.05	-.30
		Shaoxing	2.000*	.440	.000	1.13	2.87
	Shaoxing	Beijing	.135	.452	.765	-.76	1.03
		Shanghai	-3.179*	.446	.000	-4.06	-2.30
		Henan	-2.000*	.440	.000	-2.87	-1.13
T-C	Beijing	Shanghai	-5.852*	.652	.000	-7.14	-4.56
		Henan	-3.693*	.644	.000	-4.97	-2.42
		Shaoxing	-3.133*	.648	.000	-4.41	-1.85
	Shanghai	Beijing	5.852*	.652	.000	4.56	7.14
		Henan	2.158*	.636	.001	.90	3.41
		Shaoxing	2.719*	.640	.000	1.46	3.98
	Henan	Beijing	3.693*	.644	.000	2.42	4.97
		Shanghai	-2.158*	.636	.001	-3.41	-.90
		Shaoxing	.560	.632	.376	-.69	1.81
	Shaoxing	Beijing	3.133*	.648	.000	1.85	4.41
		Shanghai	-2.719*	.640	.000	-3.98	-1.46
		Henan	-.560	.632	.376	-1.81	.69

* The mean difference is significant at the 0.01 level.

Results of the homogeneous test (Tukey HSD) in Table 43 to Table 46, along with the corresponding mean plots in Figure 9 to Figure 12, present a vivid picture of the homogeneity between the participating groups, as per their performance, for each of the four test structures. As we can see in Table 43 and Table 44 (also see Figure 9 and Figure 10), the monodialectal participants (Beijing and Henan) formed a homogenous subset for the ONLY and the EVERY structures, and the bidialectal participants the other subset. Such results corroborate those found in the previous tests (see Table 37 and Table 38). However, three sub-groups were found in Table 45 (also see Figure 11) for the BUY structure: the Beijing participants and the Shaoxing participants formed a sub-group, while the Shanghai and Henan participants formed two sub-groups of their own. There were also three sub-groups found for the T-C structure (see Table 46 and Figure 12). The pattern, however, was different from that of the BUY structure. This time, while the Shanghai participants consistently had the best performance and the Beijing participants the “least satisfactory” performance, the Shaoxing and the Henan participants were found to have similar performance.

Table 43: Homogeneous subsets – The ONLY structure

<i>Subset for $\alpha=0.01$</i>				
<i>Tukey HSD^{a,b}</i>	<i>Place</i>	N	1	2
	Beijing	37	.32	
	Henan	41	1.24	
	Shanghai	39		7.05
	Shaoxing	40		7.08
	Sig.		1.20	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 39.193

b. The group sizes are unequal. The harmonic mean of the group sizes is used.
Type I error levels are not guaranteed.

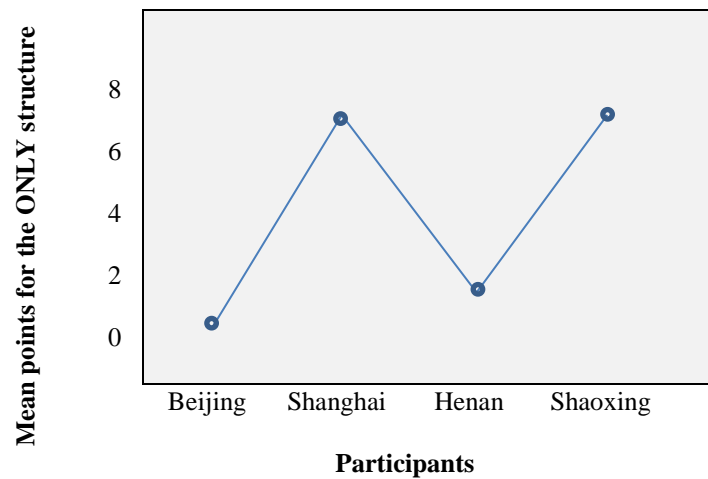


Figure 9: Mean plots – The ONLY structure

Table 44: Homogeneous subsets – The EVERY structure

<i>Subset for $\alpha=0.01$</i>				
<i>Tukey HSD^{a,b}</i>	<i>Place</i>	N	1	2
	Beijing	37	1.08	
	Henan	41	1.27	
	Shanghai	39		6.31
	Shaoxing	40		6.53
	Sig.		1.20	.963

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 39.193

b. The group sizes are unequal. The harmonic mean of the group sizes is used.
Type I error levels are not guaranteed.

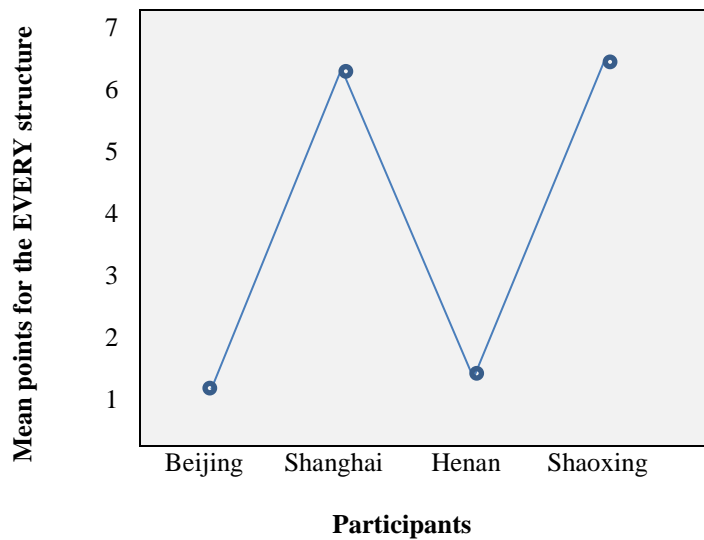


Figure 10: Mean plots – The EVERY Structure

Table 45: Homogeneous subsets – The BUY Structure

Subset for alpha=0.01					
Tukey HSD ^{a,b}	Place	N	1	2	3
	Beijing	37	4.86		
	Henan	41	5.00		
	Shanghai	39		7.00	
	Shaoxing	40			8.18
	Sig.		.990	1.000	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 39.193

b. The group sizes are unequal. The harmonic mean of the group sizes is used.
Type I error levels are not guaranteed.

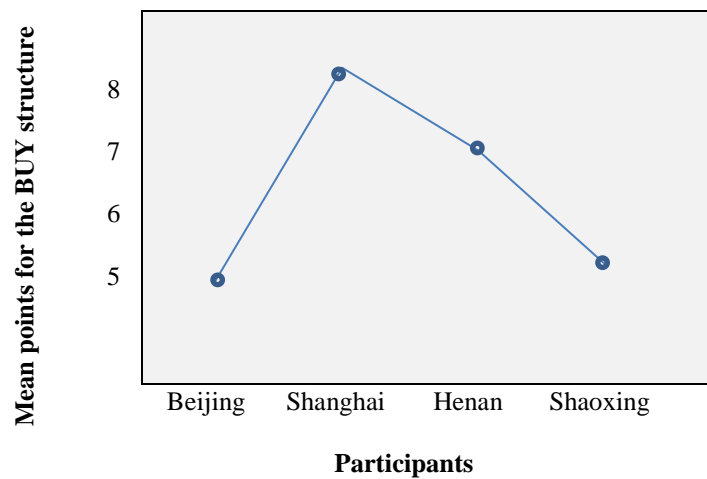


Figure 11: Mean plots – The BUY structure

Table 46: Homogeneous subsets – The T-C structure

<i>Subset for alpha=0.01</i>					
	<i>Place</i>	N	1	2	3
<i>Tukey HSD^{a,b}</i>	Beijing	37	1.27		
	Henan	41		6.03	
	Shanghai	39		7.05	
	Shaoxing	40			8.74
	Sig.		1.000	.732	1.000

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 39.193

b. The group sizes are unequal. The harmonic mean of the group sizes is used.
Type I error levels are not guaranteed.

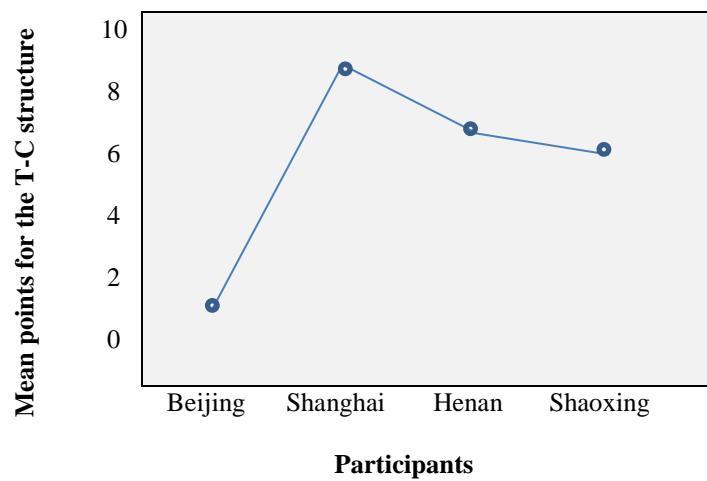


Figure 12: Mean plots – The T-C structure

The GLM test results

Control variables

Table 47 presents the independent variables that were highly correlated to the participants' performance for each test structure.

Table 47: Correlation between the independent and dependent variables

		ONLY	EVERY	BUY	T-C	Overall
Age	<i>Pearson</i>	.238	.274	-.370	-.267	-.007
	<i>Correlation</i>					
Mean Years of Living in Other Places	<i>Sig. (2-tailed)</i>	.003	.001	.000	.001	.932
	<i>Pearson</i>	-.290	-.248	-.140	-.358	-.344
Mother's Education	<i>Correlation</i>					
	<i>Sig. (2-tailed)</i>	.002	.009	.143	.000	.000
Mother's Birth Place	<i>Pearson</i>	.152	.116	.424	.414	.347
	<i>Correlation</i>					
Mother's years residing in current city	<i>Sig. (2-tailed)</i>	.060	.152	.000	.000	.000
	<i>Pearson</i>	-.131	-.085	-.344	-.444	-.312
Father's Education	<i>Correlation</i>					
	<i>Sig. (2-tailed)</i>	.138	.335	.000	.000	.000
Father's Birth Place	<i>Pearson</i>	.101	.082	.287	.455	.294
	<i>Correlation</i>					
Father's years residing in current city	<i>Sig. (2-tailed)</i>	.239	.344	.001	.000	.000
	<i>Pearson</i>	.241	.216	.392	.454	.417
Father's Work Type	<i>Correlation</i>					
	<i>Sig. (2-tailed)</i>	.003	.007	.000	.000	.000
Main Dialect Used by Mother	<i>Pearson</i>	-.199	-.072	-.274	-.421	-.304
	<i>Correlation</i>					
Main Dialect Used by Father	<i>Sig. (2-tailed)</i>	.023	.415	.002	.000	.000
	<i>Pearson</i>	.102	.036	.266	.422	.261
Main Dialect Used between Mother and Father	<i>Correlation</i>					
	<i>Sig. (2-tailed)</i>	.234	.670	.002	.000	.002
Sibling (Yes/No)	<i>Pearson</i>	-.227	-.115	-.245	-.220	-.258
	<i>Correlation</i>					
Number of Siblings	<i>Sig. (2-tailed)</i>	.006	.167	.003	.007	.002
	<i>Pearson</i>	.235	.216	-.186	.089	.145
	<i>Correlation</i>					
	<i>Sig. (2-tailed)</i>	.003	.007	.020	.269	.070
	<i>Pearson</i>	.236	.194	-.241	.088	.123
	<i>Correlation</i>					
	<i>Sig. (2-tailed)</i>	.003	.015	.002	.273	.125
	<i>Pearson</i>	.148	.119	-.242	.064	.058
	<i>Correlation</i>					
	<i>Sig. (2-tailed)</i>	.066	.141	.002	.433	.476
	<i>Pearson</i>	.399	.422	.052	.345	.424
	<i>Correlation</i>					
	<i>Sig. (2-tailed)</i>	.000	.000	.522	.000	.000
	<i>Pearson</i>	-.276	-.232	-.194	-.361	-.357
	<i>Correlation</i>					
	<i>Sig. (2-tailed)</i>	.001	.004	.017	.000	.000

Table 47: Correlation between the independent and dependent variables (continued)

		ONLY	EVERY	BUY	T-C	Overall
Main Dialect Used by the Sibling(s) to the participant	<i>Pearson Correlation</i>	.356	.385	.016	.301	.371
	<i>Sig. (2-tailed)</i>	.000	.000	.842	.000	.000
Main Dialect Used by the Participant to the Siblings	<i>Pearson Correlation</i>	.378	.406	.039	.336	.401
	<i>Sig. (2-tailed)</i>	.000	.000	.638	.000	.000
Other Carers (Yes/No)	<i>Pearson Correlation</i>	-.271	-.225	-.019	-.077	-.207
	<i>Sig. (2-tailed)</i>	.001	.006	.814	.354	.011
Dialectal Competence Rating (Mandarin Comprehension)	<i>Pearson Correlation</i>	.210	.159	.393	.306	.336
	<i>Sig. (2-tailed)</i>	.009	.050	.000	.000	.000
Dialectal Fluency Competence (Mandarin Production)	<i>Pearson Correlation</i>	.220	.179	.289	.222	.290
	<i>Sig. (2-tailed)</i>	.007	.029	.000	.006	.000

As is evidenced in Table 47, besides the factor of whether the participants had lived in other places than those of the data collection (see Table 29), there were 14 independent variables showing correlation with the participants' overall performance, which included the participants' Mandarin competence (both receptive and productive). There were another six factors that were not highly correlated with the participants' overall performance but had a correlation with the performance of individual structures. For example, mother's main dialect and whether the participant had other carers than his/her parents were correlated with the ONLY structure. Interestingly, although "Age" is not significantly correlated with the participants' overall performance, it showed high correlation with participants' performance for each individual structure.³⁰

It is important to know that the above one-to-one correlation shows association between the independent and dependent variables. It, however, does not tell if there is a cause-effect relation between the factors (Hertzog, 2015). Neither does such a correlation tell if these independent variables interact in their effect on the dependent variable (Grace-Martin, 2017). Although a linear regression does not directly tell about causation between the dependent and the independent variables, it was used here to show the degree of how the variation of the predictor (i.e. the L1 dialectal background) is associated with value changes in the response (i.e.

³⁰ However, it is interesting to note here that the association between participants' age and their test performance is positive for the ONLY and the EVERY structures, but negative for the BUY and the T-C structures. It is possible these two opposing trends cancel each other out in the overall analysis. A similar situation happens to the main dialects used by the participants' fathers (as it is positive for the ONLY structure and negative for the BUY structure). Important is all these variables were controlled in the general linear model.

participants' SPMT results). In the regression test, all the above factors correlated/associated with the dependent variable were controlled.

GLM results

The general linear model was also used to predict the values of the dependent variables based on the value of the independent variable (Leech, Barrett, & Morgan, 2008, p. 75), that is participants' dialectal backgrounds in this study. In order to further investigate the impact of participants' dialectal backgrounds on their performance for the individual structures, that is to better answer the sub-hypotheses, a GLM test was performed (see Madsen & Thyregod, 2011; Wichura, 2006).

The test results in Table 48 (also see Table 5-9 in Appendix III for more details) confirm that the L1 dialectal knowledge was the only fixed factor that had a significant impact on the participants' overall performance ($F[3]=117.93$, $p<.001$). Such significant between-group differences were also found for the structural performance of the ONLY structure ($F[3]=160.81$, $p<.001$) and of the EVERY structure ($F[3]=144.66$, $p<.001$). However, such an impact was found to show no significant difference in performance between the dialectal groups for the BUY structure ($F[3]=2.14$, $p=.147$) and for the T-C structure ($F[3]=8.31$, $p=.060$). Such a result corroborates those found through the LSD post-hoc test and the Tukey HSD homogeneity test earlier.

Table 48: Univariate analysis of variance - Tests of between-subject effects at the structural level

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
L1 Dialectal Background * Performance for the ONLY structure	547.694	3	547.694	160.812	.000	.671
L1 Dialectal Background * Performance for the EVERY structure	595.558	3	595.558	144.655	.000	.523
L1 Dialectal Background * Performance for the BUY structure	8.335	3	8.335	2.141	.147	.026
L1 Dialectal Background * Performance for the T-C structure	68.134	3	68.134	8.308	.060	.129

Interpretation of the quantitative results

Overall, the results from the t-test showed that the bidialectal group did better than the monodialectal group as per their overall performance. As for their structural performance, the bidialectal group outperformed the monodialectal group for the ONLY and the EVERY structures, when the L2 structures had more readings than those in L1. This suggests that the bidialectal learners were more “open” to “novel” L2 readings non-available in L1 than those from the monodialectal group. However, there were no such significant differences between the groups for the BUY structure, where the L2 structure had fewer readings than those in L1. Therefore, further tests are needed to confirm if such an L1 bidialectism advantage also applies to L2 structures that have fewer readings (than those of the L1). Table 49 summarizes the result of the t-test and its meaning.

Table 49: T-test result and its meaning

Purpose	Test	Result	Meaning
To test if L1 bidialectism has an overall positive impact on the syntax-semantics interface in L2	T-test	<p>The bidialectal group did better in the task than the monodialectal group in that:</p> <p>a). there were significant differences in overall performance between the monodialectal and bidialectal participants;</p> <p>b). there were significant differences in structural performance at the structural levels of ONLY, EVERY and T-C.</p>	<p>L1 bidialectism has a positive impact on Chinese child learners’ ESL syntax-semantics interface awareness;</p> <p>Further tests are needed to confirm if there is the same positive impact on the BUY and the T-C structures</p>

To further test the regional groups’ performance at the structural level, an ANOVA test was performed. The results confirmed that the L1 dialectal background was the factor that was significantly associated with the performance differences between the participants. The LSD post-hoc test and the Tukey HSD homogeneity test, however, both confirmed that the Mandarin-Wu bidialectal participants (Shanghai and Shaoxing) had better performance than the Mandarin monodialectal participants (Beijing and Henan) for the ONLY and the EVERY structures. However, while, regionally, the Shanghai participants scored the highest points and the Beijing participants the lowest scores, Henan and Shaoxing participants’ performance for the BUY and the T-C structures did not live up to the expectation that bidialectal participants would show a significantly better consistent performance than the monodialectal participants.

One possible reason why there seemed to be a big gap between the Beijing participants and those in the other groups in terms of their overall, as well as the structural, performance is that, as explained earlier in “instrument validity”, due to limitation of available facility on the day of test, the test targets were presented to the Beijing participants through an old optical projector. In order to make sure every participant, especially those sitting at the back of the classroom, see the pictures clearly, some originally printed targets were presented to the participants. Therefore, the whole test was over five minutes longer for the Beijing group than those for the other groups. And that is probably one of the reasons why the Beijing group did not do as well as the other groups, especially why it did not live up to the other monodialectal group’s (Henan) performance.

On the other hand, while they performed, as expected, better than the monodialectal participants in the ONLY and the EVERY structures, the Shaoxing participants did not show their “L1 bidialectal advantage” for the BUY or the T-C structure. This could be explained by the fact that, while the Shanghai participants had a better awareness of the Standard Wu due to the Shanghainese revitalization program in recent years (see Q. Liu, 2015; H. Wang, 2012), the Shaoxing participants still remained more Mandarin oriented since the National Language Standardisation Program (see P. Chen, 1999, pp. 42-44; Zhengzhang & Zheng, 2015, pp. 196-197). The four groups, therefore, formed a dialectal continuum with Beijing and Shanghai at the ends of the continuum of monodialectism and bidialectism, Henan and Shaoxing participants could be considered to be more Mandarin inclined (see the discussion of language distance in Chapter 7). Table 50 summarizes the ANOVA result and its meaning.

Table 50: ANOVA result and its meaning

Purpose	Test	Result	Meaning
To compare the four regional groups’ performance at the structural level	ANOVA	<p>The bidialectal groups (Shanghai and Shaoxing) performed consistently better than the monodialectal groups (Beijing and Henan) for the ONLY and the EVERY structures;</p> <p>The Beijing and Shaoxing participants showed similar performance for the BUY structure;</p> <p>The Henan and Shaoxing participants showed similar performance for the T-C structure.</p>	<p>L1 bidialectism has a positive impact on Chinese child learners’ ESL syntax-semantics interface awareness at the structural level (ONLY and EVERY);</p> <p>Further tests are needed to confirm if there is the same positive impact on the BUY and the T-C structures</p>

In a (simple) linear regression model, the relationship between the independent and the dependent variables was described by a linear function, where changes in the dependent variables were assumed to be “caused” by changes in the independent variables. The between-subject effects tests show clearly that only the participants’ L1 dialectal background had an associative relationship with their L2 performance at the syntax-semantics level.

Overall, one general tendency that we can confirm from the GLM test is that if the certain structure has only one reading in the learner’s L1 but two readings in L2, then the L1 bidialectism seems to be facilitative in selecting the additional (non-L1 like) reading in L2. However, if a structure has two readings in L1 but only one reading in L2, both the monodialectal and the bidialectal learners are able to select the L2 reading that conforms to the L1.

Table 51: GLM result and its meaning

Purpose	Test	Result	Meaning
To test the sub-hypotheses	GLM	a) The bidialectal groups (Shanghai and Shaoxing) were consistently better than the monodialectal groups (Beijing and Henan) for the ONLY and the EVERY structures;	L1 bidialectism has a positive impact on Chinese child learners’ ESL syntax-semantics interface awareness for the ONLY and the EVERY structures, that is <u>Sub-Ha is verified</u> .
		b) There was no significant difference between the bidialectal and the monodialectal groups for the BUY and the T-C structures.	There is not enough evidence that L1 bidialectism also has a positive impact on Chinese child learners’ ESL syntax-semantics interface awareness for the BUY and the T-C structures, that is <u>Sub-Hb is not verified</u> .

Summary

In this chapter, the quantitative data, its analysis, and results were presented. An independent t-test was first performed and the results showed that the bidialectal groups had a better overall performance than the monodialectal groups. The one-way ANOVA test looking into the structural performance differences between the four regional groups, however, found that, at the structural level, participants’ performance at the L2 syntax-semantics interface was directly related to their different L1 dialectal backgrounds. The LSD post-hoc test and the Tukey HSD homogeneity test confirmed that the bidialectal participants (Shanghai and Shaoxing) had similar performance for the ONLY and the EVERY structures in contrast to that of the

monodialectal participants (Beijing and Henan), who showed similar performances as each other. As for the BUY and the T-C structures, however, there was not a similar consistent performance found between the bidialectal, or the monodialectal, participants. The GLM model, with a series of independent variables being statistically controlled, corroborated these results. The model further demonstrated that the participants' L1 dialectal background was the only factor that was significantly related to their performance being significantly different between the monodialectal and bidialectal groups. Therefore, there is an L1 bidialectal advantage in L2 syntax-semantics interface acquisition when the same structure has more readings in the L2 than in the L1, but not vice versa. That is, while there is evidence to verify Sub-Ha, more evidence is needed for Sub-Hb.

The next chapter will look into the qualitative data. Its results will be compared with the quantitative ones to further explore the participants' L2 awareness at the syntax-semantics interface.

Chapter 6 Qualitative analysis

In this chapter, the qualitative results are presented for each test structure after explanation of the interview and data coding procedures. Measures to assure the rigor of the qualitative analysis are also discussed. The qualitative results are used to seek the participants' "logic justification" (see Madill, Jordan, & Shirley, 2000) to complement the quantitative results and to answer to the theoretical assumptions and the hypotheses.

The procedure

Before the interview

Unlike quantitative research, "there are no rules for sample size in qualitative inquiry" (Patton, 2004, p. 244). However, a sample size of 15 to 30 interviewees is suggested to be enough to identify patterns across data (Gough & Conner, 2006; Terry & Braun, 2011). Therefore, for qualitative data collection in phase two, the top and bottom 10% of the participants from each group were contacted to confirm their assent to take part in the interview. Contact with participants was facilitated by the class teachers. Specifically, the researcher prepared a list of participants in the order of their performance in the phase one test (from the highest scores to the lowest scores). The class teachers were asked to contact the participant with the highest points and confirm his/her assent to take part in the interview. In case there were participants reluctant to continue with the interview, the participant in the order immediately after was contacted. This process was repeated until there were 10% participants of the highest scores participating in the interview. The class teachers then followed the same procedure to contact the participants from the bottom of the list, until there were 10% of the participants with the lower scores participating in the interview (also see Figure 7 for the details). Altogether, there were 31 participants selected for the phase two interview (seven from Beijing, eight from Henan, eight from Shanghai, and eight from Shaoxing, totaling 15 monodialectals and 16 bidialectals).

The interview also took place in the recruiting schools of each group. However, a small meeting room, instead of the multi-media room, was used. As for the phase one test, the interview was also conducted after normal teaching hours. The non-participating students, therefore, either

went home or attended any extra-curricular activities organized by the school as usual. The parents/guardian were allowed to sit in the meeting room during the whole interview, but they sat behind the participants and were reminded that there was to be no disruption during the interview. The class teachers were also present throughout the interview. They were seated out of the sight of the participants. Before the interview, each participant was asked to confirm their assent to the interview.

During the interview

In the interview, the selected participants were presented with the same test targets and their answers. This time, the researcher showed the participants the printed test targets and pictures (see Box 2 below for an example of Target 8, the ONLY structure). The contents of the printed version were exactly the same as those projected onto the big screen in the phase one test. The researcher read the test sentences and each participant was asked for their reasons as to why they had made their selection (as per in the test). Considering the interpretive nature of qualitative research and extra benefits deductive thinking would bring to inductive analysis (Creswell, 2014, pp. 186-187), open-ended questions were asked in the interview to elicit views and opinions from the participants (p. 190) (see for example [56]-[58]). The interview was conducted in English (to read the test sentences) and Mandarin (for questions and answers) for the monodialectal participants (Beijing and Henan); while mainly Mandarin and occasionally Wu (for questions and answers) along with English (to read the test sentences) were used in the interviews with the bidialectal participants (Shanghai and Shaoxing). All the interviews were audio-recorded (with confirmation of the participants' and their parents'/guardians' permission).

The ninja only rides a dinosaur.



Picture A



Picture B



Picture C

Box 2: Example of the printed test targets used in the interview

The interview was semi-structured and the open-ended questions were used in particular for participants' in-depth and detailed responses (see [56], [57] and [58] for examples of questions asked for test *Target 1: The master only holds a stick*). Each participant was asked to explain their choices made in phase one. To make them comfortable with justifying their answers, the participants were given 10 seconds to give their answers. If they did not respond at all within the first 10 seconds, they were asked if they needed more time and were told it was okay if they did not want to answer. Possible distress was also acknowledged ("Are you okay?", "Do you need a rest?") (see Braun & Clarke, 2012, p. 89). Each participant was given a small present as a token of appreciation of their participation.³¹

[56] *Interviewer:* Why did you accept Picture A?

BJ-35: Because he only holds a stick.

[57] *Interviewer:* Why did you reject Picture B?

BJ-36: He also kicks a ball.

[58] *Interviewer:* Why did you also accept Picture B?

SX-40: It doesn't say that he can't kick a ball.

As conducting individual interviews is "the most time consuming and costly approach" (Creswell, 2012, p. 218), methodologically, this stage followed Creswell's (p. 220) nine-point general steps to standardize and streamline the process. Table 52 below has a summary of the steps.

³¹ It was culturally appropriate to give small presents to research participants. However, the participants had no knowledge that they would get a present before the interview.

Table 52: Nine steps to conduct individual interviews

Steps	Notes
1. Identify the interviewees	Top 10 and bottom 10% of each group
2. Determine the type of interview you will use	Semi-structured with open-ended questions (Creswell, 2012, p. 218)
3. During the interview, audiotape the questions and responses	Accurate record of the conversation through adequate recording procedures (Creswell, 2012, p.220)
4. Take brief notes during the interview	Notes were taken for the interviewees' gestures, such as pointing to the pictures while answering the questions
5. Locate a quiet, suitable place for conducting the interview	The interviews took place in rooms free from distractions
6. Obtain consent from the interviewee to participate in the study	Participants' assent and their parents'/guardians' consents were obtained before the interview started
7. Have a plan, but be flexible	During the interview, the interviewer stuck with the questions but was flexible enough to follow the conversation of the interviewee.
8. Use sub-questions to obtain additional information	Sub-questions were asked to elicit more information, that is to clarify points or to have the interviewee expand on ideas
9. Be courteous and professional when the interview is over	Each participant was thanked and offered a gift for their participation

(adapted from Creswell, 2012, pp. 218-220)

After the interview

The researcher transcribed, translated and coded the recordings. The researcher was a qualified translator (English-to-Mandarin and Mandarin-to-English), a native speaker of Wu and Mandarin, as well as a trained linguist with extensive experience in corpus building and development (including data transcription and coding). Therefore, the researcher was considered qualified and competent to transcribe, translate and code the data for this study. Specifically, the researcher first familiarized himself with and transcribed the data. The researcher then translated the data into English. The data were coded using NVivo (see Coding and Analysis section below for detail), a recommended software for the coding of qualitative data (see Creswell, 2014, pp. 195-196), and were analyzed to compare with the quantitative results to see if both results were convergent or divergent, so that a decision of whether to verify the hypotheses could be made (see Figure 6 and). An NVivo-generated comprehensive report was later used for the qualitative analysis.

In general, the analysis aimed to find the patterns and themes of the participants' choices. Methodologically, it observed a five-step procedure of qualitative data analysis after the

interview (see Braun & Clarke, 2012; also see Poland, 2002). Table 53 below summarizes and explain each step.

Table 53: Procedures of data analysis after interview

Steps	Notes
1. Transcription	Check for transcription error: a). Sentence structure errors; b). Quotation mark errors; c). Omission errors; d). Mistaken word/phrase errors
2. Reading and familiarization	Notice things that might be relevant to the research question Similar pattern of repeated listening to the material
3. Coding-selective	Conceptual and theoretical frameworks to identify implicit meanings within the data, that is the assumptions and frameworks that underpin what is said in the data. (see the Data Coding section below)
4. Analysis	Use NVivo for data analysis Do pattern-based analysis, that is ideas which recur across a dataset capture something psychologically or socially meaningful It's about meaning, rather than numbers
5. Writing up-finalizing analysis	Summarize the analysis of the content of the data extracts and use the extracts as examples

(adapted from Braun & Clarke, 2012, pp. 202-252)

Rigor

A series of measures were applied to ensure that the process was rigorous. First, the transcripts and translations were double checked by the researcher and an English-Mandarin speaker against the recordings. The data were then constantly compared, during the coding process, with the codes. Ten percent of the files were recoded by a Mandarin, Wu and English speaker. As the intercoder agreement is not exactly the same as the correlation coefficient, it does show the extent to which the different judges tend to assign exactly the same rating to each object (Tinsley & Weiss, 2000, p. 98). As suggested (see Creswell, 2014; Gibbs, 2007), memos about the codes and their definitions were kept. Intercoders' coding and analyses were also constantly cross-checked and compared so that there was a high intercoder agreement (Guest, MacQueen, & Namey, 2012) and thus good rigor (Miles & Huberman, 1994). Specifically, the qualitative rigor assurance procedures proposed by Gibbs (2007) were followed, as shown in Table 54 below:

Table 54: Qualitative rigor assurance procedures

Procedures	
1	Check transcripts to make sure they do not contain obvious mistakes made during transcription.
2	Make sure that there is not a drift in the definition of codes, a shift in the meaning of the codes during the process of coding.
3	Coordinate the communication among the coders/researchers by regular consultation and by sharing the analysis with each other.
4	Cross-check intercoders' coding by comparing results that are independently derived.

(Adapted from Creswell, 2014, p. 203; Gibbs, 2007)

Qualitative rigor was ensured by cross-checking for mistakes in transcription and translation. By strictly following the definitions of the codes any drift in meaning of the codes while coding was prevented (see Gibbs, 2007). The consistency of coding and the codes were also cross-checked by the primary supervisor (also see Guest et al., 2012; Miles & Huberman, 1994). While debriefs and interpretation of peers beyond the researcher adds validity and credibility to an account, discussion of the discrepant information that does not align with the general perspective of the theme also brings in authenticity and trustworthiness (Creswell, 2014; Creswell & Miller, 2000; Lincoln, Lynham, & Guba, 2011).

Data coding and analysis

The coding process followed a standard nine-step procedure of coding including gist reading, sample coding, categorization, code correlation, and recoding if necessary (see Creswell, 2014, p. 248; also see Tesch, 1990, pp. 142-149). Table 55 lists the codes developed to classify the explanation given by the child participants for their selection of the picture(s) they thought corresponded to each test sentence. All the codes are described and explained in detail regarding their meaning, and each code corresponds to one possible choice only. For example, the code “ONLY_Acceptance (narrow)” stands for the acceptance of picture A as an answer to the ambiguous focus “only” structure because it has the broad-scope, narrow reading (e.g. [56]), as opposed to “ONLY_Acceptance (broad)” that stands for the acceptance of picture B as an answer to the same structure because it has the narrow-scope, broad reading (e.g. [57]). The codes listed in the tables represent all the observed answers of participants’ (see the results section for examples of the main codes of interest).

Table 55: Coding summary

Structure	Code	Description	Corresponding answer
ONLY	<i>ONLY_Acceptance (Narrow)</i>	Acceptance of an answer to the ONLY structure because of its narrow reading	Acceptance of A
	<i>ONLY_Acceptance (Broad)</i>	Acceptance of an answer to the ONLY structure because of its broad reading	Acceptance of B
	<i>ONLY_Acceptance (Other)</i>	Acceptance of an answer to the ONLY structure because of other (non-linguistic) reasons	Acceptance of A, B or C
	<i>ONLY_Rejection (Narrow)</i>	Rejection of an answer to the ONLY structure because of its narrow reading	Rejection of A
	<i>ONLY_Rejection (Broad)</i>	Rejection of an answer to the ONLY structure because of its broad reading	Rejection of B
	<i>ONLY_Rejection (Inconsistency)</i>	Rejection of an answer to the ONLY structure because of there is additional/inconsistent information	Rejection of C
	<i>ONLY_Rejection (Other)</i>	Rejection of an answer to the ONLY structure because of other (non-linguistic) reasons	Rejection of A, B or C
EVERY	<i>EVERY_Acceptance (Narrow)</i>	Acceptance of an answer to the EVERY structure because of its narrow reading	Acceptance of A
	<i>EVERY_Acceptance (Broad)</i>	Acceptance of an answer to the EVERY structure because of its broad reading	Acceptance of B
	<i>EVERY_Acceptance (Other)</i>	Acceptance of an answer to the EVERY structure because of other (non-linguistic) reasons	Acceptance of A, B or C
	<i>EVERY_Rejection (Narrow)</i>	Rejection of an answer to the EVERY structure because of its narrow reading	Rejection of A
	<i>EVERY_Rejection (Broad)</i>	Rejection of an answer to the EVERY structure because of its broad reading	Rejection of B
	<i>EVERY_Rejection (Inconsistency)</i>	Rejection of an answer to the EVERY structure because there is additional/inconsistent information	Rejection of C (non-universal quantificational)
	<i>EVERY_Rejection (Affirmative UQ)</i>	Rejection of an answer to the EVERY structure because of its affirmative UQ reading	Rejection of C (universal quantificational)
	<i>EVERY_Rejection (Other)</i>	Rejection of an answer to the EVERY structure because of other (non-linguistic) reasons	Rejection of A, B or C
BUY	<i>BUY_Acceptance (Beneficiary)</i>	Acceptance of an answer to the BUY structure because of its BENEFICIARY reading	Acceptance of A
	<i>BUY_Acceptance (Source)</i>	Acceptance of an answer to the BUY structure because of its SOURCE reading	Acceptance of B
	<i>BUY_Acceptance (Other)</i>	Acceptance of an answer to the BUY structure because of other (non-linguistic) reasons	Acceptance of A, B or C
	<i>BUY_Rejection (Beneficiary)</i>	Rejection of an answer to the BUY structure because of its BENEFICIARY reading	Rejection of A
	<i>BUY_Rejection (Source)</i>	Rejection of an answer to the BUY structure because of its SOURCE reading	Rejection of B
	<i>BUY_Rejection (Inconsistency)</i>	Rejection of an answer to the BUY structure because there is additional/inconsistent information	Rejection of C
	<i>BUY_Rejection (Other)</i>	Rejection of an answer to the BUY structure because of other (non-linguistic) reasons	Rejection of A, B or C
T-C	<i>T-C_Acceptance (OSV)</i>	Acceptance of an answer to the T-C structure because of its OSV reading	Acceptance of A
	<i>T-C_Acceptance (SOV)</i>	Acceptance of an answer to the T-C structure because of its SOV reading	Acceptance of B
	<i>T-C_Acceptance (Other)</i>	Acceptance of an answer to the T-C structure because of other (non-linguistic) reasons	Acceptance of A, B or C
	<i>T-C_Rejection (OSV)</i>	Rejection of an answer to the T-C structure because of its OSV reading.	Rejection of A
	<i>T-C_Rejection (SOV)</i>	Rejection of an answer to the T-C structure because of its SOV reading	Rejection of B
	<i>T-C_Rejection (Inconsistency)</i>	Rejection of an answer to the T-C structure because there is additional/inconsistent information	Rejection of C
	<i>T-C_Rejection (Other)</i>	Rejection of an answer to the T-C structure because of other (non-linguistic) reasons	Rejection of A, B or C

Table 56 below presents a comparison of the participant answers in the main categories of interest to each test target. First, look at the results for the ONLY structure, the percentage of the answers shows that there was an equal percentage of monodialectal and bidialectal interviewees accepting the answers with narrow readings. However, of all the interviewed cases that accepted an answer because of its broad reading, over 90% were from the bidialectal interviewees. On the contrary, over 90% of those who rejected a picture as the answer because of its broad reading was from the monodialectal interviewees. The answers to the EVERY structure present a similar picture to that of the ONLY structure: half of all the participants accepting the narrow reading were from the monodialectal group (49.7%), and the other half the bidialectal group (50.3%); 84% of all the interviewees accepting the broad reading were from the bidialectal group, while over 80% rejecting the broad reading was from the monodialectal group.

Answers to the BUY and the T-C structures, however, present a different scenario. There were close to equal distributions between the monodialectal and bidialectal groups of the acceptance (55.5% to 44.5%) of the Beneficiary reading, the acceptance (49.1% to 50.9%), and rejection (50% to 50%) of the Source reading for the BUY structure. It is the same for the acceptance (51.7% to 48.3%) for the OSV reading and the rejection (42.9% to 57.1%) of the SOV reading for the T-C structure. There were more participants justified their acceptance of the SOV reading in the monodialectal group (67.4%) than in the bidialectal group (32.6%).

Table 56: Distribution of answers between the monodialectal and bidialectal interviewees

		Monodialectal (percentage)	Bidialectal (percentage)
ONLY	ONLY_Acceptance (Narrow)	48.7	51.3
	ONLY_Acceptance (Broad)	6.4	93.6
	ONLY_Rejection (Broad)	97.4	2.6
EVERY	EVERY_Acceptance (Narrow)	49.7	50.3
	EVERY_Acceptance (Broad)	16.0	84.0
	EVERY_Rejection (Broad)	80.3	19.7
BUY	BUY_Acceptance (Beneficiary)	55.5	44.5
	BUY_Acceptance (Source)	49.1	50.9
	BUY_Rejection (Source)	50.0	50.0
T-C	T-C_Acceptance (OSV)	51.7	48.3
	T-C_Acceptance (SOV)	67.4	32.6
	T-C_Rejection (SOV)	42.9	57.1

Results

The ONLY and the EVERY structures

For the ONLY structure, the results show that there were interviewees of all the four groups that justified their acceptance of Picture A because it had the narrow reading of the corresponding targets, e.g. [59].

- [59] *Interviewer:* Why did you accept Picture A?
- BJ-35:* Because he only holds a stick.
 (ONLY Target 1; PCON: 1.52%)
- SH-21:* He only kicks a ball in A.
 (ONLY Target 2; PCON: 1.71%)
- SX-19:* Because he holds two guns in A.
 (ONLY Target 7; PCON: 1.47%)
- HN-15:* Only in Picture A that he only holds a stick.
 (ONLY Target 1; PCON: 2.23%)

Most of the interviewees accepting Picture B due to its broad reading of the targets were in the bidialectal Shanghai or Shaoxing groups, e.g. [60].

- [60] *Interviewer:* Why did you also accept Picture B?
- SH-32:* In B, Jenny holds a flag, but she still only stands on the bridge.
 (ONLY Target 9; PCON: 3.35%)
- SH-16:* In B, there is a ball, but the hands do not touch the ball.
 (ONLY Target 1; PCON: 3.00%)
- SX-27:* Because he has two guns in hand. It doesn't say where he should
 stand.
 (ONLY Target 7; PCON: 3.66%)
- SX-40:* It doesn't say that he can't kick a ball.
 (ONLY Target 1; PCON: 2.44%)

Weighting (the percentage Coverage of the Node – PCON) of the observed cases indicates that acceptance of the narrow readings was equally distributed across the four groups. Acceptance of the broad readings, however, was mostly found for the interviewees from Shanghai and Shaoxing. Only four from Henan and none from Beijing were found to accept the broad readings. However, all the Beijing and Henan participants in the interview responded that they rejected Picture B because of its broad reading, e.g. [61].

- [61] *Interviewer:* Why did you reject Picture B?
- BJ-36:* He also kicks a ball.
 (ONLY Target 1; PCON: 0.55%)
- BJ-35:* Because he also holds a sword.
 (ONLY Target 2; PCON: 0.73%)
- HN-15:* Because in B, Jenny also holds a blue flag.
 (ONLY Target 5; PCON: 1.09%)
- HN-18:* The sword is additional in B.
 (ONLY Target 6; PCON: 0.75%)

Furthermore, all 31 interview participants were found to reject Picture C where there was inconsistent, or additional, information as per in the test targets. Such a result is consistent with the purpose of the inclusion of such distraction items. It demonstrates the participants' equal, logical judgment (of truth values), other than the syntactic-semantic awareness.

The situation for the EVERY structure was more or less the same as that of the ONLY structure. On one hand, there were equally distributed cases of justified acceptance of Picture A in both the monodialectal and the bidialectal groups due to its narrow readings of the test targets, e.g. [62].

- [62] *Interviewer:* Why is Picture A correct?
- SH-01:* In A, no one has a tail.
 (EVERY Target 4; PCON: 2.71%)
- SH-11:* Nobody wears a hat in A.
 (EVERY Target 2; PCON: 2.71%)
- HN-15:* Everyone sits down in A.
 (EVERY Target 3; PCON: 2.71%)
- HN-11:* Because nobody wears a hat in A.
 (EVERY Target 2; PCON: 3.50%)

On the other hand, the majority of the monodialectal groups explained their answers of the rejection of Picture B because it had the broad readings, e.g. [63].

- [63] *Interviewer:* Why do you think Picture B is wrong about the sentence?
- BJ-36:* Because the grandpa in the middle wears a hat.
 (EVERY Target 2; PCON: 1.74%)
- BJ-35:* Because two men stand up.
 (EVERY Target 3; PCON: 0.95%)
- HN-29:* Because there is a man in B that holds a sword.
 (EVERY Target 4; PCON: 1.74%)
- HN-09:* Because the master wears a hat in B.
 (EVERY Target 2; PCON: 1.44%)

On the contrary, only the bidialectal participants were found to accept Picture B because of its broad reading, e.g.

- [64] *Interviewer:* Why do you think Picture B is also right?
- SH-32:* (B is right because) the one on the right in B doesn't hold a gun.
 (EVERY Target 6; PCON: 3.85%)
- SH-11:* (B is right because) two people hold a flower.
 (EVERY Target 8; PCON: 2.31%)

Once again, all the 31 participants were found to reject Picture C as a reading to the EVERY structure with the same reason as they rejected C as an answer to the ONLY structure (see [65]), as there was inconsistent information regarding the targets, or there was an affirmative reading of the universal quantification.

- [65] *Interviewer:* Why did you not choose Picture C?
- BJ-36:* They all hold a sword.
 (ONLY Target 1; PCON: 0.27%)
- HN-22:* Everyone holds a sword in C.
 (ONLY Target 1; PCON: 0.95%)
- SH-32:* In C, everybody holds a sword.
 (ONLY Target 1; PCON: 0.98%)
- SX-27:* In C, every man holds a sword.
 (ONLY Target 1; PCON: 1.08%)

There were also limited cases where participants from the four groups accepted or rejected the ONLY or the EVERY structure for other non-linguistic reasons. Such reasons included that the participants did not see the test pictures clearly (e.g. [66]), or that it was their “intuition” that led them to the answer(s) (e.g. [67]). Sometimes they just admitted they had made a wrong choice (e.g. [68]) or did not give a reason why they picked such an answer at all (e.g. [69]).

- [66] *Interviewer:* Why did you choose Picture A?
- SX-40:* I didn't see it clearly.
 (EVERY Target 7; PCON: 7.61%)
- [67] *Interviewer:* Why did you choose Picture A?
- SH-16:* Because I think A is right.
 (ONLY Target 2; PCON: 4.97%)
- [68] *Interviewer:* Why do you think B is correct?
- SH-32:* I made the wrong, well, the wrong choice.
 (EVERY Target 5; PCON: 13.65%)
- [69] *Interviewer:* Why is B correct?
- HN-09:* I don't know.
 (ONLY Target 2; PCON: 4.76%)

The BUY and the T-C structures

It was found throughout the interview that there was evidence of participants from each group accepting Picture A because of its Beneficiary reading (see [70]).

- [70] *Interviewer:* Why did you choose Picture A?
- SX-19:* Because this man (Tony) does give him (Sam) a helmet.
 (BUY Target 4; PCON: 5.07%)
- BJ-34:* Here (pointing at Picture A), this soldier faces for the other.
 (BUY Target 9; PCON: 4.99%)

It was also found that each group had participants that accepted Picture B because it had the Source reading (see [71]).

- [71] *Interviewer:* Why did you choose Picture B?
- SH-21:* (Pointing at Picture B) Ninja bought the cake from the master,
 not for the master.
 (BUY Target 1; PCON: 16.16%)
- HN-09:* (Pointing at Picture B) because the master doesn't see, he (Tony)
 takes it away.
 (BUY Target 6; PCON: 14.67%)

The equal weighting of the observed cases such as above means the choices of acceptance of the Beneficiary reading or that of the Source reading were equally distributed between the groups.

On the other hand, there were participants from both groups that rejected Picture A because of its Beneficiary reading (e.g. [72]), or they rejected Picture B because it had the Source reading (e.g. [73]). There were, however, more participants in the interview rejecting the Source reading than those rejecting the Beneficiary reading. Weighting of the observed cases suggests such rejection was equally distributed between the groups.

- [72] *Interviewer:* Why do you think Picture A is wrong?
- HN-15:* In A, he holds the cake and gives it to the master.
 (BUY Target 1; PCON: 5.60%)
- SX-05:* (He) gives him (the master) a cake in A.
 (BUY Target 1; PCON: 4.80%)

- [73] *Interviewer:* Why did you not choose Picture B?
- BJ-31:* Because he offers the helmet to this one.
 (BUY Target 4; PCON: 0.97%)
- SH-32:* Ninja finds the gun for someone.
 (BUY Target 5; PCON: 1.12%)

As for the T-C structure, English has only the *OSV* reading, while Mandarin and Wu have both the *OSV* and the *SOV* readings. The interview results showed that, first, both the monodialectal and the bidialectal groups saw participants accepting Picture A because of its *OSV* reading (e.g. [74]), but rejecting Picture B with the *SOV* reading (e.g. [75]).

- [74] *Interviewer:* Why did you choose Picture A?
- BJ-32:* The dragon drags Tony.
 (T-C Target 10; PCON: 0.67%)
- HN-22:* Tony chases Sam.
 (T-C Target 2; PCON: 0.58%)
- SH-30:* Mary hugs Jenny.
 (T-C Target 3; PCON: 0.51%)
- SX-05:* Sam kills the dragon
 (T-C Target 1; PCON: 0.64%)

- [75] *Interviewer:* Why did you not choose Picture B?
- BJ-35:* Sam chases Tony.
 (T-C Target 2; PCON: 0.53%)
- HN-15:* Tony drags the dragon.
 (T-C Target 10; PCON:0.79%)
- SH-32:* Mary pushes Jenny in B.
 (T-C Target 5; PCON: 0.76%)
- SX-30:* Because Tony touches Sam.
 (T-C Target 9; PCON: 0.83%)

On the contrary, both groups also saw cases that rejected Picture A with the OSV reading (e.g. [76]), or that accepted Picture B with the SOV reading (e.g. [77])

- [76] *Interviewer:* Why do you think Picture A is not correct?
- HN-11:* Because Sam lifts the master.
 (T-C Target 8; PCON: 7.15%)
- SX-03:* Because the ninja shoots the soldier.
 (T-C Target 7; PCON: 7.15%)
- [77] *Interview:* Why did you choose Picture B?
- HN-40:* Mary pushes Jenny.
 (T-C Target 5; PCON: 1.82%)
- SX-16:* Jenny hugs Mary.
 (T-C Target 3; PCON: 1.45%)

As we can see, there were cases found accepting or rejecting one of the two readings across groups. However, there were more cases that accepted the OSV reading or rejected the SOV reading than those who accepted the SOV reading or rejected the OSV reading.

Besides, all the 31 participants were found to reject Picture C as an answer to the BUY structure or the T-C structure because there was additional or inconsistent information between the answer and the test targets. However, there were limited cases where the participants chose, or did not choose, an answer for reasons other than linguistic ones. Those responses showed that they didn't see the pictures clearly, believed they had chosen the wrong answer, or simply admitted there had been no reason at all. Again, such selections appeared random and unsystematic.

Interpretation of the qualitative results

Overall, the qualitative results point to a bidialectal advantage for the L2 syntax-semantics interface awareness for the ONLY and the EVERY structures. The test results show that, due to the similarities between the L1 (Mandarin and Wu) and the L2 (English), in the narrow reading to the ONLY and the EVERY structures, most participants from both the monodialectal and the bidialectal groups accepted picture A and were able to justify their choices. As for the broad reading, however, most monodialectal participants chose to reject picture B. And the results also show that their reasons were based on the corresponding L1 (Mandarin) syntactic-semantic projection of the same structures. In contrast, albeit the broad reading is absent for the same structures in Wu, most bidialectal participants still accepted such a reading. This time, however, they based their justification through the syntax-semantics interface in the target language.

Contra the ONLY and the EVERY structures, the corresponding results present a picture of no obvious differences between the groups as per their performance for the BUY or the T-C structures. Most of the participants accepted the readings available in English (i.e. the *BENEFICIARY* reading for the BUY structure and the *OSV* reading for the T-C structure) and rejected the ones that were not (i.e. the *SOURCE* reading and the *SOV* reading respectively), even though such readings are possible in the L1 dialects.

In fact, the analyses of the qualitative data turned out two “conflicting” results. While the bidialectal participants excelled in comparison to their monodialectal counterparts for the ONLY and the EVERY structures by showing sound reasons and better and clearer L2 syntactic-semantic awareness, there were no obvious differences found between the groups for the BUY or the T-C structures. Such a result confirms the quantitative findings in Chapter 5 that L1 bidialectism has a positive influence in the L2 acquisition at the syntax-semantics interface for the ONLY and the EVERY structures where the same structure has more readings in the L2 than in L1, but not vice versa.

Summary

In summary, through a closer examination of the data from interviews with top and bottom 10% of participants (where there were not big differences between the top and the bottom 10% participants in each group for the same answers, that is they used similar reasons to accept

certain readings, or to reject certain readings), the qualitative results confirm the quantitative ones that the bidialectal group did better than the monodialectal group for the structures involving ambiguous focus (ONLY) or the negation of universal quantification (EVERY). The results of the qualitative analysis suggest that this better performance came from the more complex L1 knowledge of the bidialectal participants. According to the participants' responses in the interview, the correct answers made by the bidialectal participants were explained by them reading the sentence at the syntax-semantics interface in the L2 domain, as compared to most monodialectal participants who analyzed and explained the targets by using their L1 knowledge, and therefore the wrong answers. Therefore, the results verified the first sub-hypothesis - Sub-Ha, that is for structures that have two readings in L2 but only one reading in L1, the bidialectal participants will accept both readings, while the monodialectal participants will only accept the L1-like reading. The results from the BUY and the T-C structures, however, were not enough to verify the second sub-hypothesis - Sub-Hb, that is for structures that have two readings in L1 but only one reading in L2, the monodialectal participants will accept both readings, while the bidialectal participants will only accept the L2-like reading.

A general picture we can see from both the quantitative and qualitative analyses, therefore, is that they point to a tendency that L1 bidialectal advantage emerges when the same structure in L2 is semantically inclusive of that in L1, but not the other way around. The biggest concern now is why there were split scenarios among the participants with different L1 dialectal backgrounds for the same test targets. These questions will be discussed in the next chapter.

Chapter 7 General discussion

The general concern of this study is to explore the role of Chinese child ESL learners' L2 syntax-semantics interface awareness (in structures with readings unparalleled with the corresponding L1 structures). The general and the sub-hypotheses propose a positive role of L1 bidialectism in SLA at the syntax-semantics interface. Both the quantitative and the qualitative results confirm an L1 bidialectal advantage when the same structure has more readings in L2 (i.e. the ONLY and the EVERY structures), but not when there are fewer readings in the target language (i.e. the BUY and the T-C structures).

It has been made clear earlier that there are many multi-dialectal SLA learners of English in the world, and, in the bilingual speech-language pathology context, misdiagnosis is common. Therefore, a detailed discussion of the results from this study will make a contribution to the disciplines of speech-language pathology studies by providing a cross-linguistic (bilingualism vs bidialectism) account and interpretive critique of the nexus of language impairment and language transfer. Such a contribution will be of value to speech-language pathologists and clinicians, as well as applied linguists, who will be able to use the findings to improve understanding of the impact of bidialectism. More specifically, it will provide a unique, focused insight into the relationship between speech-language pathology, language acquisition studies (in particular meta-linguistic awareness and cross-linguistic transfer) and linguistic typology. Therefore, this is the start of a cross-disciplinary look at this area.

This chapter will start with a discussion of the results within the framework of the role of UG in language acquisition, that is whether and how L2 learners also have access to the innate capacity for language. The difference between the L1 and L2 developmental stages, that is the L2 initial state and the L1 crosslinguistic transfer will then be discussed in detail. This will lay a sound theoretical foundation to infer learners' language competence through their actual performance in the target language where the L1 transfer is involved (see Yip & Matthews, 2006).

Until very recently, there has been limited research in the effort to bridge bilingualism and language disorder. As to the learners' factors, current explanations are neatly limited within the cross-overs between the four "symmetric" categories of TD monolinguals, TD bilinguals and atypically developing monolinguals and bilinguals (Chiat, 2010). It, however, leaves little

room for a fifth category of TD L1 bidialectal L2 learners. Both the quantitative and qualitative results in this study indeed reveal the importance of such a fifth permutation, in that it helps to better our understandings of the nature of L2 capacity shaped by existing L1 systems beyond mere L2 inputs, or L1 transfer.

As to the language modules of learning, while the majority of attention has been put on the phonological or lexical aspects (e.g. Smirnova et al., 2015), little is known about the L2 acquisition at the syntax-semantics interface. We know even less of how such syntactic and semantic knowledge, especially the interface between them, is represented in L2, as compared to L1. On one hand, neurolinguistic studies show evidence that FLA and SLA may be represented differently in the cortex (Sakai, 2005); on the other, the cross-linguistic knowledge is believed to be a connected system (Cook, 1992), which is more integrated than separated. However, things can easily become more complicated when put in the context of language disorder studies, since there are problems in the assessment of bilingual children under the “faulty” guide of the data observed from monolingual children only (see Zurer-Pearson, 2010).

The relationship between language distance and transfer, as previously mentioned, the typological distance, as well as the psychological perception of such distance, between L1 and L2, is believed to be the main factor deciding how the positive or negative transfer of L1 knowledge will impact on L2 acquisition (e.g. Rothman, 2010). However, the distance between L1 and L2 may tell only part of the story. In a narrow sense, it is equally important to examine the distance between the multiple L1 dialects and its role on SLA. Also, although there are no commonly agreed-upon explanations of why language transfer occurs (R. Ellis, 2008, p. 397), it is widely accepted that it is not a trivial question as to whether and to what extent cross-linguistic influence has a facilitative or an inhibitory effect on L2 acquisition (Ringbom, 1990). There is no doubt that learner’s background language (i.e. L1) has, to a certain extent, influences on their interpretation preferences of L2. Indeed, the question is how much learners’ L1 (dialectal) knowledge will impact on their actual acquisition of L2 (specifically, in this study, the acquisition of the same L2 structure as in L1 but with narrower or wider semantics)?

Furthermore, while other linguistic modules, such as speech sounds, are acquired through three stages of input, storage/processing and output (Stackhouse & Wells, 1997), it is actually not easy to clearly define the “stages” in the acquisition at the syntactic-semantic interface. In fact, children may need additional storage and pathways when they are exposed to more than one language (also see Hambly, Wren, McLeod, & Roulstone, 2013). Therefore, another focus of

this chapter is about the L1 and L2 “connected system” in an L2 learner’s mind (e.g. Cook, 2008), that is the question of how input, in addition to crosslinguistic knowledge, has an impact on L2 learners who have multidialectal L1 knowledge?

Also, factors other than the typological and linguistic ones indeed deserve detailed investigation. For example, a “widespread belief” (Saville-Troike, 2012, p. 90) in many cultures is that female learners tend to be more successful than male learners, especially in the SLA context, which is allegedly due to the fact that the brains of females are more symmetrically organized than males (Kimura, 1992). Also, as for learners’ age, recent studies conclude that early young L2 learners (between three and seven) are not the same as late young L2 learners (after seven but before puberty) as per their L2 learning processes and outcomes (e.g. Blom, 2008; Chondrogianni, 2008; Ionin, 2008). Other factors, such as the learners’ cognitive skills (Nicholas & Lightbown, 2008), or learning environment, such as the instructional settings (Myles, 2005; Pladevall-Ballester, 2010) are all believed to have an impact in child L2 acquisition studies (also see Montrul, 2013 for more details). Therefore, demographic factors will be looked into in detail in order to provide answers to a further concern of this chapter, that is whether the non-linguistic factors other than the L1 bidialectism, have the same significant impact on the L2 syntax-semantics interface awareness.

Finally, as the results have highlighted the differences in the learning of L2 by monodialectals versus bidialectals, it is important that we separate the two, not only theoretically, but, more importantly, also clinically. This issue is also discussed from a more clinical perspective.

UG access for child L2 learners and the L2 initial state

While Schreiber and Sprouse’s (1998), Hopp’s (2005) and Marsden’s (2009) studies (see Chapter 3) point to the conclusion that L2 learners have access to UG as do L1 speakers, it should be noted that the participants in these studies were all adult learners at intermediate or advanced levels. The results from the current study of early young learners, however, seem to present a conflicting picture: while the bidialectal groups processed the target sentences as UG predicted, the monodialectals appeared to be mainly subject to the L1 knowledge.³²

³² One interpretation that bidialectal groups are better at doing this is because they have developed an awareness that languages can have different semantic-syntactic structures and monodialectals haven’t because this is the first time they are ‘finding out’ that languages have different structures that express different meanings. In this sense,

Such contradictory results do not, however, disobey the UG rules. UG distinguishes between I-language (“I” for internal or intensional) and E-language (“E” for external or extensional) (see Tonoike, 2013). While E-language is the actual performance of individual speakers, it is the I-language that represents learners’ knowledge about the language they speak (similar to the linguistic awareness this study is interested in) that differentiates individual speaker’s competence from each other. On the surface, this study shows that bidialectals are better at the external performance because they have a better I-language. The bidialectal results, in fact, confirm White’s (1989, 2003) claim that if there is evidence that the L2 learner demonstrates unconscious knowledge about the target language grammar, especially those non-L1-like, then there is a reason to believe that UG is also functioning for L2 acquisition as it is in L1. Apart from the argument between the L2 learners’ ability to access UG principles and to reset UG parameters (see White, 2013, p. 671), I propose a third equally important yet long overlooked theme: that is the L2 learners’ ability to add parameters without resetting them. That is to say, it is possible for two systems of parameters to co-exist in the L2 learner’s mind, contra the common belief that the parameters remain set as L1 is acquired. Therefore, L2 learners do have access to the innate capacities for language.

The test targets in the current study fit with such a mismatch between forms and meanings across languages. While trying to explain the form-meaning pairing, one thing that is often referred to is syntactic parsing. Specifically, parsing, in psycholinguistics is traditionally referred to as the process of structural classification of the words in a sentence and the establishment of the syntactic relations between them (D. C. Mitchell, Cuetos, & Zagar, 1990). Earlier theories, such as the Syntax First Model (e.g. Frazier, 1979) and the Constraint-Based Model (e.g. Garnsey, Pearlmutter, Myers, & Lotocky, 1997; McDonald, Pearlmutter, & Seidenberg, 1994; Trueswell, Tanenhaus, & Kello, 1993), proposed that the readers’ parsing and interpretation of such form-meaning mismatched sentences are subjected to either usage-based or exposure-based factors. This study’s results, however, tell a different story. Since the test sentences were presented in a decontextualized manner and there was no proof that the participants had had different exposure to the test sentences, their differences in performance should be better explained by factors other than usage or exposure. This suggests that while the monodialectal groups parsed these sentences, they put them in the L1 domain, that is they

the L1-bidialectals are “better” L2 learners in the early age not because they have “better” access to UG, but because they can activate the non-L1 like parameters with more ease than the L1 monodialectal learners. This will be discussed later.

followed the L1 patterns to parse the sentences in L2. On the contrary, the bidialectal groups were more flexible and able to parse the test sentences in the L2 domain.

If the form-meaning pairing is viewed as an information structure, then theoretically the meaning and its interface with the form are the keys to the successful processing of such an information structure (Jackendoff, 2002; Reinhart, 2006). Recent research such as Valenzuela (2006) and Fruit (2009) has indicated that the acquisition of the purely semantic properties of an information structure is the logical basis for the successful acquisition of the structure at the syntax and semantics interface. For example, it is proposed that studies of how information such as topic and focus is processed in the target language have become an important aspect of L2 acquisition research (Slabakova, 2012, p. 141). The results obtained from the test of the T-C structure have shown, however, that the information is processed differently by the bidialectal groups in L1 and L2. The bidialectal learners were able to contain the transfer of non-target-like semantics for the same structure in L2, no matter how “prominent” such a meaning is in L1. This, again, leads us back to the question of how similar L1 and L2 learning are, that is how both processes of acquisition are possible, as well as how different is one from the other.

If access to UG is as active in L2 as in L1, then the full access to UG in SLA is expected to help learners to converge onto the “correct” target grammar through only the positive L2 input, while disregarding the role of L1, or other confounding factors, as it does to L1 (see for example Zdorenko & Paradis, 2008). On the contrary, if SLA only relies on part of the UG that is already accessible in L1, that is the access is indirect, then those L2 particular parameters will not be successfully reset, or, as proposed earlier, added. Or, the story could be that the learning principles from the language faculty, that is UG, is still available in L2, only that it is selectively, but not completely, accessible. While the results of the BUY and the T-C structures seemingly point to an indirect UG access in L2 learning, those of the ONLY and the EVERY structures show there is UG access in L2. To put the two pictures together, there seems to be at least partial access to UG in L2. Such a partial access view, however, leads to the question of what part of UG is selectively “impaired”, and what part remains “intact”, at least for child L2 learners?

According to the Interface Hypothesis (see Chapter 3), for L2 learners, “apart from their lexical entry in the linguistic lexicon, the (LF-interpretable) features are also associated with semantic/conceptual features in the mental lexicon; these features are, by definition non-

modular” (Mastropavlou & Tsimpli, 2011, p. 444). As for the current study, although there were no significant differences between the monodialectal and the bidialectal groups for the BUY and the T-C structures, such a result does not necessarily point to the interference of L1 knowledge since the L1 readings are broader than those in L2. That is, such a result shows the potential positive L1 influences, rather than the negative impact L1 may have onto L2. Indeed, it is the different performance between the monodialectals and the bidialectals for the ONLY and the EVERY structures, where the L2 readings are broader than those in L1, that present a more intriguing picture of the story: while the monodialectals struggled with the additional non-L1 like meaning at the interface, the bidialectals accessed all the L2 readings as predicted. In this sense, although more evidence is still needed for the full UG access hypothesis of SLA for both L1 monodialectal and bidialectal learners, the result of the current study is consistent with the view that L2 learners have, at least, partial access to UG, which in turn confirms the Interface Hypothesis that the L2 interface acquisition is a much more vulnerable aspect than the acquisition of other individual modules (of, for example, phonology or morphology, etc.). It further suggests that L1 bidialectism might be an important variable in the L2 initial state.

Therefore, learners are expected to enter the stages of SLA with at least partial access to UG, where the syntax-semantics interface is selectively “inaccessible” for L1 monodialectal learners. Therefore, as to the question of why some learners appear to be more successful than others in L2, this study confirms Saville-Troike’s (2012, pp. 54-55) claim that “(apparently) there are several possibilities within the UG framework. These include...all learners may not have the same degree of access to UG...(and) some learners may be more perceptive than others of mismatches between L2 input and existing L1 parameter settings.”

Cross-linguistic transfer at the syntax-semantics interface

Crosslinguistic transfer from the existing L1 knowledge onto the L2 acquisition is believed to be facilitative (i.e. positive transfer) or inhibitory (i.e. negative transfer) (see for example Jarvis & Pavlenko, 2008; Odlin, 2003, 2013). As to the degree of how “positive” or “negative” the L1 transfer will be is decided by the “closeness” between L1 and L2 (Rothman, 2010).

Results of this study show that, overall, the bidialectal groups did better than the monodialectal groups. Specifically, the bidialectal participants did better than the monodialectal participants if the L2 structure had more readings than in L1, while no significant difference was found

between the mono- and bidialectal participants if the L1 structure had more readings than in L2.

Such results indicate that, regardless of the typological differences between L1 and L2, structures with the same word order are most susceptible to cross-linguistic transfers (Hartsuiker & Pickering, 2008; Verreyt et al., 2013). It is predicted that cross-linguistic influences from L1 to L2 at the syntax-semantics interface will happen if the same structure has two readings in L2, but only one reading in L1 (Müller & Hulk, 2001). In the context of advanced adult L2 learners (e.g. Sorace, 2011), or that of simultaneous child bilingual speakers (e.g. Serratrice et al., 2004; Sorace, Serratrice, Filiaci, & Baldo, 2009), such a theory has been supported. In this study of sequential child L2 learners with different L1 dialectal backgrounds, only the results of the monodialectals (for the ONLY and the EVERY structures) agree with the above prediction. In fact, the reason why the bidialectal participants exhibited better performance compared to their monodialectal counterparts can be explained as the bidialectals had already developed a selection mechanism between linguistic systems that relied less on inhibition. Therefore, the L1 bidialectals did not have to apply as many inhibitory controls onto the L2 as the monodialectals would do (see Costa & Santesteban, 2004; Sorace, 2011, p. 24 for a similar comparison between multilinguals and monolinguals).

As explained earlier in Chapter 3, transfer theories have proposed several models predicting the impact of the transfer on L2 development (at the syntactic level or its interface with other modules, such as semantics). For example, the Cumulative Enhancement Model (CEM) proposed that all prior linguistic knowledge may contribute positively to the ultimate L2 learning (e.g. Flynn et al., 2004). The strong version of L2 Status Factor Theory (L2SF) predicts that the chronologically newer acquired knowledge contributes to successful L2 acquisition (e.g. Falk & Bardel, 2011), while the weak version states it is the chronologically older knowledge that has more impact on the process of L2 acquisition (Hermas, 2014b). Broadly, in L_n acquisition, when there are multiple structural transfers available, the Typological Primacy Model (TPM) proposes that it is the existing psychologically and typologically “close” knowledge to L_n that contributes in a more positive way (e.g. Rothman, 2011, 2013, 2015; Rothman & Cabrelli Amaro, 2010). The Declarative-Procedural Model (DPM), on the other hand, predicts that, depending on various factors and providing there is

enough L2 experience, L2 learners will rely more on procedural, instead of the declarative³³, memory for L2 processing, which will help lead to ultimate native-like proficiency (e.g. Ullman, 2001, 2005).

Therefore, as predicted by CEM, TPM, L2SF, explanations for results of the BUY and the T-C structures would be that because the L1 readings are inclusive of the L2 readings for these structures, it is easy for the learners to acquire/accept the target reading(s) for the same structure as there is positive transfer from L1³⁴, rather than the claimed L2 reverse transfer, that is misuses in L1 resulted from negative transfers from L2 (see W. L. Tsang, 2016). However, as for the ONLY and the EVERY structures, the bidialectal group is more “open” to non-L1 like readings in that the participants are more aware of the cross-linguistic variations at the syntax-semantics interface, likely due to their awareness of the existing syntactic/semantic complexities in their L1 dialects. We have, therefore, reasons to believe that even without extensive L2 experience as DPM predicts, the L1 bidialectism also helps keep the procedural knowledge in L2 active in syntactic acquisition and processing. Therefore, as to what and how L2 learning is different from that of the L1, the answer is L2 learning is subject to the crosslinguistic transfer of existing knowledge, where the L1 bidialectism has a positive influence.

In the process of L2 acquisition, as the competence in the target language develops, a simple grammar is formed to elaborate the target language data the learners are exposed to (Ringbom, 2013). Transfer is important in such a process of elaboration. For example, Finnish-L1 English learners tend to omit articles in the L2 due to their absence in Finnish (Jarvis & Pavlenko, 2008; Ringbom, 2007), or Swedish-L1 learners of Finnish may omit the fifteen L2 case endings, which are not present in the L1 (Ringbom, 2013). However, the test results in the current study show that L1 bidialectals have a better awareness of the L2 syntax-semantics awareness from limited exposure to the target language. Therefore, it seems true that the development of the grammar in the target language is an interactive process based not only on the exposure to the

³³ The declarative memory processes facts and events and, therefore, relates more directly to the processing of lexical learning. The procedural memory, on the other hand, processes cognitive skills and “habits”, thus directly relates to processing of syntactic learning (see Foucart & Frenck-Mestre, 2013).

³⁴ Also, both the mono- and bidialectal participants’ performance for the OSV reading for the topic-comment structure may be explained by Kraš’ (2016) finding that L2 learners tend to prefer, in forward anaphora, the object reading for the overt pronoun.

L2 data but also on what the previous knowledge, that is “the L1 and others”, can offer (ibid, p. 398).

Transfer in bilinguals is not a simple issue. There are studies (e.g. Sanoudaki & Thierry, 2015) showing that only bilinguals with higher verbal fluency show non-selective syntax in sentence comprehension. This is because bilinguals are accustomed to the switch between the two systems so that they have better control over the activation of one system over the other. In other words, bilinguals are experts in maintaining one language system while facing more options. Such results, however, were only drawn from observations of lexical tasks. It does not necessarily mean that bilinguals would also be more competent in syntactic and semantic tasks in L2. Apart from adult bilinguals, it is also open to investigation whether cross-linguistic variability can be eventually overcome for early child bilinguals (see Montrul, 2008, p. 261). The current study finds, at least, that L1 bidialectals started at a higher level with better syntactic-semantic skills in L2 than their L1 monodialectal counterparts.

Two broad questions regarding the transfer of any previously existing knowledge onto the syntactic aspects of an additional language are, as Lardiere (2012, p. 110) pointed out, “(a) to what extent does the grammar of the L1 constitute the initial “departure point” for a learner’s assumptions and representation of the L2 grammar?, and (b) to what extent is the ultimate attainment of the L2 circumscribed by the categories and features of the L1?”. Answers to these questions can be partly found in the results of the current study. On one hand, it is clear that there is L1 transfer of functional categories and features. The degree of such a transfer, however, varies greatly between monodialectals and bidialectals, with the latter presenting less negative transfers from the existing system, due to their better awareness of the typological differences between the multiple (old and new) systems. On the other hand, those previously unselected features in L1 will still be available, at least for the bidialectals, in the process of SLA. However, in the long run, the “constraining” role of L1 may not persist through the stages beyond the initial one, especially for monodialectal learners.

Another factor said to be decisive of the manner and degree L1 transfers to L2 is bilinguals’ L2 proficiency (Kroll & Dussias, 2004). For example, Su’s (2001) study found that for early Chinese learners of English, it was not possible for them to clearly distinguish animacy cues or word order cues to assign the thematic roles to NPs in L2. Or, low proficiency Chinese learners are found to easily violate the word order rules in English (e.g. Paul, 2007, pp. 173-174). This is not surprising, considering that while it is typical for Mandarin and other Chinese

dialects to use structures of the OV order (Object-Verb), there are only 15% OV orders in written English, while the number is lowered to 5% if only spoken English is counted.³⁵ This means the word order mistakes by Chinese ESL learners in those studies were more relevant to appropriacy/inappropriacy than grammaticality/ungrammaticality.

Actually, many errors found in learners' L2 cannot be explained by the transfer from L1 (Butler & Hakuta, 2004, p. 130). While most literature concentrates on transfers from either the first to the second language (e.g. Z. Han, 2010), or the second to the first (e.g. Porte, 2003), there is increasing attention paid to transfer on the additional language from more complex knowledge beyond only one language (e.g. De Angelis, 2007). Third language acquisition, or, more appropriate for the current study, acquisition of the additional (linguistic) variety, takes place when the language learner has already had knowledge of two L1s, or two dialects of his/her L1 (see Hammarberg, 2013, p. 644). Knowledge of multiple varieties, therefore, will provide "greater ease to suppress" the possible negative influences that a single variety may have on L2 (ibid, p. 646). Having more than one linguistic variety has been suggested to have positive impacts on L2 proficiency, especially on linguistic awareness (see for example Jessner, 2006). That is why facilitative effects of learning an additional language are confirmed for learners who have already had two or more systems in their L1 (Cenoz, 2003).

Therefore, in L2 development, comparing to monodialectals, bidialectals may show distinct abilities to distinguish target-like, but non-L1-like, sentences from those that are non-target-like but L1-like. The qualitative results show that while the monodialectal groups consciously compared, and "adjusted", the corresponding structures in L2 according to those in L1, more often than not, the bidialectals processed the L2 structures in the L2 domain. While the monodialectals made errors by keeping or discarding potential choices in L2 as per their L1, such "errors", as Isurin (2013) pointed out, reveal exactly the tactics used by the learners to reach L2 outputs.

As for L2 syntactic acquisition, Hartsuiker and Bernolet (2015) argued for a three-phase scenario, that is an initial stage (where there are no L2 syntactic representations), an intermediate stage (where limited L2 specific representations are found), and a final stage (where L1 independent L2 representations are established). The results of this study show that bidialectals have reached the stage of establishing L1 independent L2 representations sooner

³⁵ However, the same mistake of not being able to identify and distinguish the dialectal backgrounds of the Chinese-L1 learners is spotted in these studies.

than their monolingual peers. Therefore, I propose that differences between the L1 monodialectals and L1 bidialectals may affect the rate of L2 acquisition at least at the syntax-semantics interface. Such development patterns and differences between monodialectals and bidialectals in the L2 acquisition are proposed as being general, although it is also possible that individual variation might exist in the particular acquisition sequence across languages (such as there might be differences for different combinations of L1 dialects and the L2 being acquired) (also see Thordardottir, 2005).

Abstract representation in L2

Logically, there are four possibilities of how the linguistic knowledge is represented in an L2 learner's mind: a) only the L1 knowledge (i.e. only the L1 knowledge is used to approach L2), b) only the L2 knowledge (that is only the L2 knowledge is left and used for L1 after L2 acquisition), c) a mixture of L1 and L2 (i.e. interlanguage), and d) both L1 and L2 are represented as separate systems. The majority of research in SLA does not support either the L1-only or the L2-only representation scenario.

As for the mixed L1 and L2 proposal, there have been studies, results of which are in favor of a mixture system of representation. For example, after comparing Japanese-L1 and Chinese-L1 learners of English as L2, Hawkins and Liszka (2003) found that the Japanese learners appeared more successful than the Chinese learners in the past tense marking (-ed) tasks, which was likely because there was past tense marking in Japanese but not in Chinese. Therefore, such past tense marking features are “uninterpretable” for Chinese learners. They then concluded that Chinese-L1 learners would be incapable of acquiring such features, as opposed to Japanese learners (also see Hawkins, 2009). The implication, therefore, seemed to be that learners are deeply influenced by their L1 knowledge in the process of L2 learning, especially when there are contradictory features between the two languages, only that Hawkins and Liszka proposed a very strong claim that the interlanguage learners used in the process of SLA is “doomed” to be fossilized, and will be the end state of the L2 learning, at least for the Chinese learners in their case.³⁶

³⁶ In fact, the Chinese learners in Hawkins and Liszka's (2003) study were not that “doomed”. While the Japanese learners showed as high as 92% suppliance of past tense marking in obligatory contexts, their Chinese counterparts had 63% suppliance, which is, indeed, not so bad as would have been imagined (also see Ionin, 2013).

On the contrary, a recent article by Chondrogianni, Vasić, Marinis, and Blom (2015) reported a study of Turkish-L1 child learners of either English or Dutch as L2. The learners' online processing and production of definite articles were examined, and the results showed that the two different systems of L1 and L2 were represented separately in the learners' mind. Such a finding confirmed what Haznedar and Schwartz (1997) claimed that child L2 learners' variable production may be better attributed to the contrasting differences between, rather than the lack of, abstract representations of the dual language systems.

The quantitative, as well as the qualitative, results from this study are more in favor of the dual systems of representation theory. As presented earlier, the monodialectal groups failed to show L2-like attainment in the tasks not because they lacked an abstract representation in L2, rather it was because there were such huge typological contrasts between the two systems so that the (syntactic-semantic) representation did not fully merge with the target language. However, the results of this study also suggest that the attainment of the L2-like abstract representation would not just be contained by the contrasting characteristics of the L1. In the case there are enough complexities in the existing L1 systems, or, in other words, when the learners have enough exposure to two typologically separate representations, it would be easier to represent the target-like system in the additional language. The overall better performance by the bidialectal groups suggested that L1 bidialectism does contribute to the acquisition of the abstract system in L2, and therefore the bidialectals showed more control over complex structures at the syntax-semantics interface.

A further question, therefore, is whether the dual systems of abstract representation are equal, specifically, whether the L2 syntax and semantics are represented the same for L2 learners as compared to native speakers? The "Shallow Processing" theory (Clahsen & Felser, 2006a) proposed, comparing to native speakers, L2 learners are "shallower" in processing the inputs of the target language. That is language modules in the target language, such as syntax and semantics, are not fully represented in an L2 learner's mind (as compared to L1 speakers). And it is because L2 speakers are fundamentally less efficient in applying structure-driven strategies and processing syntactic information, therefore "shallower" syntactic and semantic representations are constructed in L2. Such "shallowness" in the second language seems to happen even when there are not contrasting syntactic differences between L1 and L2. Most favorable data to the "shallow processing" theory comes from the studies of L1 and L2 learners' processing of syntactically ambiguous sentences (Dussias & Guzzardo Tamargo, 2013, pp.

476-477). Papadopoulou and Clahsen (2003), for example, examined the RC (relative clause) attachment, a highly typologically distinct feature among languages, such as [78]:

[78] The dean likes the secretary of the professor who was reading a letter.

(adapted from Dussias & Guzzardo Tamargo, 2013, p. 476)

Apparently, the attachment preferences vary greatly cross-linguistically for the above example. In low attachment languages, such as Norwegian and Brazilian Portuguese, the relative clause is read as attached to the noun in the lower position, that is “the professor”, thus the reading of “the professor was reading a letter”. In high attachment languages, such as French, Spanish, Greek and German, however, it is preferred to be read as attached to “the secretary”, the high position noun, therefore the reading as “the secretary is reading a letter”. Greek-L2 learners, whose L1s were also a high attachment language, were asked to read similar sentences in Greek (Papadopoulou & Clahsen, 2003). It was found, however, that the preference for high attachment was lost in the L2 processing, which resulted in inaccuracies in the target language. Felser, Roberts, Gross, and Marinis (2003) further pointed out that similar results indicated that L2 learners are “shallower” in processing structure-based information due to their focuses on the lexical, pragmatic cues (see, however, Dussias, 2003; Dussias & Sagarra, 2007; Frenck-Mestre & Pynte, 1997 for counter-evidence).

The bidialectal groups’ performance in the current study, however, do not agree with such “shallowness” among L2 learners. No matter whether it is subject to the lexical cues, or the syntactic features in L2, the L1 bidialectals appeared to have clearer awareness (in language comprehension) at the syntax-semantics level. In fact, in the interview phase, as compared to the monodialectal participants who attributed their answers to the test targets to their L1 knowledge, the bidialectal participants “stayed” in the target language. This suggests that L2 learners (at least the bidialectal ones) were able to compute and represent the syntactic information as native speakers do for the ONLY and the EVERY structures (see for example Crain, 1992; Crain et al., 1994; Crain et al., 1992). However, the lower performance by the monodialectal groups does not necessarily suggest the “shallower” processing, either. There was no evidence to show that were interfered by lexical or pragmatic cues in the test, other than their L1 syntactic knowledge. There is no reason, however, to believe that the L2 pragmatic factors influenced the monodialectal groups’ performance since the interface at the pragmatic level comes later in the L2 development and is thus the most difficult to acquire (see Schwartz & Sprouse, 1996). Therefore, as the result does not solidly confirm the Full Access without

Transfer theory or that of Full Transfer, it does not support the Shallow Structure Hypothesis, either. The bidialectal group's performance, in fact, confirms that L2 learners have the ability to use native-like strategies solving ambiguities in L2 sentence processing (see Yuan, 2017 for similar results).

Language distance and L2 learning

Language distance has long been suggested to be one of the many factors that influence the L2 acquisition rate (Odlin, 1989). Broadly speaking, language distance in SLA refers to the typological differences/similarities between the learner's L1 and L2. Language distance between the home and target languages may be used to predict how easy or difficult the L2 learning process would be. That is to say, learners will take longer to acquire the L2 if the L2 is typologically very "distant" from their L1 (Butler & Hakuta, 2004). An Italian-L1 speaker, therefore, will take longer to acquire Japanese, than to acquire Spanish, as the L2 due to the different typological distances between these languages. The results of this study, again, partly confirm such a proposal. As English is typologically quite distant from both Mandarin and Wu, a weak linguistic attainment of the monodialectal groups at an early stage of acquisition is well expected. However, the bidialectals performed much better in spite of the huge typological differences between the L1 and L2. I propose that because Mandarin and Wu are syntactically distant from each other, the L1 bidialectals have already mastered two "distant" linguistic varieties before the acquisition of a third linguistically distant variety. It is their ready knowledge and experience of the typological distance between two language systems that prepared them to focus on the distinct system of the additional language.

Second language learners, therefore, could be sensitive to subtle differences at the syntax-semantics interface in L2. However, the majority of the existing evidence comes from studies of L2 learners, who have an L1 typologically very close to the L2, such as English and French (for example Dekydtspotter et al., 2001). Such sensitivities are not found for the monodialectals in the current study. This could be due to the fact that the language distance is much bigger between English and Mandarin than, for example, that between English and French. However, a more important issue is, if bilinguals are more sensitive to the subtle characteristics at the syntax-semantics interface than monolinguals are, they, therefore, are more able to sustain such sensitivities and apply them in the successful processing of the target language. Again, the

question is why the bidialectals were only better than the monodialectals for the ONLY and the EVERY structures, but not for the other two?

As discussed earlier, the answer to the above question is that the bidialectal group did much better than the monodialectal participants for the ONLY and the EVERY structures because they were more aware of the cross-linguistic variations at the syntax-semantics interface. As for the BUY and the T-C structures, rather than to say that the bidialectals did not do much better than the monodialectals, it would be fairer to say that the monodialectals did less poorly in this case than they did for the other two structures. The bidialectal participants were more “open” to non-L1 like readings, which was likely due to their awareness of the existing syntactic/semantic complexities in their L1 dialects, which are “distant” from each other.

Earlier in Table 42, it is obvious that, for the ONLY and the EVERY structures, the bidialectal participants (Shanghai and Shaoxing) form a homogenous group, as opposed to the monodialectal participants (Beijing and Henan). For the BUY and the T-C structures, however, there was no such homogeneity found for either the monodialectal participants or the bidialectal participants (also see Table 43 to Table 46, as well as Figure 9 to Figure 12). An easy explanation, as pointed out in previous chapters, is that, as predicted by several cross-linguistic transfer theories (e.g. CEM, TPM, L2SF), since L1 readings are inclusive of the L2 readings for the BUY and the T-C structures, it is easy for the learners to accept the target reading(s) for the same structure as there is positive transfer from L1. To further explain the inconsistent performance of the Shaoxing and the Henan participants, it requires a narrower investigation and discussion of language distance.

It was assumed earlier that a native speaker of Italian would find it easier to learn Spanish (also a language of the Latin family) as an L2 as compared to Japanese (an Altaic language). Such an assumption makes sense because the language distance between Italian and Spanish is substantially “smaller” than that between Italian and Japanese. Although much “smaller”, language distance also exists between dialects of the same language. In this sense, there is language distance between the dialects of the participants in the test (cf. Figure 5). Although syntactically the same, the Mandarin used by the Henan participants (especially in informal contexts) would sound more exaggerated in terms of the phonology. For example, the name of “Henan” in standard Mandarin (as well as in vernacular Pekingese) is read as “xɿ²nan²”. In spoken Mandarin in Henan, however, the tone of the first syllable usually starts at a higher level, e.g. “xɿ⁴nan²”. Such a difference in between the high and low tones, however, does not

result in meaning change. Therefore, as they are still defined as monodialectal, internally in the group, the Henan participants had more complex phonological knowledge than the Beijing group. However, such a difference is not big enough to qualify them as true bidialectal speakers. On the other hand, while the Shanghai participants are likely to be regaining their dialectal intuitions of Wu, thanks to the Shanghainese revitalization program introduced over a decade ago (Q. Liu, 2015; H. Wang, 2012), the Shaoxing participants still remained heavily Mandarin oriented (see P. Chen, 1999, pp. 42-44; Zhengzhang & Zheng, 2015, pp. 196-197), since the Mandarin standardization program from the 1950s (P. Chen, 1999, p. 24; Coblin, 2000) (also see the Order of the President of the People's Republic of China (No. 37), 2000). Therefore, although definitively the Shaoxing participants are bidialectal, their knowledge and intuition of Wu might not be as good, or as strong, as those of the Shanghai participants. Then, if we set the reference points of the Beijing group as typically monodialectal as opposed to the Shanghai group as typically bidialectal (as in this study per se), the Henan and the Shaoxing groups would appear somewhere in between the continuum, as illustrated in Figure 13. This helps to explain why the Shaoxing participants' performance did not live up to the "standards" of the Shanghai participants. However, whether the phonological complexity of the Henan participants is related with their syntactic and semantic awareness better than the Beijing participants in L2 needs further studies to answer.

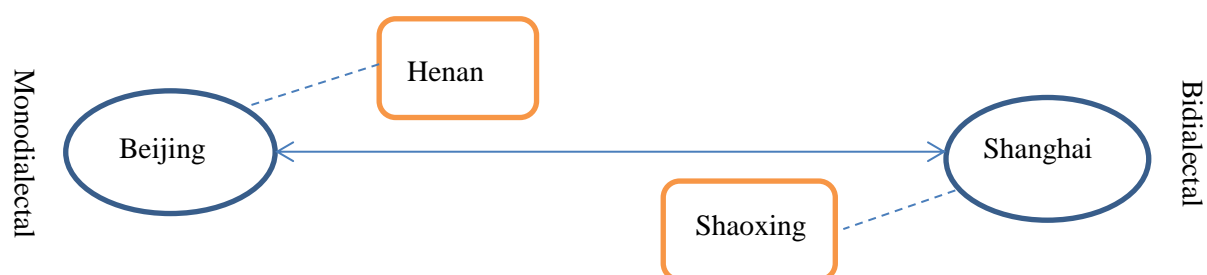


Figure 13: Dialectal continuum of the Beijing, Henan, Shanghai and Shaoxing participants

Multi-competence and input in L2 learning

Considering that cross-linguistic knowledge is actually a connected system (Cook, 1992), speakers who have multiple language knowledge are said to be multi-competent (Cook, 2008, p. 11). Multi-competence is, however, not just L1 competence plus L2 competence. Learners' linguistic knowledge is believed to change while learning a new language (Cook, 2008, pp.

231-232). Such a change is proposed to be distinct and therefore have the following three features:

Feature 1: L2 users' knowledge of L2 is not the same as L2 natives

Feature 2: L2 users' knowledge of L1 is not the same as L1 monolinguals'

Feature 3: L2 users think differently than L1 or L2 monolinguals

So, one natural question is what L2 learners' knowledge is and what and how they "think"? Obviously, at least from where Cook stood, they stand and think somewhere in between the L1 and L2. Therefore, in search of such an "in-between" place, the L2 learners seemed to form a "mixed" language (see Meakins, 2013), which is that the two languages are fused together (usually there is syntax from one language and lexicon from the other). Therefore, a mixed language is like an interlanguage, but more stable and systematic and used by more people. However, it is indeed not easy to tell the actual realization of an individual's mixed language, because an L2 learner may adapt his/her speech to either converge with, or diverge from, the L2 usage, which is usually out of language-external factors (Rampton, 2005). Reasonably, therefore, mixed language systems of L1 and L2 are neither completely fused nor absolutely separated (Saville-Troike, 2012, p. 75). Based on in the results of this study, I propose here a fourth feature to be taken into consideration, which is:

Feature 4: L1 bidialectals develop L2 knowledge in a more positive way than L1 monodialectals

As per the previous discussion of how linguistic knowledge is represented in an L2 learner's mind, the study results favor an abstract representation of dual language systems. My proposal is, therefore, if it is true that learners' knowledge changes and linguistic competence increases in the process of L2 acquisition, the changes would be more possibly happening at the syntax-semantics interface which is reflected by the learners' awareness at such a level, over which bidialectal learners have an advantage. Therefore, practically, if the claimed additive effect of bilingualism on L2 learning has the credence (see Cenoz, 2003), the L1 bidialectism, which points to superior metalinguistic skills and knowledge, specifically at the syntax-semantics interface, should be a variable to be controlled (cf. Rothman et al., 2013, p. 373) in the context of L2 acquisition studies and those of speech-language pathology.

Aside from the internal L1 bidialectism, externally, positive input, as both empirically and theoretically supported, also plays a facilitative role in the process of L2 learning. Within the UG model, input is viewed as one mechanism, alongside UG, which people use to learn a language (Cook, 2008, p. 215). Other studies also claim that input alone is far from being sufficient for successful language learning (e.g. Swain, 1991). The qualitative examination of the monodialectal data showed that when there is complexity between the L1 and the L2, and when language transfer cannot be avoided (at least not without the help of L1 bidialectism), L2 learners tend to rely on the “narrower” form-meaning match between the two languages. And this is because transfer more happens to a syntax centered language from a less centered one, rather than vice versa (Sasaki, 1991, p. 61). That is to say, for certain structures, if the target language’s reading is simpler, those “additional” reading(s) in L1 will be given up in L2; while if the L1 reading is narrower, only this “narrower” reading will be acquired in the target language even though there is positive input for those alternative readings. This means, in an early stage of L2 learning, positive input alone is not enough to guarantee an “expedited” successful L2 learning. Indeed, the results show that both the L1 bidialectism and positive input in L2 play an important role in SLA.

The demographic factors in L2 learning

A potential variable about learner’s demographic background is if gender is related to their individual language performance. Oakes, Kover, and Abbeduto’s (2013) study compared cognition (non-verbal) matched young learners with learning disabilities and TD children and found that there were minimal differences in the performance of receptive syntax, especially within the group that had learning disabilities, if only the male participants were considered. Such a result implies a potential gender difference between male and female children. However, more evidence is wanted for the generalizability of such gender differences in language acquisition (see Oxford, 2013), especially that of TD children’s L2. As Table 47 has illustrated (see Chapter 5), there were around 20 control variables that showed observable correlations with the participants’ test performance, both at the structural and general levels. Gender, however, was not one of them.

Unlike gender, age, in this research, showed association with the participants’ individual structural performance. Indeed, age is a factor critical in language acquisition (e.g. Akiyama et al., 2013; Can, Richards, & Kuhl, 2013; Chung & Ho, 2010; Gomez & Reason, 2002; Krashen,

1981; Kuhl et al., 2013; Lenneberg, 1967). The Critical Period Hypothesis (CPH), for example, proposes an “optimal” age (before puberty) for language acquisition, both biologically and psychologically. The participants in this study were all within such a “critical period”. In the GLM analysis, when other factors were controlled for, the results did not show that age was a decisive factor to influence the participants’ performance (see Table 48).

Other non-biological factors, such as parental educational background, were said to be better predictors of learners’ performance (see Flege & Liu, 2001; Flege, Yeni-Komshian, & Liu, 1999), especially in the acquisition of an additional language. In Price, Roberts, Vandergrift, and Martin’s (2007) study, for example, they found that when the participants’ maternal education was controlled, no significant between-group differences were found for the scores for syntax, grammatical morphology and receptive vocabulary. Like gender and age, the educational level of the participants’ mother and father was not found to have a significant influence on the test results. Again, in this study, none of the other independent variables were found to be an important factor as the participants’ L1 dialectal background on their L2 performance at the syntax-semantics interface, neither from the complex statistical analyses nor through the qualitative examination of their interview. All of these mean biological and/or non-biological factors only were not as deterministic, or reliably predictive, in L2 acquisition as theories would have predicted. Rather, the complexity of the existing linguistic knowledge, such as the L1 bidialectism, was of great importance.

The discussions above seem to point to a fact that, in the L2 acquisition process, at least at the syntax-semantics interface, biological or non-biological factors are less important than the (typological) linguistic factors in regard to learners’ final attainment in the target language. In fact, there has been a recent revival of focusing on the grammatical aspect of L2 learning from the perspective of linguistic relativity (e.g. Bylund, Athanasopoulos, & Oostendorp, 2013). It is pointed out that the “L1 habits” are present in L2, even for very advanced learners (see Z. Han & Cadierno, 2013, pp. 393-394). The findings based on the monodialectal groups’ performance seemed to indicate the effect of linguistic relativity in the L2 acquisition. However, the contradictory results by the bidialectal groups presented a different picture. The participants’ recall of their motivations in making the choices during the interview showed very clearly that, for the monodialectal learners, their thinking and comprehension of the English structures were subject to the corresponding L1 patterns. However, for the bidialectal learners, such “relative” influences from L1 were much smaller. The L1 bidialectism—complex syntax-semantics

knowledge—was substantially less subject to the L1 habitual nature and/or cognitive entrenchment.

One good theory to explain such a clear distinction between the mono-and-bidialectal groups in their performance in L2 is cross-language interactivity. Cummings (2000) proposed that speakers who have two linguistic systems in mind would be better at processing event information organized differently in the two systems due to their greater flexibility in switching between the two. Kormi-Nouri et al. (2008) supported the dual-system advantage of bilinguals. In a series of experiments, they found that switching between the language systems and changing cognitive demands had no influence on the semantic (or episodic) tasks.

I, therefore, propose that there is similar cross-language interactivity for bidialectals, who, due to their early exposure to two typologically different systems, have better awareness across systems, as well as better control of the different parts of information in one system that will inhibit that in the other (cf. Bialystok, 2001, 2004; 2005 for similar discussions of the cross-language interactivity in bilinguals). Because the two systems in L1 presenting typological contrasts share common representational domains, such mutual activity eventually contributes to the acquisition of a third system (typologically different from the existing ones). And that is why the bidialectal participants had much better performance in some structures than the monodialectal ones.

Language difference and disorder in pluralistic contexts

We should now understand that the “atypical” performance of an L2 learner in the target language may come from language disorder, or simply from language difference. From a developmental perspective, language disorder refers to the “significant discrepancy in language skills relative to what would be expected for a client’s age or developmental level”, while, typologically, language difference refers to the “rule-governed language style that deviates in some way from the standard usage of the mainstream culture” (Paul, 2007, p. 166). Such a definition of language difference, however, takes us to two questions, that is what is culture? and what does culture have to do with language difference? According to Paul (2007), culture is a general term that refers to the “ways of thinking, talking, understanding, and relating to others that are characteristic of groups of people with a shared history, (which) evolves to serve a purpose to make groups coherent and to preserve their values and beliefs over time” (p. 166).

It is agreed that people from different cultures may have different thought patterns and, therefore, use different narrative structures in communication.

Such different thought patterns and narrative structures are reflected through the linguistic characteristics of different languages. Syntactically, for example, while an English sentence usually starts with a non-omittable subject and a straightforward predicate (therefore a “subject-prominent” language), a Chinese sentence is inclined to start with a topic and is comfortable with the omission of the subject (therefore a “topic-prominent” language) (W. Han, 2013; C. N. Li & Thompson, 1976, 1981). Therefore, an “excessive” use of the topic-comment structure in English by, say, a Chinese migrant child in Australia, would be more accurately assessed as a language difference rather than a disorder.

Therefore, bicultural education is recommended as the approach to enhance the culturally and linguistically different (CLD) clients’ effective communication in the target culture and language while keeping their home styles and strategies of communication. This means the clinician “can learn to take part in two (or more) sets of cultural styles and can switch back and forth when appropriate to maximize effectiveness in each...(based on) the understanding and sincere respect on the part of teachers and clinicians for cultures that contrast with those of the mainstream and that influence clients’ communication” (Paul, 2007, p. 166). The best way for an SLP, therefore, upon careful assessment and successful diagnosis of language difference of his/her child client(s), is to consult and work with their parents and teachers, especially their ESL teachers.

Bilingual children may differ in L2 performance because of lack of exposure in the target language or because of their varied L1 dialectal backgrounds, but not necessarily because of language impairment (also see Bedore & Peña, 2008; Gillam et al., 2013). Therefore, the results of this study show that we may also need to consider the interfaces such as syntax-semantics for bilingual children. To facilitate this, a series of reliable threshold indicators for possible disorder or impairment might be helpful for SLPs to facilitate accurate diagnosis.

In a pluralistic (multicultural and multilingual) society like Australia, where speakers with Chinese as their L1 have become the biggest bilingual population (Australian Bureau of Statistics, 2016), it is important for SLPs to understand that for Chinese bilingual speakers the dialectal background of their Chinese L1 plays an important role in their L2 performance: the more syntactically-semantically complex the L1 dialects and the L2 are, the less negative syntactic transfer from L1 on L2 is expected. Unquestionably, understanding the Chinese-

speaking child's linguistic capabilities is essential to ensure equal access and quality of language impairment diagnosis, assessment, and intervention. Therefore, it is imperative that SLPs and clinicians seek case-specific linguistic information that is accurate for clients who have Chinese as their L1, which will inform assessment and diagnosis through having developed an understanding of the characteristics of these clients' dialectal backgrounds.

Summary

This chapter began with the role of UG in L2 learning and the L2 initial state. The study results provide evidence to support that L2 learners have, at least, partial access to UG, and L1 bidialectism is an important variable to take into consideration. Specifically, the current study points out that one key for successful parameters addition in L2 is the L1 bidialectism. In other words, due to the constant exposure and practice of two typologically different enough systems, bidialectals are more ready for the computation of a third system through UG. At least, a more conservative proposal here is that although both monodialectals and bidialectals have access to UG, while L1 knowledge is present for both groups, the bidialectals rely more on UG to access the new language, while the monodialectals are subject more to the existing L1 knowledge.

This study shows that other than the change of syntactic contexts, it is rather the ability to access the UG in the target language that makes differences. As to the fact that L2 learners show awareness of the subtle grammatical properties in the target language that have not been previously explicitly taught, in line with Dekydtspotter, Anderson, and Sprouse (2007), I agree that it can only be explained by the immediate functioning of the UG, which L1 bidialectals show better access at an early stage of L2 learning.

As for the role of cross-linguistic transfer in L2 learning, the study results show that there is positive L1 transfer at the syntax-semantics interface for the same structures (BUY and T-C) that have more readings in L1 than in L2. There is L1 negative transfer at the syntax-semantics interface, however, if the structures (ONLY and EVERY) have more readings in L2 than in L1. Such a negative transfer is found for the L1-monodialectal participants, but not for the bidialectal participants. It is proposed that L1 bidialectal learners, compared to their monodialectal counterparts, enter the L2 syntax-semantics interface acquisition in a more advantaged position. This is because they have a better syntax-semantics interface awareness due to the complexities of their L1 dialects. That is, there is an L1 bidialectism benefit. And

such a benefit of less L1 negative transfer does not necessarily come from learners' L2 proficiency or his/her amount of exposure to the target language.

It was then pointed out that the quantitative, as well as the qualitative, results earlier are in favor of the dual systems of representation theory. The overall better performance by the bidialectal groups indicates that L1 bidialectism does contribute to the acquisition of abstract systems in L2. The bidialectal participants "stayed" in the target language while performing the L2 tasks, which means that they were able to compute and represent the syntactic information in L2 as native speakers do. It showed that the more complex or diversified the L1 dialects are, the easier it might be to connect where the internal knowledge of L2 is stored and thus to activate the L2 knowledge.

In consideration of language distance, the bidialectal participants have already mastered two "distant" varieties before the acquisition of a third variety. Therefore, they have a better awareness of the syntax-semantics complexities. The results showed that these bidialectal learners were more active in establishing L1 independent L2 representations. Then, acknowledging that mixed language systems of L1 and L2 are neither completely fused nor absolutely separated, I proposed a fourth feature, in addition to Cook's (2008, pp. 231-232) description of the L2 learners' linguistic knowledge change, that is L1 bidialectals develop L2 knowledge in a more positive way than L1 monodialectals. At an early stage of SLA, however, positive input alone is not enough to guarantee a successful outcome of L2 learning. Rather, both the L1 bidialectism and positive input in L2 play an important role.

As for the role of demographic factors in L2 learning, the test results did not turn out significant differences showing biological factors, such as gender or age, were reliable predictive factors. Other demographic factors, such as the parents' educational backgrounds, were not found correlated to the test results, either. Therefore, at least at the syntax-semantics interface, biological or other non-biological factors are less important than the (typological) linguistic factors in regard to L2 learners' final attainment in the target language. In line with the crosslinguistic interactivity theory, I propose that bidialectals, who, due to their early exposure to two typologically different systems, have better awareness across systems, as well as better control of the different parts of information in one system that will inhibit that in the other. And because the two systems in L1 that present typological contrasts with each other share common representational domains, such mutual interactivity eventually contributes to the acquisition of a third system.

Finally, the study results suggest that since people from different cultures may have different thought patterns and, therefore, use different narrative structures in communication, bilingual children of the same L1 may have different L2 performances because of their different L1 dialectal backgrounds. In a multicultural and multilingual society like Australia, therefore, where Chinese speakers comprise the biggest bilingual population, understanding of the Chinese-speaking child's linguistic capabilities is essential to ensure equal access and quality of language impairment diagnosis, assessment, and intervention. Chapter 8, on such a basis, will extend the implications of the results into further details from the multiple theoretical and clinical perspectives.

Chapter 8 Limitations, implications and future research

While two decades ago Crystal (1997) estimated that over 40% of English speakers globally (c.a. 235 million people) were bilingual/multilingual, a more realistic picture for today is that over two-thirds of the world's population is bilingual (also see Grosjean, 2010). Considering different dialects, including different *ideolects* or *sociolects* (i.e. distinctive and unique use of speech and language peculiar to a particular person or a particular social class), some even believe that monolingualism does not really exist, *sensu stricto* (Grohmann & Kambanaros, 2016, pp. 1-2). Therefore, in a world with the majority being bilingual, being able to correctly define and identify bilinguals and monolinguals, as well as to distinguish language difference from language impairments, has become increasingly important for linguistics and SLPs (see Bhatia & Ritchie, 2004, p. 1).

It is clear that there are important differences between bilingual and monolingual development, even though both resemble each other in many ways (Döpke, 1997; Nicoladis & Genesee, 1997). This presents a challenge to the assessment of bilingual children's language proficiency. Gutiérrez-Clellen (1996) recommended assessment in both L1 and L2 of bilingual children in order for a fair evaluation, especially when considering important indications of rule acquisition, such as over-regularization errors, and inclusion and omission rates (Thordardottir, 2005). However, any single approach, such as only the consideration of the contrasts between the L1 and L2 features, would be too simplistic to provide an understanding of the above issues (Gass & Mackey, 2012, p. 1).

Clinically, with more research based on monolingual diagnosis and treatment in bilingual practices, more and more attention has been drawn to the inappropriateness of the application of monolingual norms to bilinguals. More importantly, there is urgent need to identify the determining aspects in bilingual assessment, such as which language to target, or which aspects of language are most vulnerable and therefore can best inform SLPs in their decision, as well as what linguistic similarities can be exploited to improve treatment efficiency (also see Lorenzen & Murray, 2008). For example, to focus on the semantic properties in child L1, child L2, and adult L2 acquisition helps to maximize the understanding of the different types of development at the syntax-semantics interface (Slabakova, 2012, p. 142).

Even for the limited number of existing studies on bi-/multilingualism and DLD, most comparisons of the diversity of the languages are limited to a small number of “dominant” languages, such as English, French, Spanish, etc. Therefore, the information provided is limited to contexts in which specific SLA occurs. That is not to mention the population under research has been “overwhelmingly” of adult, rather than child, learners (A. Cohen & Macaro, 2013, pp. 412-413). Undoubtedly, all these issues require answers from more target-oriented research, that is child ESL learners of less studied first languages, especially those typologically more distant from English and those with multiple dialects, such as Chinese. The current study makes its effort to fill in such clinical, methodological and theoretical gaps. As discussed previously, the results obtained from the tests have shown significant differences between L1 mono- and bidialectal learners in L2 acquisition. A range of implications, therefore, can be drawn from the results for clinicians and linguists.

This chapter will start with the limitations of the current study followed by implications, both theoretical and clinical, for linguists and SLPs. For example, issues such as the reconsideration of the definition and categorization of bilingualism, its relation to bidialectism, language difference, etc. will be addressed. It will then continue to point to the directions for future research so that a more comprehensive picture can be provided for us to understand the role of L1-bidialectism in the L2 acquisition, not only at the syntax-semantics interface but also other individual modules and their interfaces. Finally, a summary concludes the whole chapter.

Limitations

The biggest limitations of this study come from the methodological aspects. These are the limitations that this study was not able to attend to but certainly leave space for future research. For example, while this study compares the two most populous Chinese dialects (Mandarin and Wu), many populous and important dialects, such as Cantonese, Hakka, Min (both Southern and Northern), etc. are not included. Indeed, such dialects display distinct syntactic and semantic features that are different to Mandarin or Wu (see Hashimoto, 2010; Lien, 2015; Matthews & Yip, 2011). Therefore, a careful comparison of bidialectals of these dialects with the corresponding monodialectals may reveal more detail as to how, as well as to what extent, bidialectals may differ from monodialectals in the process of L2 learning.

Also related to the sample of participants, as acknowledged earlier in Chapter 4, although it was the most realistic for this study to use convenience sampling, the nonprobability samples selected were accidental, and, therefore, are limited with regard to generalization (as opposed to true representative samples through random sampling). In fact, the selected participants were limited to those studying at mainstream public schools, who had the same amount of exposure to formal ESL instructions. Considering the fact that there have been growing numbers of early ESL learners, particularly in generally well-off and developed cities such as Beijing and Shanghai, etc., there could be a chance that even a similar comparison between the Beijing and Shanghai participants who have more intensive ESL inputs (such as those studying in private or international schools) would turn out different results. Age could also be a significant variable if we push it to an earlier stage, or after the “critical period” (also see Clifford, Rhodes, & Paxton, 2014).

Another limitation is that only the receptive, not the expressive, competence was investigated. The results only tell about the different passive language ability between the mono- and bidialectal groups. To provide a more comprehensive understanding of the topic, it is urged to take a close look at how the different dialectal groups will differ in their active L2 production (see Austin, Pongpaiboj, & Trenkic, 2015; Strijkers, Baus, Runnqvist, Fitzpatrick, & Costa, 2013).

As to the L2 skills, although this study provides new perspectives on L1 bidialectal L2 learners’ competence at the interface level, only the interface that bridges syntax and semantics is examined. Indeed, there are other important aspects such as the morpho-syntax interface, the syntax-phonology interface, the syntax-pragmatics interface, etc. Further investigations of these aspects are urgently called for, with the expectation that they will provide a more extensive and impartial understanding of the topic (see for example Cheatham & Ro, 2011; Hanna, Shtyrov, Williams, & Pulvermüller, 2016; Marcus, 2009). There is a need to potentially control the participants’ cognitive abilities, too. Therefore, a measure of non-verbal intelligence, whilst fraught with challenges as to which measure, would be able to correlate participants’ performance.

There are also limitations in the process of quantitative and qualitative analyses. For example, although the *p* value was set at the stricter .01 level, statistical indications, such as the *p*-value, are only a “starting point” (American Psychological Association, 2010, p. 33), and the truth might be blinded by relying too much on the “significant figures”. It is the same for effect sizes.

It should be understood that large effect sizes are typically found for experimental studies (Plonsky & Gass, 2011, p. 341), therefore, it is not the most meaningful to rely too much on the effect sizes to evaluate the research quality. One thing that needs taking into caution is that effect sizes observed overtime tend to decrease (Plonsky & Oswald, 2012), in which sense posttests are desired in order to ensure there is high reliability associated with the effect sizes found. As to the transferability of the qualitative analysis, had there been more resources in order that all participants were interviewed, more comprehensive results could be drawn and more transferable the research could be to other contexts and participants of other L1 dialectal and L2 combinations.

As to the test structures, although the syntax must be bridged with the semantics to achieve proper reading(s), while the ONLY and the EVERY structures present typological contrasts to the BUY and the T-C structures (in their different readings across L1 and L2), theory-wise, the former two are more semantically oriented (i.e. the typological differences between English and the Chinese dialects happen more at the semantic level), and the other two more syntactically oriented (i.e. the typological differences between English and the Chinese dialects happen more at the syntactic level). For example, while the first two structures (ONLY and EVERY) are “trapped” between the antithetic narrow and broad meanings, the other two (BUY and T-C) present more of word order differences, which result in different semantic readings. On the other side, the test structures present more “inter-language”, rather than “intra-language”, differences. That is to say, the four structures only embody the crosslinguistic contrasts between the L1 and L2, but not within the L1. It could be more unprejudiced, and more interesting, to compare and consider structures that a) are more syntactically and semantically equally oriented, and b) present both inter- and intra-language differences.

Implications and future research

This study, as one of the very few attempts of its kind, tries to bridge L2 acquisition and speech-language pathology studies by particularly taking into account the learners’ L1 dialectal backgrounds. I acknowledge that the test results are open to multiple theories for an explanation. However, in a time when there are multiple theories against the learning theory based on UG, even the strongest opponents to UG have to admit that “all these arguments (against UG) are not strong enough to refute UG, neither alone nor in combination” (Lin, 2017, p. 15). Therefore,

this study and its findings, especially those at the syntax-semantics interface, have multiple implications, both methodologically, theoretically and clinically.

Methodologically, this research has implications for the application of mixed methods in bilingual studies. While the quantitative method employed in this study helps to demonstrate to what extent L1 bidialectals differ from monodialectals in L2 syntactic-semantic awareness, the qualitative approaches promote a deeper understanding of how and why such differences happen. Although mixed methods studies are increasing in popularity and use, quantitative and qualitative approaches are sometimes still treated separately. For example, when most research in applied linguistics, especially in L2 acquisition, is identified as being quantitative (86%), as little as 13% of research is qualitative, leaving only 1% of mixed research (A. Cohen & Macaro, 2010; Lazaraton, 2002). An effort of the current study is to better present and explain the findings through the combination of both quantitative and qualitative methods, and, therefore, offer a better and more impartial understanding of the topic. The advantages of using both methods to complement each other and the successful presentation and explanation of the results means the current study could serve as a good example for future research of the same kind. It is recommended that mixed methods be used in bilingualism research, especially in the speech-language pathology context. This is because mixed methods would not only reduce the partial weakness of a single method (Dörnyei, 2007, p. 20) but also yield better and more comprehensive explanatory forces with regard to similar topics that involve L1 monodialectal and bidialectal learners.

Theoretically, the research findings have implications for a more inclusive definition of bilingualism. While earlier definitions (for example Haugen, 1953) acknowledged people who are communicative in two languages (e.g. fluency in one and basic communication in the other) as bilingual, there is neither an agreed upon definition of bilingualism, nor has there been widely accepted measures of bilingualism (Ritchie & Bhatia, 2013, p. 66). In the process of such changes, for child L2 learners, in particular, the developmental levels in L1 could be facilitative (Lakshmanan, 2009, p. 393). The complexity and developmental levels of the L1 dialects, from what the current study has shown, is a decisive factor in how facilitative L1 can be in the process of L2 acquisition.

Norris and Ortega (2012) suggested that more attention should be given to the L2 targets in a multi-dimensional way, that is to consider simultaneously the development of a whole subsystem in L2, such as the interrelated aspects and inventories of structures and constructions

(p. 577). On top of the five questions that Norris and Ortega proposed to consider for a proper definition of bilingualism³⁷, as per the results of the current study, I suggest another two questions for a more appropriate definition of bilingualism, especially in the context of speech-language pathology:

- (1) To what extent does learners' L1 knowledge provide information of their L2 initial states (e.g. at the syntax-semantics interface)?

and

- (2) How can learners' L1 dialectal backgrounds help to inform SLPs to separate true disorder from language difference in L2?

It is understandable that it is not an easy job to provide a consistent understanding of the term of “bilingualism” (or “multilingualism”, broadly speaking) due to its complicated, and sometimes conflicting, definitions and typologies (see Butler & Hakuta, 2004). One thing certain is that any definition of bilingualism would be in vain if put in a decontextualized situation. The proposal here is, put in the speech-language pathology context, L2 speakers' L1 dialectal background is one important variable to consider for a better understanding of the L2 states, as well as the difference between language difference and disorder.

The results of this study showed that the differences of awareness at the interface level are best explained by the participants' complex L1 knowledge. There is not a clear picture as to what and how the monodialectal and the bidialectal participants' performance was related to their general cognitive abilities. Therefore, this needs to be considered in future studies. Future research should control for cognitive abilities, e.g. nonverbal intelligence, so that it will shed

³⁷ Norris and Ortega (2012, p. 586) specified their questions as follows:

(A) To what extent do current definitions of diverse aspects of learner knowledge, across SLA theories, provide a sufficient foundation for identifying relevant observable phenomena within research? In other words, do our theories provide clearly defined constructs that can be assessed?”

(B) To what extent do current assessment techniques provide a sufficient empirical window into diverse theories and their claims about learner L2 knowledge?

(C) Which technologies can facilitate the automation, reliability, and sharing of both L2 data elicitation and its analysis, and what are the benefits and drawbacks of using them?

(D) What do L2 assessment findings really mean and what don't (or can't) they mean, in the context of a given study and vis-a-vis the targeted population of learners, and how can researchers incorporate meaningful benchmarks into their interpretations about L2 acquisition?

(E) How should each assessment of learner L2 knowledge be validated, by whom, for what purposes, and against what criteria? To what extent can assessment be utilized, and their results generalized, across learning contexts?

new light on the topic of bilingual learners' cognitive abilities in regard to their different L1 dialectal complexities and uses.

The findings have also theoretical implications for embedding the syntax-semantics interface into L2 acquisition studies. From a formal perspective, what is acquired about syntax, for example, is actually a set of mental representations of morphosyntactic rules which constructs the knowledge of grammar at levels of interface with semantics and other features (Lardiere, 2012). In such a sense, at least, theoretically, it is the implicit, or intuitive, knowledge of language, rather than the explicit knowledge about language (see Norris & Ortega, 2012, p. 575), that is of primary importance in an L2 speaker's development status in the target language. As the qualitative data have shown, many participants seemed to "intuitively" know the answers even though some of them did not have the very "explicit" reasons of why certain readings were "correct", but others were "wrong".

Such an interesting fact can be explained by the Interface Hypothesis (IH) (Sorace, 2011; Tsimpli & Sorace, 2006). The IH suggests that, instead of individual modules, problems in L2 arise from the processing constraints when the speaker tries to integrate information from multiple domains, that is at the interfaces. Under this account, bilingualism itself, but not specific combinations between languages, is the cause of speakers' differential performance at the interface level.³⁸ Results of this study, therefore, suggest that on top of the theories of parameters resetting, or observation/violation of UG constraints in the L2 acquisition, more attention should be given to the interface of core aspects such as syntax and semantics to explore more deeply the factors that facilitate or impede the correct uses of certain interface features in L2.

Beyond syntax-semantics interface, on a broad account, recent development of the IH (e.g. Sorace, 2011) further distinguishes grammatical-internal interfaces (i.e. those between grammatical modules of syntax, semantics, morphology, and phonology) and grammatical-external interfaces (i.e. those between grammatical modules and other conceptual modules of discourse/pragmatics and articulatory modules of phonetics). It is predicted that external interfaces are even more problematic to acquire for L2 learners than internal interfaces (also see Belletti et al., 2007; Camacho, 2011). A very recent study by Özçelik (2017), however, found that although the distinction between internal and external interfaces did exist, for L2

³⁸ See the recent article by Kraš (2016) for counter-arguments, however.

learners, the internal interfaces are actually more problematic to acquire than the external ones. Contra Özçelik's (2017) findings of advanced adult L2 learners, my results, from the cL2A perspective, found that L1-bidialectal L2 learners are less problematic at the internal interface than the L1-monodialectal learners. Therefore, one question for future research to answer is whether external interfaces are equally (un)problematic as internal interfaces (also see White, 2011a; White, 2011b) and whether there is still the advantage of L1 bidialectism at the external interfaces.³⁹

Another direction for future research is to further explore the role of linguistic typology in the process of SLA. Traditionally, linguistic typology is related to linguistic universals mostly in an opposite relation. While linguistic universal focuses on the generalized principles that are expected to be true throughout languages, linguistic typology is more interested in the individual variations across languages. The bidialectals in my study tended to have better awareness of language-specific typologies than their monodialectal peers. It is acknowledged that a clearer understanding of the acquisition process and representation of the crosslinguistic variations would benefit from a close examination and comparison of the typologies between L1 and L2 (Lee-Ellis, 2013). I propose that a close look at the typologies between the dialects in L1 would also contribute in this regard. It is, however, not a unidirectional relationship between SLA and linguistic typology. As psychological representations of certain linguistic features in the process of L2 acquisition can be inferred from the learner's interlanguage, studies of non-target like variations in the interlanguage should be valued (see J. H. Greenberg, 1991). In this sense, both outputs from the monodialectal and bidialectal learners are important, because it reflects how the syntactic distance (i.e. to which extent syntax across languages are different from each other) between L1 and L2 impacts on the L2 acquisition.

Apart from the balance between focusing on L2 comprehension and L2 production (Giezen & Emmorey, 2015), future research should give further considerations to the "backward" effect of L2 onto the L1 abilities, because L1 attrition is a reality. Studies have shown that acquisition of a Romance language, such as English, as an L2 in earlier years will later cause L1 attrition to some extent if the L1 is a typologically very different language such as Chinese (H. Liu, Bates, & Li, 1992) or Vietnamese (Pham & Ebert, 2015). However, it is still not known if Chinese bi-/multidialectal children, or Vietnamese bi-/multidialectal child learners, will suffer

³⁹ This would benefit from the inclusion of bidialectal ESL learners of other languages as L1 (such as Korean; see Kim, Liu, & Cao, 2017).

the same L1 attrition (from learning English, or other typologically distant languages) as the monodialectals are claimed to. Additional factors such as the speakers' language attitudes, whether the dialects involved are regional or social, and whether the nonstandard-speaking population forms the majority or the minority of a community should also be taken into account (cf. Yiakoumetti & Esch, 2010; Yiakoumetti & Mina, 2011).

This study's findings also have clinical implications. For example, this study shows that bidialectal knowledge in the first language contributes positively to the acquisition of certain structures at the syntax-semantics interface in L2, even though the bidialectals and monodialectals have very similar length and quality of exposure to the target language (cf. Gutiérrez-Clellen & Simón-Cerejido, 2007; Walters, Armon-Lotem, Gagarina, & Remennick, 2009). Therefore, we need to understand the "mistakes" made by the participants (of different L1 dialectal backgrounds) to better understand the difference between language difference and language disorder. We need further research in order to better understand the results of this study in the context of diagnosis, assessment and intervention.

Albeit not impossible to identify DLD in bilingual children in a labor intensive way (e.g. Armon-Lotem, 2014; Blom & Paradis, 2013; Chilla & Barbur, 2010; Clahsen, Rothweiler, Sterner, & Chilla, 2014; Gillam et al., 2013; Paradis, Rice, Crago, & Marquis, 2008), as Meir et al. (2016, p. 423) have pointed out "more research addressing different structures and including different data collection methods and additional pairs of languages is needed" to fill the methodological and typological gaps. This study, therefore, proposes that the diversity of L1 dialects in L2 acquisition be considered so that more appropriate tools of language assessments will be developed without linguistically and/or culturally biased test items being present (also see Gn, Brebner, & McCormack, 2014; Teoh et al., 2012). One way to help to make the test less biased, for example, is to administer it in the client's L1, the rationale behind which is "children are penalized on standardized tests when English is not their first language" (Curenton, 2011, p. 401).⁴⁰

In the Australian context, for example, albeit there is only limited research on the relationship between contrastive variation, non-contrastive difference, and diagnosis of DLD in the English of Aboriginal and Torres Strait Islander children (i.e. Australian Indigenous Englishes-AIE, as

⁴⁰ Providing that the SLP is not conversant with his/her client's L1, trained, professional interpreters should be relied on (Curenton, 2011, p. 397).

compared to Standard Australian English-SAE), an evident tendency in these studies was that the number of participants that were identified with DLD largely increased when SAE norms were used as the target reference (see for example Laffey, Pearce, & Steed, 2014). Therefore, cautions there should be when standard varieties are used to measure non-standard varieties in a bilingual/multilingual context. For example, it is not the best choice to use SAE to assess a Chinese immigrant child's phonological aspect of English, whose first exposure to English was in Beijing or Shanghai (or, more typically, in Hong Kong or Singapore).

This study has also implications for SLPs in that they need an understanding of the role of cross-linguistic transfer in diagnosis and assessment of bilingual clients. The proposal of this study is that, for Chinese bilingual speakers, the dialectal background of their Chinese L1 plays an important role in their L2 performance. The more syntactically and semantically complex L1 dialects and L2 are, the less negative syntactic transfer from L1 on L2 is expected. That is, it is expected that speakers of syntactically and semantically complex L1 dialects would make fewer errors in L2 syntax and semantics than their monodialectal counterparts. This is due to bidialectals having more complex knowledge at the syntax-semantics interface so that they turn out to be more sensitive than monodialectals to the L1 and L2 syntactic-semantic differences.

Therefore, understanding the Chinese-L1 children's linguistic capabilities is one essential measure to ensure equal access and quality of language impairment diagnosis, assessment, and intervention for the corresponding communities. As Chinese immigration continues to increase, their linguistic needs are likely not to be met with the linguistic capabilities of their SLPs. Therefore, further research on client-clinician language discordance, that is when clients and clinicians lack proficiency in the same language(s), is needed so as to minimize the risk of "language discordant clinical encounters" (Sears, Khan, Ardern, & Tamim, 2013) for these children, and negative health and educational outcomes. Of critical importance is the understanding that cross-linguistic transfer may differ depending on the Chinese dialects and the language mix of the Chinese clients. The point is that we need to understand children who speak Chinese may speak more than one dialect and this influences their learning of L2.

As to assessment, this study implies that appropriate normative data for Chinese English learners is important. It is incisively pointed out that "a particular difficulty in assessment of language ability in bilingual children is the lack of standardized tests that are valid and reliable for that purpose" (Bedore & Peña, 2008, p. 17). For example, Spaulding, Plante, and Farinella (2006) found most available tests of English linguistic abilities are not as reliable as they should

be. This is because most tests use arbitrary cut-off scores, instead of empirically derived cut-off scores for diagnosis and assessment, while sensitivity and specificity values were not available or could not be calculated for most tests (also see Gillam et al., 2013, p. 1820). In addition, research has suggested that monolingual normative data should not be used to compare with bilingual children's performances (Gn et al., 2014; Teoh et al., 2012). Also, although those typologically similar structures are believed to be of more importance, than those typologically different, to assessment or treatment (Goral, Levy, & Kastl, 2010; Goral, Rosas, Conner, Maul, & Obler, 2012), all the languages (and dialects) of the client should be considered for accurate diagnostic and assessment decision-making (Peña, Bedore, & Kester, 2016, p. 192). Therefore, when it comes to the syntactic-semantic domain, for bilingual Chinese-L1 children, what is needed next are careful studies of normative groups taking into account different dialectal backgrounds. Then from that, it might be appropriate to develop threshold indicators.

As to the complexity of the treatment language, based on what is found in this study, it is suggested to target at the “deeper” syntax and semantics interface, which is more effectively elicited by more complex, than simple, structures (such as the BUY and the T-C structure). Therefore, I agree with Thompson (2007, p. 3) who has pointed out that while “the long-standing clinical notion that treatment should begin with simple structures, (there are indeed) facilitative effects of using more complex structures as a starting point of treatment.” Mounting evidence has pointed to the fact that training in complex structures will result in generalization to simpler structures, not only phonologically (Geirut, 2007) and lexically (Kiran, 2007), but also syntactically (Thompson & Shapiro, 2007; Thompson, Shapiro, Kiran, & Sobecks, 2003), and semantically (considering bilinguals' same underlying learning mechanisms in the semantic framework; see Mann, Sheng, & Morgan, 2016). Syntactically, in particular, recent studies have shown evidence that sentence repetition tasks help to show the underlying syntactic representations among different learners, and therefore are successful in distinguishing not only monolingual (Conti-Ramsden, Botting, Simkin, & Konx, 2001), but also bilingual (Armon-Lotem, de Jong, & Meir, 2015; Meir et al., 2016) TD children and those with DLD.

In short, to quote Verdon, McLeod, and Wong (2015), while there is no single “gold standard method” of the assessment and intervention of possible DLD in bi-/multilingual children, “it is possible, however, to underpin practice with a framework that ensures comprehensive

assessment, accurate diagnosis, and effective intervention.” And results of this study suggest that understanding bilingual speakers’ L1 dialectal knowledge and the impact this will have on L2 is one important and indispensable part within such a framework.

Summary

In second language studies, at the syntax-semantics interface, in particular, one fascinating research question is to compare and contrast child L1 and child L2 acquisition of semantic properties (Slabakova, 2012, p. 142). The current study provides sample resources and presents exciting results in such a respect. One of its main aims is to help SLPs, as well as applied linguists, understand what is “typical” of bilingual children, who may have diverse L1 dialectal backgrounds, by investigating what has, and has not, been understood of the impact of L1 bidialectism on bilingual children’s acquisition of English. While children with the same L1 are compared, the diversity (sometimes considerable) in their home language (i.e. bidialectism or multidialectism) is usually overlooked. Results of this study show there are overlaps, as well as divergence, in L2 developmental patterns among children with different dialectal backgrounds under the same home language.

As one of the few attempts to embed L1 bidialectism in L2 acquisition at the interface of syntax and semantics, the current study has shown that the bidialectism in the home language is a variable that researchers cannot afford to neglect. The value of this study is that it demonstrates that large groups of mono- and bidialectal speakers have different patterns at the syntax-semantics interface for L2. Therefore, there are multiple implications (methodological, theoretical and clinical) from this for future studies. One next stage of research, for example, is to replicate the current study to determine if the patterns found are consistent across other dialectal groups in China so that clinical threshold indicators can be developed. With regard to diagnosis and assessment of language impairment/disorder, future research also requires studies with children with DLD to confirm that the results will be as anticipated by this study, that is DLD performance is not able to be explained by the L1-L2 language differences. Overall, it is proposed that further studies should focus more on culturally and linguistically different children. It will also provide information as to how to improve diagnosis and assessment of dual language users by separating those who are bilingual from those who are bilingual and bidialectal.

Considering the fact that “studying bilingual speakers/learners is notoriously problematic due to the difficulty in controlling the wide range of possible extraneous variables that may frequently operate in group comparisons” (Folke, Ouzia, Bright, Martino, & Filippi, 2016, p. 128), it is not an easy question as to “why” bilingual children’s L2 competence is different from that of monolinguals’. As is pointed out by Grohmann and Kambanaros (2016, pp. 14-15), however, there is “a need for thorough sociolinguistic work...a need for thorough theoretical linguistic work...a need for thorough psycholinguistic work...a need for cognitive psychological work...and a need for clinical linguistic work...” put together to provide keys to understand bilingualism and bidialectism, especially the combination of the two, in the speech-language pathology context.

Chapter 9 Conclusion

In simple words, bilingualism refers to the ability to use two languages⁴¹, and bidialectism two dialects. However, any attempt to define the two in detail is challenging (Aitken, 1992, p. 894), especially in today's world, where even strictly defined, there are more bilinguals than monolinguals (Tucker, 1999). In this sense, the ability to use two linguistic varieties⁴² would be an easier and more inclusive way to refer to both bilingualism and bidialectism, without any further confusion as to decide, for example, if Swiss German and High German, or Cantonese and Wu, are two dialects or two languages.

Although it is not an intention of this study to argue the philosophical and theoretical aspects of these terms and their definitions, it does aim to provide more clues and evidence as to the basic concerns of modern L2 acquisition studies, that is (1) The knowledge L2 learners get to learn in the process of L2 acquisition; (2) The way they acquire such knowledge; and (3) The reason some of them are better at acquiring such knowledge than others. To reach definitive and conclusive answers to these concerns seems like “mission impossible” not only because the L2 acquisition is highly complex in nature, but also because L2 researchers are from different academic disciplines, who could have very different theoretical and methodological approaches to the topic, (also see Saville-Troike, 2012, p. 2).

For the first concern, that is what knowledge L2 learners acquire, it is obvious that the acquisition itself is a multifaceted process in which multiple knowledge is involved. Specifically, at the linguistic level, it is the knowledge about the rules (phonological, morphological, syntactical, semantical, etc.) in L2, particularly those different from the L1's, that are to be acquired by the L2 learners. Such L2 specific rules are indeed language specific “parameters” (see Chomsky, 1986, 1988, 1995) that need resetting in the L2 acquisition. It is fair to say, therefore, better L2 learners are those who have better knowledge of the L2 specific parameters and those who are better able to apply them in the target language. As to the second concern, that is how L2 learners acquire the L2 specific rules, as discussed in detail in Chapter 7, theoretically, all L2 learners have access to UG to the target language. This helps the learners to find the L2 specific parameters and reset them. However, results of the current study point

⁴¹ Such an ability can be passive (such as reading, listening, etc.), or active (such as writing, speaking, etc.), or both.

⁴² If, at the current moment, we do not count in styles or registers, or other “social varieties”.

to the fact that there are variations between L1 monodialectals and bidialectals, that is there seem to be degrees of UG access in L2. And this leads to the third concern, that is why, in this study specifically, L1 bidialectals appear more successful in L2 at the syntax-semantics interface than their monodialectal counterparts? Within the generative framework, and with a formal approach, it is acknowledged that L2 acquisition is subject to crosslinguistic transfer. To summarise what has been found and extensively discussed earlier, the L1 bidialectal learners are more successful than the monodialectals because they are less subject to the negative crosslinguistic transfer brought by their L1. And this is possibly due to the L1 bidialectals being more experienced in dealing with typologically different inputs (from their dialectal exposure). Therefore, while acknowledging that both L1 mono- and bidialectals have access to UG in L2, they are indeed different in resisting the L1 negative transfer.

Undoubtedly, a thorough understanding of L2 acquisition plays an important role in diagnosis and treatment of bilingual children. Unfortunately, overall, only 40% of SLPs reported showing basic knowledge of SLA and its relation to other aspects, such as cognitive development or academic success, etc., a fact that constitutes a big challenge for practitioners with bilingual clients (Curenton, 2011, p. 388). In a pluralistic society, such as Australia, where people of Chinese origin have emerged as the largest non-English population, it would be risky for SLPs, while working with Chinese-L1 children, to “unintentionally” apply the English language standards, cultural frameworks and language philosophies during diagnosis and assessment, and, therefore, make biased decisions (see Hwa-Froelich & Vigil, 2004). For child language disorders, in contrast to the systems model that sees the communication problems as in the environment (Prizant & Whetherby, 2005), or the categorical model (or the specific disabilities model) that views communication problems as coming from cognitive or development deficits (Newbury & Monaco, 2002, pp. 12-21; Paul & Norbury, 2007; Ullman & Pierpont, 2005), in a multicultural and multilingual society, a model that pays particular attention to the bilingual clients’ L1 backgrounds, especially their L1 dialectal profiles, will help to inform SLPs to more effectively separate differences from disorders.

Overall, while Meisel (2009), Genesee et al. (2011), Unsworth et al. (2014), among many others, focused on a) child L2 learners’ L1 and b) the role of L2 input, and Tsimpli (2014) and Grohmann and Kambanaros (2016) paying particular attention to c) the time of acquisition and d) the language proximity between L1 and L2, I propose a fifth overlooked but realistic and important factor to be taken into serious consideration in bilingual studies for SLPs and

linguists (both theoretical and applied), that is the L1 dialectal complexity (and learners' corresponding knowledge about the complexity). One should be aware, however, bilingualism and bidialectism are two different, albeit closely related, topics in language acquisition studies.

In summary, this study confirms that learner variables such as L2 awareness or L1 bidialectism should be introduced with respect to their influence on the processes and outcomes of L2 learning. It is found that there is an L1 bidialectal advantage in SLA. At the syntax-semantics interface, in particular, there are advantages when the same structure has more readings in L2 than in L1, although not vice versa. Therefore, L2 learners have, at least, partial access to UG, while L1 bidialectism might be an important variable in the L2 initial state. It is important to know that incomplete SLA for child learners may be caused by language disorder or simply by language differences between L1 and L2. Finally, it is suggested for future research to consider the L1 background, including L1 bidialectism, so that SLPs are able to separate, while facing their bilingual clients, typically developing child L2 learners from those with developmental language disorder.

References

- Aitken, A. J. (1992). *The Oxford Companion to the English Language*. Oxford: Oxford University Press.
- Akiyama, L. F., Richards, T. R., Imada, T., Dager, S. R., Wroblewski, L., & Kuhl, P. K. (2013). Age-specific average head template for typically developing 6-month-old infants. *PLOS ONE*, 8, e73821.
- American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: American Psychological Association.
- Anderson, R. T. (2004). Phonological acquisition in preschoolers learning a second language via immersion: a longitudinal study. *Clinical Linguistics and Phonetics*, 18, 183-210.
- Armon-Lotem, S. (2010). Instructive bilingualism: Can bilingual children with specific language impairment rely on one language in learning a second one? *Applied Psycholinguistics*, 31, 253-343.
- Armon-Lotem, S. (2014). Between L2 and SLI: Inflections and prepositions in the Hebrew of bilingual children with TLD and monolingual children with SLI. *Journal of Child Language*, 41(1), 3-33.
- Armon-Lotem, S., de Jong, J., & Meir, N. (2015). *Assessing multilingual children disentangling bilingualism from language impairment*. London: Multilingual Matters.
- Athanasopoulos, P., & Treffers-Daller, J. (2015). Language diversity and bilingual processing. *International Journal of Bilingual Education & Bilingualism*, 18(5), 519-528.
- Austin, G., Pongpaiboj, N., & Trenkic, D. (2015). Structural Competition in Second Language Production: Towards a Constraint - Satisfaction Model. *Language Learning*, 65(3), 689-722.
- Australian Bureau of Statistics. (2016). 2016 Census QuickStats (Census). Retrieved 27 June 2017, from The Australian Bureau of Statistics <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/2071.0main+features902012-2013>
- Baker, M. R. (2002). *The atoms of language*. Oxford: Oxford University Press.
- Bauer, L. (2014). Grammaticality, acceptability, possible words and large corpora. *Morphology*, 24, 83-103.
- Baum, W. (2011). What is radical behaviorism? A review of Jay Moore's conceptual foundations of radical behaviorism. *Journal of the Experimental Analysis of Behavior*, 95(1), 119-126.
- Beck, M.-L. (Ed.) (1998). *Morphology and its interface in L2 knowledge*. Amsterdam: John Benjamins.
- Bedore, L. M., Fiestas, C., Peña, E. D., & Nagy, V. (2006). Cross-language comparisons of maze use in Spanish and English in functionally monolingual and bilingual children. *Bilingualism: Language and Cognition*, 9(3), 233-247.
- Bedore, L. M., & Peña, E. D. (2008). Assessment of bilingual children for identification of language impairment: Current findings and implications for practice. *Bilingual Education and Bilingualism*, 11(1), 1-29.
- Bedore, L. M., Peña, E. D., Summer, C. L., Boerger, K. M., Resendiz, M. D., Greene, K., . . . Gillam, R. B. (2012). The measure matters: Language dominance profiles across measures in Spanish-English bilingual children. *Bilingualism: Language and Cognition*, 15(3), 616-629.
- Belletti, A., Bennati, E., & Sorace, A. (2007). Theoretical and developmental issues in the syntax of subjects. *Natural Language and Linguistic Theory*, 25, 657-689.

- Bent, T., & Bradlow, A. R. (2003). The interlanguage speech intelligibility benefit. *Journal of Acoustic Society of America*, 114(3), 1600-1610.
- Best, C., McRoberts, G., & Goodell, E. (2001). Discrimination of non-native consonant contrasts varying in perceptual assimilation to the listener's native phonological system. *Journal of Acoustic Society of America*, 109, 775-794.
- Bhatia, T. K., & Ritchie, W. C. (2004). *Handbook of bilingualism*. Oxford: Blackwell Publishing.
- Bialystok, E. (2001). *Bilingualism in development: Language, literacy and cognition*. Cambridge: Cambridge University Press.
- Bialystok, E. (2004). Impact of bilingualism on language and literacy development. In T. K. Bhatia & W. C. Ritchie (Eds.), *The handbook of bilingualism*. Oxford: Blackwell.
- Bialystok, E. (2005). Consequences of bilingualism for cognitive development. In J. F. Kroll & A. M. B. De Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches*. New York: Oxford University Press.
- Bialystok, E. (2006). Effect of bilingualism and computer video game experience on the Simon task. *Canadian Journal of Experimental Psychology*, 60, 68-79.
- Bialystok, E. (2007). Cognitive effects of bilingualism: How linguistic experience leads to cognitive change. *International Journal of Bilingual Education & Bilingualism*, 10, 210-223.
- Bialystok, E., Craik, F. I. M., Grady, C., Chau, W., Ishii, R., Gunji, A., & Pantev, C. (2005). Effect of bilingualism on cognitive control in the Simon task: evidence from MEG. *NeuroImage*, 24(1), 40-49.
- Bialystok, E., Craik, F. I. M., & Ryan, J. (2006). Executive control in a modified antisaccade task: Effects of aging and bilingualism. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 32, 1341-1354.
- Bialystok, E., & Martin, M. M. (2004). Attention and inhibition in bilingual children: evidence from the dimensional change card sort task. *Developmental Science*, 7(3), 325-339.
- Birdsong, D. (1999). *Second Language Acquisition and the Critical Period Hypothesis*. New Jersey: Lawrence Erlbaum.
- Bishop, D. (2004). Specific language impairment: a diagnostic dilemma. In H. V. Balkom & L. Verhoeven (Eds.), *Classification of developmental language disorders: theoretical issues and clinical implications* (pp. 309-326). Hillsdale, N.J.: Lawrence Erlbaum.
- Bishop, D. (2006). What causes specific language impairment in children? *Current Directions in Psychological Science*, 15(5), 217-221.
- Bishop, D. (2008). Specific language impairment, dyslexia, and autism: Using genetics to unravel their relationship. In C. Norbury, J. Tomblin, & D. Bishop (Eds.), *Understanding developmental language disorders: from theory to practice* (pp. 67-78). Hove: Psychology Press.
- Bishop, D. (2017). Why is it so hard to reach agreement on terminology? The case of developmental language disorder (DLD). *International Journal of Language & Communication Disorders*, 52, 671-680.
- Bishop, D., & Norbury, C. F. (2008). Speech and language impairments. In A. Thapar, M. Rutter, D. Bishop, D. Pine, S. M. Scott, J. Stevenson, & E. Taylor (Eds.), *Rutter's Child and Adolescent Psychiatry* (pp. 782-801). Oxford: Wiley-Blackwell.
- Black, T. R. (1999). *Doing Quantitative Research in the Social Sciences*. London: Sage.
- Bley-Vroman, R. (1990). The logical problem of foreign language learning. *Linguistic Analysis*, 20, 3-49.
- Bley-Vroman, R. (2009). The evolving context of the Fundamental Difference Hypothesis. *Studies in Second Language Acquisition*, 31, 175-198.

- Blom, E. (2008). Testing the Domain-by-Age Model: inflection and placement of Dutch verbs. In B. Haznedar & E. Gavruseva (Eds.), *Current trends in child second language acquisition: a generative perspective* (pp. 271-300). Amsterdam: John Benjamins.
- Blom, E., & Paradis, J. (2013). Past tense production by English second language learners with and without language impairment. *Journal of Speech, Language and Hearing Research*, 56(1), 281-294.
- Blom, E., & Unsworth, S. (2010). *Experimental methods in language acquisition research*. Amsterdam: John Benjamins.
- Bohnacker, U. (2006). When Swedes begin to learn German: From V2 to V2. *Second Language Research*, 22(4), 443-486.
- Bohnacker, U., & Rosén, C. (2007). How to start a V2 declarative clause: Transfer of syntax vs. information structure in L2 German. *Nordlyd*, 34(3), 29-56.
- Bransford, J., Brown, A., & Cocking, R. (2000). *How People Learn: Brain, Mind, and Experience & School*. Washington D.C.: National Academy Press.
- Braun, V., & Clarke, V. (2012). *Successful qualitative research: A practical guide for beginners*. London: Sage.
- Brooks, P. J., & Sekerina, I. (2006). Shortcuts to quantifier interpretation in children and adults. *Language Acquisition*, 13(3), 177-206.
- Broomfield, J., & Dodd, B. (2004). Children with speech and language disability: Caseload characteristics. *International Journal of Language & Communication Disorders*, 39(3), 303-324.
- Brown, J. D. (2008). Effect size and eta squared. *JALT Testing & Evaluation SIG Newsletter*, 12(2), 38-43.
- Brown, R. (1973). *A First Language*. Cambridge, MA: Harvard University Press.
- Brown, T., & Haynes, M. (1985). Literacy Background and Reading Development in a Second Language. In T. H. Carr (Ed.), *The Development of Reading Skills* (pp. 19-34). San Francisco: Jossey-Bass.
- Bryman, A., & Cramer, D. (2004). *Quantitative Data Analysis with SPSS 12 and 13: A Guide for Social Scientists*. London: Routledge.
- Butler, Y. G., & Hakuta, K. (2004). Bilingualism and second language acquisition. In T. K. Bhatia & W. C. Ritchie (Eds.), *The handbook of bilingualism* (pp. 114-144). Oxford: Blackwell.
- Bylund, E. P., Athanasopoulos, P., & Oostendorp, M. (2013). Motion event cognition and grammatical aspect: Evidence from Afrikaans. *Linguistics*, 51(5), 929-955.
- Caesar, L. G., & Kohler, P. D. (2007). The state of school-based bilingual assessment: actual practice versus recommended guidelines. *Language, Speech, and Hearing Services in Schools*, 38, 190-200.
- Camacho, J. (2011). Chinese-type pro in a Romance-type null-subject language. *Lingua*, 121, 987-1008.
- Campbell, D. T., & Fiske, D. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56, 81-105.
- Can, D. C., Richards, T. L., & Kuhl, P. K. (2013). Early gray-matter and white-matter concentration in infancy predict later language skills: A whole-brain voxel-based morphometry study. *Brain & Language*, 124, 34-44.
- Cao, Z. (Ed.) (2008a). *Linguistic Atlas of Chinese Dialects: Grammar*. Beijing: The Commercial Press.
- Cao, Z. (Ed.) (2008b). *Linguistic Atlas of Chinese Dialects: Lexicon*. Beijing: The Commercial Press.
- Cao, Z. (Ed.) (2008c). *Linguistic Atlas of Chinese Dialects: Phonetics*. Beijing: The Commercial Press.

- Carroll, S. E. (2009). Re-assembling formal features in second language acquisition: Beyond Minimalism. *Second Language Research*, 25, 245-253.
- Catts, H., Fey, M., Zhang, Z., & Tomblin, J. B. (1999). Language basis of reading and reading disabilities: Evidence from a longitudinal investigation. *Scientific Studies in Reading*, 3, 331-361.
- Cenoz, J. (2003). The additive effect of bilingualism on third language acquisition. *International Journal of Bilingualism*, 7, 71-87.
- Chan, A. Y. W. (2004). Syntactic Transfer: Evidence from the Interlanguage of Hong Kong Chinese ESL Learners. *The Modern Language Journal*, 88, 56-74.
- Chang, C., & Mishler, A. (2012). Evidence for language transfer leading to a perceptual advantage for non-native listeners. *Journal of the Acoustical Society of America*, 132(4), 2700-2710.
- Chapman, S., & Routledge, C. (Eds.). (2009). *Key Ideas in Linguistics and the Philosophy of Language*. Edinburgh: Edinburgh University Press.
- Cheatham, G., & Ro, Y. E. (2011). A linguistic perspective on communication with parents who speak English as a second language: phonology, morphology and syntax. *Early Child Development and Care*, 18(9), 1247-1260.
- Chen, H.-C., & Leung, Y.-S. (1989). Patterns of lexical processing in a non-native language. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 15, 316-325.
- Chen, P. (1999). *Modern Chinese: History and Sociolinguistics*. Cambridge: Cambridge University Press.
- Chiat, S. (2010). Mapping at the interface. *Applied Psycholinguistics*, 31, 261-270.
- Chilla, S., & Barbur, E. (2010). Specific language impairment in Turkish-German bilingual children: Aspects of assessment. In S. Topbaş & M. Yavaş (Eds.), *Communication Disorders in Turkish*. Bristol: Multilingual Matters.
- Chomsky, N. (1957). *Syntactic Structures*. Hague: The Mouton.
- Chomsky, N. (1959). A Review of B. F. Skinner's Verbal Behavior. *Language*, 35, 26-58.
- Chomsky, N. (1971). Language and Mind. In A. Bar-Adon & W. Leopold (Eds.), *Child language: A book of readings* (pp. 425-433). Englewood Cliffs: Prentice-Hall.
- Chomsky, N. (1975). *Reflections on Language*. New York: Pantheon Books.
- Chomsky, N. (1981). *Lectures on government and binding*. Dordrecht: Foris.
- Chomsky, N. (1986). *Knowledge of language*. New York: Prager Books.
- Chomsky, N. (1988). *Language and problems of knowledge*. Cambridge, MA: MIT Press.
- Chomsky, N. (1995). *The minimalist program*. Cambridge, MA: MIT Press.
- Chomsky, N. (2001). Derivation by phase. In M. Kenstowicz (Ed.), *Ken Hale: A life in linguistics* (pp. 1-52). Cambridge, MA: MIT Press.
- Chomsky, N. (2002). *On Nature and Language*. Cambridge: Cambridge University Press.
- Chondrogianni, V. (2008). Comparing child and adult L2 acquisition of Greek DP: effects of age and construction. In B. Haznedar & E. Gavruseva (Eds.), *Current trends in child second language acquisition: a generative perspective* (pp. 97-144). Amsterdam: John Benjamins.
- Chondrogianni, V., Vasić, N., Marinis, T., & Blom, E. (2015). Production and on-line comprehension of definiteness in English and Dutch by monolingual and sequential bilingual children. *Second Language Research*, 31(3), 309-341.
- Chung, K., & Ho, C. (2010). Second language learning difficulties in Chinese children with dyslexia: What are the reading-related cognitive skills that contribute to English and Chinese word reading? , 43(3), 195-211.
- Clahsen, H., & Felser, C. (2006a). Grammatical processing in language learners. *Applied Psycholinguistics*, 27, 3-42.

- Clahsen, H., & Felser, C. (2006b). How native-like is non-native language processing. *Trends in Cognitive Sciences*, 10(12), 564-570.
- Clahsen, H., & Muysken, P. (1986). The availability of Universal Grammar to adult and child learners - a study of the acquisition of German word order. *Second Language Research*, 2, 93-119.
- Clahsen, H., Rothweiler, M., Sterner, F., & Chilla, S. (2014). Linguistic markers of specific language impairment in bilingual children: The case of verb morphology. *Clinical Linguistics & Phonetics*, 28(9), 709-721.
- Clark, A., & Lappin, S. (2010). *Linguistic Nativism and the Poverty of the Stimulus*. Oxford: Wiley-Blackwell.
- Classen, S., Lopez, D. D. S., Winter, S., Awadzi, K. D., Ferree, N., & Garvan, C. W. (2007). Population-based health promotion perspective for older driver safety: Conceptual framework to intervention plan. *Clinical Intervention in Aging*, 2(4), 677-693.
- Clifford, V., Rhodes, A., & Paxton, G. (2014). Learning difficulties or learning English difficulties? Additional language acquisition: an update for paediatricians. *Journal of Paediatricians & Child Health*, 50(3), 175-181.
- Coady, J., & Evans, J. (2008). Uses and interpretations of non-word repetition tasks in children with and without specific language impairments (SLI). *International Journal of Language & Communication Disorders*, 43(1), 1-40.
- Coblin, W. S. (2000). A brief history of Mandarin. *Journal of the American Oriental Society*, 120(4), 537-552.
- Cohen, A., & Macaro, E. (2010). Research methods in second language acquisition. In E. Macaro (Ed.), *Continuum companion to second language acquisition* (pp. 107-139). London: Continuum.
- Cohen, A., & Macaro, E. (2013). Measuring and researching SLA. In P. Robinson (Ed.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 411-420). New York/London: Routledge.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Newbury Park, CA: Sage.
- Comrie, B. (1989). *Language universals and linguistic typology* (2nd ed.). Chicago: The University of Chicago Press.
- Conti-Ramsden, G., Botting, N. F., Simkin, Z., & Konx, E. (2001). Follow-up of children attending infant language units: Outcomes at 11 years of age. *International Journal of Language & Communication Disorders*, 36, 1013-1020.
- Contossopoulos, N. G. (1994). *Dialects and idioms of modern Greek*. Athens: Academy of Athens.
- Cook, V. (1992). Evidence for multi-competence. *Language Learning*, 42(4), 557-591.
- Cook, V. (2002). Background to the L2 user. In V. Cook (Ed.), *Portraits of the L2 User* (pp. 1-28). Clevedon: Multilingual Matters.
- Cook, V. (2008). *Second Language Learning and Language Teaching*. London: Arnold.
- Cook, V., & Bassetti, B. (Eds.). (2011). *Language and bilingual cognition*. New York: Psychology Press.
- Cormack, D. (2000). *The Research Process in Nursing* (4th ed.). Oxford: Blackwell.
- Cornips, L., & Hulk, A. (2006). External and Internal Factors in Bilingual and Bidialectal Language Development: Grammatical Gender of the Dutch Definite Determiner. In C. Lefebvre, L. White, & C. Jourdan (Eds.), *L2 acquisition and Creole genesis: Dialogues* (pp. 355-378). Amsterdam: John Benjamins.
- Costa, A., & Santesteban, M. (2004). Lexical access in bilingual speech production: Evidence from language switching in highly proficient bilinguals and L2 learners. *Journal of Memory and Language*, 50, 491-511.

- 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: towards a definition of specific language impairment* (pp. 97-110). Mahwah, NJ: Erlbaum.
- Crain, S. (1992). *The Semantic Subset Principle in the acquisition of quantification*. Paper presented at the Workshop on the Acquisition of Wh-Extraction and Related Work on Quantification, Amherst.
- Crain, S. (2008). The interpretation of disjunction in Universal Grammar. *Language and Speech*, 51(1&2), 151-169.
- Crain, S., Ni, W., & Conway, L. (1994). Learning, parsing and modularity. In C. Clifton, L. Frazier, & K. Rayner (Eds.), *Perspectives on sentence processing* (pp. 443-467). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Crain, S., & Philip, W. (1993). *Global semantic dependencies in child language*. Paper presented at the 16th GLOW Colloquium, Lund, Sweden.
- Crain, S., Philip, W., Drozd, K., Roeper, T., & Matsuoka, K. (1992). *Only in child language*. Paper presented at the 17th Annual Boston University Conference on Language Development, Boston.
- Crain, S., & Thornton, R. (1998). *Investigations in universal grammar: A guide to research on the acquisition of syntax and semantics*. Cambridge, MA: MIT Press.
- Creswell, J. W. (2012). *Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (4th ed.). Boston, MA: Pearson.
- Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W., & Miller, D. (2000). Determining validity in qualitative inquiry. *Theory Into Practice*, 39(3), 124-130.
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). Thousand Oaks, CA: Sage.
- Croft, W. (2006). Typology. In M. Aronoff & J. Rees-Miller (Eds.), *The handbook of linguistics* (pp. 337-368). Oxford: Blackwell.
- Crystal, D. (1997). *English as a global language*. Cambridge: Cambridge University Press.
- Cummings, J. (2000). *Language, power and pedagogy: Bilingual children in the crossfire*. Clevedon: Multilingual Matters.
- Curenton, S. M. (2011). Multicultural Issues. In J. N. Kaderavek (Ed.), *Language disorders in children* (pp. 383-412). Upper Saddle River, NJ: Pearson Education Inc.
- Dalgaard, P. (2002). *Introductory statistics with R*. New York: Springer.
- Dash, U. N., & Mishra, H. C. (1992). Bilingualism and metalinguistic development: evidence from Kond tribal culture. *Psychological Studies*, 37, 81-87.
- De Angelis, G. (2007). *Third or additional language acquisition*. Clevedon: Multilingual Matters.
- De Angelis, G. (2008). Multilingualism, language learning and language teaching: Some recent options for teachers and researchers. *Language Teaching*, 41, 135-142.
- Dekydtspotter, L., Anderson, B., & Sprouse, R. (2007). Syntax-semantics in English-French interlanguage. In D. Ayoun (Ed.), *The handbook of French applied linguistics* (pp. 75-102). Amsterdam: John Benjamins.
- Dekydtspotter, L., Sprouse, R., & Swanson, K. (2001). Reflexes of mental architecture in second-language acquisition: The interpretation of *combien* extractions in English-French interlanguage. *Language Acquisition*, 9, 175-227.
- Devlin, M., Folli, R., Henry, A., & Sevdali, C. (2015). Clitic right dislocation in English: Cross-linguistic influence in multilingual acquisition. *Lingua*, 161, 101-124.

- Dinh, P., & Yang, P. (2011). Handling Baselines in Repeated Measures Analyses with Missing Data at Random. *Journal of Biopharmaceutical Statistics*, 21(2), 326-341.
- Donovan, S., & Cross, C. T. (Eds.). (2002). *Minority students in special and gifted education*. Washington DC: National Academy Press.
- Döpke, S. (1997). Is the simultaneous acquisition of two languages in early childhood equal to acquiring each of the two languages individually? In E. Clark (Ed.), *Child Language Research Forum (Stanford: Center for the Study of Language and Information)* (pp. 90-112). Stanford, CA: Stanford University Press.
- Döpke, S. (2000). Generation of and retraction from cross-linguistically motivated structures in bilingual first language acquisition. *Bilingualism: Language and Cognition*, 3, 209-226.
- Dörnyei, Z. (2007). *Research methods in applied linguistics: Quantitative, qualitative and mixed methodologies*. Oxford: Oxford University Press.
- Dörnyei, Z., & Csizér, K. (2012). How to design and analyze surveys in second language acquisition research. In A. Mackey & S. Gass (Eds.), *Research methods in second language acquisition: A practical guide* (1st ed., pp. 74-94). Oxford: Wiley-Blackwell.
- Dromi, E., Leonard, L., Adam, G., & Zadunaisky-Ehrlich, S. (1999). Verb agreement morphology in Hebrew-speaking children with specific language impairment. *Journal of Speech, Language and Hearing Research*, 42, 1414-1431.
- Duanmu, S. (1990). *A formal study of syllable, tone, stress and domain in Chinese languages*. (PhD), MIT, Cambridge, Mass.
- Duanmu, S. (2000). *The phonology of Standard Chinese*. Oxford: Oxford University Press.
- Dussias, P. E. (2003). Syntactic ambiguity resolution in L2 learners: Some effects of bilinguality on L1 and L2 processing strategies. *Studies in Second Language Acquisition*, 25, 529-557.
- Dussias, P. E., & Guzzardo Tamargo, R. E. (2013). Parsing sentences. In P. Robinson (Ed.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 475-479). New York/London: Routledge.
- Dussias, P. E., & Sagarra, N. (2007). The effect of exposure on syntactic parsing in Spanish-English bilinguals. *Bilingualism: Language and Cognition*, 10, 101-116.
- Eby, M. (1993). Validation: choosing a test to fit the design. *Nurse Researcher*, 1(2), 27-33.
- Eckman, F. (1996). On evaluating arguments for special nativism in second language acquisition theory. *Second Language Research*, 12, 398-419.
- Edmonds, W. A., & Kennedy, T. D. (Eds.). (2013). *An applied reference guide to research designs: Quantitative, qualitative and mixed methods*. Thousand Oaks, CA: Sage.
- Edwards, J. (2009). *Language and identity: An introduction*. Cambridge: Cambridge University Press.
- Ellis, N., & Schmidt, R. (1997). Morphology and Longer Distance Dependencies: Laboratory Research Illuminating the A in SLA. *Studies in Second Language Acquisition*, 19, 145-171.
- Ellis, R. (2008). *The Study of Second Language Acquisition* (2nd ed.). Oxford: Oxford University Press.
- Epstein, S., Flynn, S., & Martohardjono, G. (1996). Second language acquisition: Theoretical and experimental issues in contemporary research. *Brain and Behavioral Sciences*, 19, 677-758.
- Falk, Y., & Bardel, C. (2011). Object pronouns in German L3 syntax: evidence for the L2 status factor. *Second Language Research*, 27(1), 9-82.
- Fasold, R. W. (2006). The politics of language. In R. W. Fasold & J. Connor-Linton (Eds.), *An Introduction to Language and Linguistics* (pp. 371-400). Cambridge: Cambridge University Press.

- Felser, C., Roberts, L., Gross, R., & Marinis, T. (2003). The processing of ambiguous sentences by first and second language learners of English. *Applied Psycholinguistics*, 24, 453-489.
- Fernández Fuertes, R., & Kiceras, J. M. (2008). *Copula omission in the English developing grammar of English/Spanish bilingual children*. Paper presented at the International Conference on Models of Interaction in Bilinguals, Bangor University, UK.
- Filippi, R., Leech, R., Thomas, M. S. C., Green, D. W., & Dick, F. (2012). A bilingual advantage in controlling language interference during sentence comprehension. *Bilingualism: Language and Cognition*, 15, 858-872.
- Flege, J. E. (2002). Interactions between the native and second-language phonetics systems. In P. Burmeister, T. Piske, & A. Rohde (Eds.), *An Integrated View of Language Development: Papers in Honor of Henning Wode*. Trier: Wissenschaftlicher Verlag Trier.
- Flege, J. E., & Liu, S. (2001). The effect of experience on adults' acquisition of a second language. *Studies in Second Language Acquisition*, 23(4), 527-552.
- Flege, J. E., Yeni-Komshian, G., & Liu, S. (1999). Age constraints on second language learning. *Journal of Memory and Language*, 41, 78-104.
- Flores, O. C. (1995). Metapragmatic awareness. *Lestra de Hoje*, 30, 121-137.
- Flynn, S., Foley, C., & Vinnitskaya, I. (2004). The cumulative-enhancement model for language acquisition: comparing adults' and children's patterns of development in first, second and third language acquisition of relative clauses. *The International Journal of Multilingualism*, 1, 3-17.
- Folke, T., Ouzia, J., Bright, P., Martino, B. D., & Filippi, R. (2016). A bilingual disadvantage in metacognitive processing. *Cognition*, 150, 119-132.
- Foucart, A., & Frenck-Mestre, C. (2013). Language processing. In J. Herschensohn & M. Young-Scholten (Eds.), *The Cambridge Handbook of Second Language Acquisition* (pp. 394-416). Cambridge: Cambridge University Press.
- Fox, A. V., Dodd, B., & Howard, D. (2002). Risk factors for speech disorders in children. *International Journal of Language & Communication Disorders*, 37, 117-131.
- Frazier, L. (1979). *On comprehending sentences: Syntactic parsing strategies*. (PhD), University of Connecticut, Connecticut.
- Frenck-Mestre, C., & Pynte, J. (1997). Syntactic ambiguity resolution while reading in second and native languages. *Quarterly Journal of Experimental Psychology*, 50, 119-148.
- Fruit, M. (2006). L2 Acquisition of Focus Constructions in European Portuguese and the L2 Status of the Syntax Discourse Interface. In M. G. O. Brien, C. Shea, & J. Archibald (Eds.), *Proceedings to the 8th Generative Approaches to Second Language Acquisition Conference (GASLA 2006)*. Somerville, MA: Cascadilla.
- Fruit, M. (2009). Divergence at the syntax-discourse interface: Evidence from the L2 acquisition of contrastive focus in European Portuguese. In A. Pires & J. Rothman (Eds.), *Minimalist inquiries into child and adult second language acquisition: Case studies across Portuguese* (pp. 197-219). Berlin: Mouton de Gruyter.
- Gall, F. (1825). *On the function of the brain and each of its parts* (Vol. 1-6). Boston, MA: March, Capen and Lyon.
- Gao, X. (2015). The ideological framing of "dialect": an analysis of mainland China's state media coverage of "dialect crisis" (2002–2012). *Journal of Multilingual and Multicultural Development*, 36(5), 468-482.
- Garnsey, S. M., Pearlmutter, N. J., Myers, E., & Lotocky, M. A. (1997). The contributions of verb bias and plausibility to the comprehension of temporarily ambiguous sentences. *Journal of Memory and Language*, 37, 58-93.
- Gass, S. (1997). *Input, interaction and the second language learner*. Mahwah, NJ: Lawrence Erlbaum.

- Gass, S., & Mackey, A. (2012). *The Routledge Handbook of Second Language Acquisition*. London/New York: Routledge.
- Gass, S., & Selinker, L. (2008). *Second Language Acquisition: An Introductory Course*. New York: Routledge.
- Gathercole, V. C. M. (2010). Interface or face to face? The profiles and contours of bilinguals and specific language impairment. *Applied Psycholinguistics*, 31, 282-293.
- Gawlitzeck-Maiwald, I., & Tracy, R. (1996). Bilingual bootstrapping. *Linguistics*, 34(901-926).
- Geirut, J. A. (2007). Phonological complexity and language learnability. *American Journal of Speech Language Pathology*, 16, 6-17.
- Genesee, F., Paradis, J., & Crago, M. (2011). *Dual Language Development and Disorders: A Handbook on Bilingualism and Second Language Learning* (2nd ed.). Baltimore: Brookes.
- Gesell, A., & Amatruda, C. (1947). *Developmental diagnosis* (2nd ed.). New York: Hoeber.
- Giancaspro, D., Halloran, B., & Iverson, M. (2015). Transfer at the initial stages of L3 Brazilian Portuguese: A look at three groups of English/Spanish bilinguals. *Bilingualism: Language and Cognition*, 18(2), 191-207.
- Gibbs, G. R. (2007). Analyzing qualitative data. In U. Flick (Ed.), *The Sage qualitative research kit*. Thousand Oaks, CA: Sage.
- Giezen, M. R., & Emmorey, K. (2015). Language co-activation and lexical selection in bimodal bilinguals: Evidence from picture-word interference. *Bilingualism: Language and Cognition*, 1-13.
- Gillam, R. B., Peña, E. D., Bedore, L. M., Bohman, T. M., & Mendez-Perez, A. (2013). Identification of Specific Language Impairment in Bilingual Children: I. Assessment in English. *Journal of Speech, Language and Hearing Research*, 56, 1813-1823.
- Gn, L. E., Brebner, C., & McCormack, P. (2014). A preliminary report on the English phonology of typically developing English-Mandarin bilingual preschool Singaporean children. *International Journal of Language & Communication Disorders*, 49(3), 317-332.
- Goldstein, B. A., & McLeod, S. (2012). Typical and atypical multilingual speech acquisition. In S. McLeod & B. A. Goldstein (Eds.), *Multilingual Aspects of Speech Sound Disorders in Children* (pp. 84-100). Bristol: Multilingual Matters.
- Gombert, J. É. (1992). *Metalinguistic Development*. Chicago: The University of Chicago Press.
- Gomez, C., & Reason, R. (2002). Cross-linguistic transfer of phonological skills: a Malaysian perspective. *Dyslexia*, 8(1), 22-33.
- Goral, M., Levy, E. S., & Kastl, R. (2010). Cross - language treatment generalisation: A case of trilingual aphasia. *Aphasiology*, 24(2), 170-187.
- Goral, M., Rosas, J., Conner, P. S., Maul, K. K., & Obler, L. K. (2012). Effects of language proficiency and language of the environment on aphasia therapy in a multilingual. *Journal of Neurolinguistics*, 25(6), 538-551.
- Gough, B., & Conner, M. T. (2006). Barriers to healthy eating amongst men: a qualitative analysis. *Social Science and Medicine*, 62, 387-395.
- Grace-Martin, K. (2017). *The Difference Between Interaction and Association*. Retrieved from <http://www.theanalysisfactor.com/interaction-association/>
- Graven, S., & Browne, J. (2008). Auditory development in the fetus and infant. *Newborn and Infant Nursing Reviews*, 8(4), 187-193.
- Grech, H., & McLeod, S. (2012). Multilingual speech and language development and disorders. In D. Battle (Ed.), *Communication Disorders and Development in Multicultural Populations* (pp. 120-147). St Louis: Elsevier.

- Greenberg, J. H. (1966). Some universals of grammar with particular reference to the order of meaningful elements. In J. H. Greenberg (Ed.), *Universals of grammar* (2 ed., pp. 73-113). Cambridge, Mass: MIT Press.
- Greenberg, J. H. (1991). Typology/universals and second language acquisition. In T. Huebner & C. A. Ferguson (Eds.), *Crosscurrents in second language acquisition and linguistic theories*. Amsterdam: John Benjamins.
- Grohmann, K. K., & Kambanaros, M. (2016). The gradience of multilingualism in typical and impaired language development: Positioning bilectism within comparative bilingualism. *Frontiers in Psychology*, 7, 37.
- Grosjean, F. (1989). Neurolinguists, beware! The bilingual is not two monolingual speakers in one person. *Brain and Language*, 36(1), 3-15.
- Grosjean, F. (2010). *Bilingual: Life and reality*. Cambridge, MA: Harvard University Press.
- Grüter, T., & Conradie, S. (2006). Investigating the L2 initial state: Additional evidence from the production and comprehension of Afrikaans-speaking learners of German. In R. Slabakova, S. Montrul, & P. Prévost (Eds.), *Inquiries in linguistic development: Studies in honor of Lydia White* (pp. 89-114). Amsterdam: Benjamins.
- Grüter, T., Lieberman, M., & Gualmini, A. (2010). Acquiring the Scope of Disjunction and Negation in L2: A Bidirectional Study of Learners of Japanese and English. *Language Acquisition*, 17(3), 127-154.
- Guest, G., MacQueen, K. M., & Namey, E. E. (2012). *Applied thematic analysis*. Thousand Oaks, CA: Sage.
- Gui, Y., Berry, J. W., & Zheng, Y. (2012). Migrant worker acculturation in China. *International Journal of Intercultural Relations*, 36(4), 598-610.
- Gutiérrez-Clellen, V. F. (1996). Language diversity: Implications for assessment. In K. Cole, P. Dale, & D. Thal (Eds.), *Assessment of communication and language*. Baltimore, MD: Brookes.
- Gutiérrez-Clellen, V. F., & Simón-Cerejido, G. (2007). The discriminant accuracy of a grammatical measure with Latino English-speaking children. *Journal of Speech, Language, and Hearing Research*, 50(4), 968-981.
- Hacohen, A., & Schaeffer, J. (2007). Subject realization in early Hebrew/English bilingual acquisition: The role of crosslinguistic influence. *Bilingualism: Language and Cognition*, 10(3), 333-344.
- Håkansson, G. (2010). Development or impairment? *Applied Psycholinguistics*, 31, 293-297.
- Hambly, H., Wren, Y., McLeod, S., & Roulstone, S. (2013). The influence of bilingualism on speech production: A systematic review. *Journal of Language and Communication Disorders*, 48(1), 1-24.
- Hammarberg, B. (2013). Third language acquisition. In P. Robinson (Ed.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 644-648). New York/London: Routledge.
- Han, W. (2008). *Object Preposed Sentences and Subject Prominence*. Paper presented at the 1st International Workshop on Cognitive Linguistics and Rhetoric, Shanghai University, Shanghai.
- Han, W. (2012). *Contextual Effect in SLA: A Case Study of Polysemy and Metaphor*. Saabrücken, Germany: Lambert Academic Publishing.
- Han, W. (2013). *Word Order Typology: Topic and Topic Marker Structure*. Shanghai: Shanghai Foreign Language Education Press.
- Han, W., Arppe, A., & Newman, J. (2013). Topic marking in a Shanghainese corpus: From observation to prediction. *Corpus Linguistics and Linguistic Theory*, 13(2), 291-319. doi:10.1515/cllt-2013-0014

- Han, W., Brebner, C., & McAllister, S. (2016). Redefining 'Chinese' L1 in SLP-Considerations for the assessment of Chinese bilingual-bidialectal language skills. *International Journal of Speech - Language Pathology*, 18(2), 135-146.
- Han, W., & Shi, D. (2014). The Evolution of *hi23ka* 34 'he says' in Shanghainese. *Language and Linguistics*, 15(4), 479-494.
- Han, W., & Shi, D. (2016). Topic and Left Periphery in Shanghainese. *Journal of Chinese Linguistics*, 44(1), 29-60.
- Han, Z. (2010). Grammatical inadequacy as a function of linguistic relativity: A longitudinal case study. In Z. Han & T. Cadierno (Eds.), *Linguistic relativity in second language acquisition: Evidence of first language thinking for speaking* (pp. 154-182). Clevedon: Multilingual Matters.
- Han, Z., & Cadierno, T. (2013). Linguistic relativity in SLA. In P. Robinson (Ed.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 393-396). New York/London: Routledge.
- Hanna, J., Shtyrov, Y., Williams, J., & Pulvermüller, F. (2016). Early neurophysiological indices of second language morphosyntax learning. *Neuropsychologia*, 82, 18-30.
- Harrington, M. (1987). Processing Transfer: Language-Specific Processing Strategies as a Source of Interlanguage Variation. *Applied Psycholinguistics*, 8, 351-377.
- Hartsuiker, R. J., & Bernolet, S. (2015). The development of shared syntax in second language learning. *Bilingualism: Language and Cognition*, 1-16.
- Hartsuiker, R. J., & Pickering, M. J. (2008). Language integration in bilingual sentence production. *Acta Psychologica*, 128, 479-489.
- Hashemi, M. R. (2012). Reflections on mixing methods in applied linguistics research. *Applied Linguistics*, 33, 206-212.
- Hashemi, M. R., & Babaii, E. (2013). Mixed Methods Research: Toward New Research Designs in Applied Linguistics. *The Modern Language Journal*, 97(4), 828-852.
- Hashimoto, M. J. (2010). *The Hakka Dialect: A Linguistic Study of Its Phonology, Syntax and Lexicon*. Cambridge: Cambridge University Press.
- Hatch, E., & Lazaraton, A. (1991). *The research manual: Design and statistics for applied linguistics*. New York: Newbury House.
- Haugen, E. (1953). *The Norwegian language in America*. Philadelphia: University of Pennsylvania Press.
- Hawkins, R. (2001a). *Second Language Syntax: A Generative Introduction*. Oxford: Blackwell.
- Hawkins, R. (2001b). The Theoretical Significance of Universal Grammar in Second Language Acquisition. *Second Language Research*, 17(4), 345-367.
- Hawkins, R. (2009). Second language acquisition of morphosyntax. In W. C. Ritchie & T. K. Bhatia (Eds.), *The new handbook of second language acquisition* (pp. 211-236). Bingley: Emerald.
- Hawkins, R., & Liszka, S. (2003). Locating the source of defective past tense marking in advanced L2 English speakers. In R. van Hout, A. Hulk, F. Kuiken, & R. Towell (Eds.), *The lexicon-syntax interface in second language acquisition* (pp. 21-44). Amsterdam: John Benjamins.
- Hayes, S. C., Barnes-Holmes, D., & Roche, B. (2001). *Relational Frame Theory: A Post-Skinnerian Account of Human Language and Cognition*. New York: Kluwer Academic Publishers.
- Haynes, J. (2007). *Getting Started With English Language Learners: How Educators Can Meet the Challenge*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Haynes, M., & Carr, T. H. (1990). Writing System Background and Second Language Reading: A Component Skills Analysis of English Reading by Native Speaker-Readers of

- Chinese. In T. H. Carr & B. A. Levy (Eds.), *Reading and Its Development: Component Skills Approaches* (pp. 375-422). New York: Academic.
- Haznedar, B. (2010). Transfer at the syntax-pragmatics interface: Pronominal subjects in bilingual Turkish. *Second Language Research*, 26(3), 355-378.
- Haznedar, B., & Schwartz, B. (1997). Are there optional infinitives in child L2 acquisition? In E. Hughes, M. Hughes, & A. Grenhill (Eds.), *Proceedings of the 21st annual Boston University Conference on Language Development* (pp. 257-268). Somerville, MA: Cascadilla Press.
- Hermas, A. (2014a). The categorization of the relative complementizer phrase in third language English: A feature re-assembly account. *International Journal of Bilingualism*, 19(5), 587-607.
- Hermas, A. (2014b). Restrictive Relatives in L3 English: L1 Transfer and Ultimate Attainment Convergence. *Australian Journal of Linguistics*, 34(3), 361-387.
- Herschensohn, J. (2000). *The second time around: Minimalism and L2 acquisition*. Amsterdam: John Benjamins.
- Hertzog, L. (2015). *Correlation and Linear Regression*. Retrieved from <https://www.r-bloggers.com/correlation-and-linear-regression/>
- Hoff, E. (2006). How social contexts support and shape language development. *Developmental Review*, 26, 55-88.
- Hope, T. M. H., Jones, Ö. P., Grogan, A., Crinion, J., Rae, J., Ruffle, L., . . . Green, D. W. (2015). Comparing language outcomes in monolingual and bilingual stroke patients. *Brain*, 138, 1070-1083.
- Hopp, H. (2005). Constraining second language word order optionality: scrambling in advanced English-German and Japanese-German interlanguage. *Second Language Research*, 21, 34-71.
- Hoversten, L. J., & Traxler, M. J. (2016). A time course analysis of interlingual homograph processing: Evidence from eye movements. *Bilingualism: Language and Cognition*, 19(2), 347-360.
- Hulk, A., & Müller, N. (2000). Bilingual first language acquisition at the interface between syntax and pragmatics. *Bilingualism: Language and Cognition*, 3, 227-244.
- Hulk, A., & Unsworth, S. (2010). Bilingualism as a kind of therapy? *Applied Psycholinguistics*, 31, 297-303.
- Huttenlocher, J., Waterfall, H., Vasilyeva, M., Vevea, J., & Hedges, L. V. (2010). Sources of variability in children's language growth. *Cognitive Psychology*, 61, 343-365.
- Hwa-Froelich, D. A., & Vigil, D. C. (2004). Three aspects of cultural influence on communication: A literature review. *Communication Disorders Quarterly*, 25, 107-118.
- Imai, S., Flege, J. E., & Walley, A. (2003). *Spoken word recognition of accented and unaccented speech: Lexical factors affecting native and non-native listeners*. Paper presented at the Proceedings of the International Congress on Phonetic Science, Barcelona, Spain.
- Ingram, T. T., & Reid, J. F. (1956). Developmental aphasia observed in a department of child psychiatry. *Archives of Disease in Childhood*, 31, 161-172.
- Inhelder, B., & Piaget, J. (1958). *The Growth of Logical Thinking From Childhood to Adolescence*. New York: Basic Books.
- Inhelder, B., & Piaget, J. (1964). *The Early Growth of Logic in the Child*. London: Routledge and Kegan Paul.
- Ionin, T. (2008). Progressive aspect in child L2-English. In B. Haznedar & E. Gavrusseva (Eds.), *Current trends in child second language acquisition: a generative perspective* (pp. 17-53). Amsterdam: John Benjamins.

- Ionin, T. (2012). Formal Theory-Based Methodologies. In A. Mackey & S. M. Gass (Eds.), *Research methods in second language acquisition: A practical guide* (1st ed., pp. 30-52). Chichester, West Sussex, U.K./Malden, Mass: Wiley-Blackwell.
- Ionin, T. (2013). Morphosyntax. In J. Herschensohn & M. Young-Scholten (Eds.), *The Cambridge Handbook of Second Language Acquisition* (pp. 505-528). Cambridge: Cambridge University Press.
- Isurin, L. (2013). Memory and first language forgetting. In J. Altarriba & L. Isurin (Eds.), *Memory, language, and bilingualism: theoretical and applied approaches* (pp. 319-348). Cambridge: Cambridge University Press.
- Isurin, L. (Ed.) (2005). *Cross Linguistic Transfer in Word Order: Evidence from L1 Forgetting and L2 Acquisition*. Somerville, MA: Cascadilla Press.
- Jackendoff, R. (2002). *Foundations of language*. Oxford: Oxford University Press.
- Jarvis, S., & Pavlenko, A. (2008). *Crosslinguistic influence in language and cognition*. New York: Routledge.
- Jessner, U. (2006). *Linguistic awareness in multilinguals: English as a third language*. Edinburgh: Edinburgh University Press.
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Towards a definition of mixed methods research. *Journal of Mixed Methods Research*, 1(2), 112-133.
- Jordaan, H. (2008). Clinical intervention for bilingual children: An international survey. *Folia Phoniatrica et logopaedica*, 60, 97-105.
- Kaderavek, J. N. (2011). *Language disorders in children: Fundamental concepts of assessment and intervention*. Upper Saddle River, NJ: Pearson Education Inc.
- Kalaycioglu, O., Copas, A., King, M., & Omar, R. Z. (2015). A comparison of multiple - imputation methods for handling missing data in repeated measurements observational studies. *Statistics in Society*, 179, 683-706.
- Kayser, H. (2002). Bilingual language development and language disorders. In D. Battle (Ed.), *Communication disorders in multicultural populations* (3rd ed., pp. 205-232). Boston, MA: Butterworth Heineman.
- Kellerman, E. (1995). Crosslinguistic influence: Transfer to nowhere. *Annual Review of Applied Linguistics*, 15, 125-150.
- Kellerman, E., & Smith, M. S. (1986). *Crosslinguistic Influence in Second Language Acquisition*. Oxford: Pergamon Press.
- Kidd, E., Chan, A., & Chiu, J. (2015). Cross-linguistic influence in simultaneous Cantonese-English bilingual children's comprehension of relative clauses. *Bilingualism: Language and Cognition*, 18(3), 438-452.
- Kim, S. Y., Liu, L., & Cao, F. (2017). How does first language (L1) influence second language (L2) reading in the brain? Evidence from Korean-English and Chinese-English bilinguals. *Brain & Language*, 171, 1-13.
- Kimberlin, C. L., & Winterstein, A. G. (2008). Validity and reliability of measurement instruments used in research. *American Journal of Health-System Pharmacy*, 65(23), 2276-2284.
- Kimura, D. (1992). Sex differences in the brain. *Scientific American*, 267(3), 119-125.
- Kiran, S. (2007). Complexity in the treatment of naming deficits. *American Journal of Speech Language Pathology*, 16, 18-29.
- Klein-Konigsberg, H. (1984). Semantic integration and language learning disabilities: From research to assessment and intervention. In G. P. Wallach & K. G. Butler (Eds.), *Language learning disabilities in school-age children*. Baltimore, MD: Williams and Wilkins.
- Kline, R. (2004). *Beyond significance testing: Reforming data analysis methods in behavioral research*. Washington, DC: American Psychological Association.

- Klingner, J., & Artiles, A. (2003). Why should bilingual students be in special education? *Educational Leadership*, October, 66-71.
- Koda, K. (1989). Effects of L1 Orthographic Representation on L2 Phonological Coding Strategies. *Journal of Psycholinguistic Research*, 18, 201-222.
- Koda, K. (1990). The Use of L1 Reading Strategies in L2 Reading: Effects of L1 Orthographic Structures on L2 Phonological Recording Strategies. *Studies in Second Language Acquisition*, 12, 393-410.
- Kohnert, K. (2010). Bilingual children with primary language impairment: Issues, evidence and implications for clinical actions. *Journal of Communication Disorders*, 43, 456-473.
- Kohnert, K., & Ebert, K. D. (2010). Beyond morphosyntax in developing bilinguals and “specific” language impairment. *Applied Psycholinguistics*, 31, 303-310.
- Kohnert, K., & Medina, A. (2009). Bilingual Children and Communication Disorders: A 30 Year Research Retrospective. *Seminars in Speech and Language*, 30, 219-233.
- Kormi-Nouri, R., Shojaei, R. S., Moniri, S., Gholami, A. R., Moradi, A. R., Akbari-Zardkhaneh, S., & Nilsson, L. G. (2008). The effect of childhood bilingualism on episodic and semantic memory tasks. *Scandinavian Journal of Psychology*, 49(2), 93-109.
- Kouridou, T. (2007). *Dialect as a medium of ESL instruction: Are Greek Cypriots privileged?* (MA), University of Cyprus, Nicosia, Cyprus.
- Kouridou, T. (2009). *A Bidialectal Methodology of Teaching English as a Second Language*. Paper presented at the 18th International Conference on Historical Linguistics.
- Kraš, T. (2016). Cross-linguistic influence at the discourse-syntax interface: Insights from anaphora resolution in child second language learners of Italian. *International Journal of Bilingualism*, 20(4), 369-385.
- Krashen, S. D. (1981). *Second Language Acquisition and Second Language Learning*. Oxford: Pergamon.
- Krashen, S. D. (1982). *Principles and practice in second language acquisition*. Oxford: Pergamon.
- Krashen, S. D. (1985). *The Input Hypothesis: Issues and Implications*. New York: Longman.
- Krashen, S. D. (1989). We acquire vocabulary and spelling by reading: additional evidence for the input hypothesis. *Modern Language Journal*, 73(4), 440-464.
- Krizman, J., Marian, V., Shook, A., Skoe, E., & Kraus, N. (2012). Subcortical encoding of sound is enhanced in bilinguals and relates to executive function advantages. *PNAS*, 109, 7877-7881.
- Krizman, J., Slater, J., Skoe, E., Marian, V., & Kraus, N. (2015). Neural processing of speech in children is influenced by extent of bilingual experience. *Neuroscience Letters*, 585, 48-53.
- Kroll, J. F., & Curley, J. (1988). Lexical memory in novice bilinguals: The role of concepts in retrieving second language words. In M. Gruneberg, P. Morris, & R. Sykes (Eds.), *Practical aspects of memory* (Vol. 2, pp. 389-395). London: Wiley.
- Kroll, J. F., & Dussias, P. (2004). The comprehension of words and sentences in two languages. In T. K. Bhatia & W. C. Ritchie (Eds.), *Handbook of Bilingualism* (pp. 169-200). Oxford: Blackwell.
- Kuder, S. (1997). *Teaching students with language and communication disabilities*. Boston, MA: Allyn & Bacon.
- Kuhl, P. K., Coffey-Corina, S., Padden, D., Munson, J., Estes, A., & Dawson, G. (2013). Brain responses to words in 2-year-olds with autism predict developmental outcomes at age 6. *PLOS ONE*, 8, e64967.

- Laffey, K., Pearce, W. M., & Steed, W. (2014). Effect of dialect on the identification of speech impairment in indigenous children. *Australian Review of Applied Linguistics*, 37(2), 161-177.
- Lakshmanan, U. (2009). Child second language acquisition. In W. C. Ritchie & T. K. Bhatia (Eds.), *The new handbook of second language acquisition* (pp. 377-399). Sheffield: Emerald Publishers.
- Lakshmanan, U. (2013). Child second language acquisition. In P. Robinson (Ed.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 71-75). New York/London: Routledge.
- Lantolf, J. P. (2000). *Sociocultural Theory and Second Language Learning*. Oxford: Oxford University Press.
- Lardiere, D. (1998). Dissociating syntax from morphology in a divergent end-state grammar. *Second Language Research*, 14, 359-375.
- Lardiere, D. (2012). Linguistic approaches to second language morphosyntax. In S. Gass & A. Mackey (Eds.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 106-126). London/New York: Routledge.
- Larson-Hall, J. (2010). *A guide to doing statistics in second language research using SPSS*. New York, NY: Routledge.
- Larson-Hall, J. (2012). How to run statistical analyses. In A. Mackey & S. Gass (Eds.), *Research methods in second language acquisition: A practical guide* (pp. 245-274). Oxford: Wiley-Blackwell.
- Laurence, S., & Margolis, E. (2001). The Poverty of the Stimulus Argument. *The British Journal for the Philosophy of Science*, 52(2), 217-276.
- Law, N. C. W., & So, L. K. H. (2006). The relationship of phonological development and language dominance in bilingual Cantonese - Putonghua children. *International Journal of Bilingualism*, 10(4), 405-427.
- Lazaraton, A. (2002). Quantitative and qualitative approaches to discourse analysis. *Annual Review of Applied Linguistics*, 22, 32-51.
- Lebrun, Y., & Buysens, E. (1982). Metalanguage and Speech Pathology. *British Journal of Disorders of Communication*, 17, 21-25.
- Lee-Ellis, S. (2013). Language typology and language distance. In P. Robinson (Ed.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 364-367). New York/London: Routledge.
- Leech, N. L., Barrett, K. C., & Morgan, G. A. (2008). *SPSS for intermediate statistics: Use and interpretation*. New York: Lawrence Erlbaum Associates.
- Lenneberg, E. (1967). *Biological Foundations of Language*. NY: Wiley.
- Leonard, L. B. (2010). Language combinations, subtypes, and severity in the study of bilingual children with specific language impairment. *Applied Psycholinguistics*, 31(2), 310-315.
- Leonard, L. B. (2014). *Children with specific language impairment*. Cambridge, MA: MIT Press.
- Leung, Y.-K. I. (2005). L2 vs. L3 initial state: A comparative study of the acquisition of French DPs by Vietnamese monolinguals and Cantonese-English bilinguals. *Bilingualism: Language and Cognition*, 8, 39-61.
- Li, C. N., & Thompson, S. A. (1976). Subject and topic: A new typology of language. In C. N. Li (Ed.), *Subject and Topic* (pp. 457-489). New York: Academic Press.
- Li, C. N., & Thompson, S. A. (1981). *Mandarin Chinese: A functional reference grammar*. Berkeley, CA: University of California Press.
- Li, W. (2000). *The bilingualism reader*. London: Routledge.

- Li, W., & Zhu, H. (2010). Voices from the diaspora: Changing hierarchies and dynamics of Chinese multilingualism. *International Journal of the Sociology of Language*, 205, 155-171.
- Lien, C. (2015). Min languages. In W. S.-Y. Wang & C. Sun (Eds.), *The Oxford Handbook of Chinese Linguistics* (pp. 160-172). Oxford: Oxford University Press.
- Lightbown, P., & Spada, N. (2006). *How Languages Are Learned* (3rd Ed.). Oxford/New York: Oxford University Press.
- Lightfoot, D. (2010). Language acquisition and language change. *Cognitive Science*, 1(5), 677-684.
- Lin, F. Y. (2017). A refutation of universal grammar. *Lingua*, 193, 1-22.
- Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences revisited. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (4th ed., pp. 97-128). Thousand Oaks, CA: Sage.
- Liu, H., Bates, E., & Li, P. (1992). Sentence interpretation in bilingual speakers of English and Chinese. *Applied Psycholinguistics*, 13, 451-484.
- Liu, L., & Han, W. (2015). Pragmatic Properties of Chinese Conjunctive Empty Verb Sentences. *Chinese Teaching in the World*, 29(1), 45-54.
- Liu, Q. (2015). Shanghainese Revitalization Statement. Retrieved 1 November 2016, from Language Documentation Training Centre, University of Hawaii <http://ling.hawaii.edu/ldtc/languages/shanghainese-f15/2439-2/>
- Long, M. (1996). The Role of the Linguistic Environment in Second Language Acquisition. In W. Ritchie & T. Bhatia (Eds.), *Handbook of Second Language Acquisition* (pp. 413-468). San Diego: Academic Press.
- Lorenzen, B., & Murray, L. L. (2008). Bilingual aphasia: A theoretical and clinical review. *American Journal of Speech Language Pathology*, 17(3), 299-317.
- Lugo-Gil, J., & Tamis-LeMonda, C. S. (2008). Family resources and parenting quality. *Child Development*, 79, 1065-1085.
- Lyovin, A. V. (1997). *An introduction to the languages of the world*. New York/Oxford: Oxford University Press.
- Macizo, P. (2015). Phonological coactivation in the bilinguals' two languages: Evidence from the color naming task. *Bilingualism: Language and Cognition*, 1-15.
- MacWhinney, B. (1999). *The Emergence of Language*. Mahwah, NJ: Lawrence Erlbaum.
- Madill, A., Jordan, A., & Shirley, C. (2000). Objectivity and reliability in qualitative analysis: realist, contextualist and radical constructionist epistemologies. *British Journal of Psychology*, 91, 1-20.
- Madsen, H., & Thyregod, P. (2011). *Introduction to General and Generalized Linear Models*. Boca Raton: Chapman & Hall.
- Mann, W., Sheng, L., & Morgan, G. (2016). Lexical-Semantic Organization in Bilingually Developing Deaf Children With ASL-Dominant Language Exposure: Evidence From a Repeated Meaning Association Task. *Language Learning*, 66(4), 872-899.
- Marcus, C. (2009). *Information highlighting in advanced learning English: The syntax-pragmatics interface in second language acquisition*. Amsterdam/Philadelphia: John Benjamins.
- Marinis, T., & Chondrogianni, V. (2011). Comprehension of reflexives and pronouns in sequential bilingual children: Do they pattern similarly to L1 children, L2 adults, or children with specific language impairment. *Journal of Neurolinguistics*, 24(2), 202-212.
- Marsden, H. (2009). Distributive quantifier scope in English-Japanese and Korean-Japanese Interlanguage. *Language Acquisition*, 16, 135-177.

- Masconi, K. L., Matsha, T. E., Echouffo-Tcheugui, J. B., Erasmus, R. T., & Kengne, A. P. (2015). Reporting and handling of missing data in predictive research for prevalent undiagnosed type 2 diabetes mellitus: a systematic review. *EPMA Journal*, 6(1), 7.
- Mastropavlou, M., & Tsimpli, I. M. (2011). Complementizers and subordination in typical language acquisition and SLI. *Lingua*, 121, 442-462.
- Matthews, S., & Yip, V. (2011). *Cantonese: A Comprehensive Grammar* (2nd ed.). London: Routledge.
- Mayo, M., Ibarrola, A. L., & Liceras, J. M. (2005). Placeholders in the English Interlanguage of Bilingual (Basque/Spanish) Children. *Language Learning*, 55(3), 445-489.
- Mayo, M., & Olaizola, I. V. (2010). The development of suppletive and affixal tense and agreement morphemes in the L3 English of Basque-Spanish bilinguals. *Second Language Research*, 27(1), 129-149.
- McArthur, T. (2001). World Englishes: Trends, tensions, varieties and standards. *Language Teaching*, 34, 1-20.
- McDonald, M. C., Pearlmutter, N. J., & Seidenberg, M. S. (1994). Syntactic ambiguity resolution as lexical ambiguity resolution. In K. Rayner (Ed.), *Perspectives on sentence processing* (pp. 123-153). Hillsdale, NJ: Erlbaum.
- McDowd, J. M., & Shaw, R. J. (2000). Attention and aging: A functional perspective. In F. I. M. Craik & T. A. Salthouse (Eds.), *The Handbook of Aging and Cognition* (2nd ed., pp. 221-292). Mahwah, NJ: Erlbaum.
- McNealy, K., Mazziotta, J. C., & Dapretto, M. (2011). Age and experience shape developmental changes in the neural basis of language-related learning. *Developmental Science*, 14, 1261-1282.
- Meakins, F. (2013). Mixed languages. In P. Bakker & Y. Matras (Eds.), *Contact Languages: A Comprehensive Guide* (pp. 159-228). Berlin: Mouton de Gruyter.
- Meir, N., Walters, J., & Armon-Lotem, S. (2016). Disentangling SLI and bilingualism using sentence repetition tasks: the impact of L1 and L2 properties. *International Journal of Bilingualism*, 20(4), 421-452.
- Meisel, J. M. (1997). The acquisition of the syntax of negation in French and German: contrasting first and second language development. *Second Language Research*, 13(3), 227-263.
- Meisel, J. M. (2009). Second language acquisition in early childhood. *Zeitschrift für Sprachwissenschaft*, 28, 5-34.
- Meng, X., You, H., Song, M., Desroches, A. S., Wang, Z., Wei, N., . . . Ding, G. (2015). Neural deficits in auditory phonological processing in Chinese children with English reading impairment. *Bilingualism: Language and Cognition*, 1-16.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: A sourcebook of new methods*. Thousand Oaks, CA: Sage.
- Mitchell, D. C., Cuetos, F., & Zagar, D. (1990). Reading in different languages: Is there a universal mechanism for parsing sentences? In D. A. Balota, G. B. F. d'Arcais, & K. Rayner (Eds.), *Comprehension processes in reading* (pp. 285-302). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Mitchell, R., & Myles, F. (1998). *Second Language Learning Theories*. London: Arnold.
- Moerk, E. L. (1994). Corrections in first language acquisition: Theoretical controversies and factual evidence. *International Journal of Psycholinguistics*, 10, 33-58.
- Montrul, S. (2004). Subject and object expression in Spanish heritage speakers: A case of morpho-syntactic convergence. *Bilingualism: Language and Cognition*, 7(2), 125-142.
- Montrul, S. (2006). Incomplete acquisition as a feature of bilingual and L2 grammars. In R. Slabakova, S. Montrul, & P. Prévost (Eds.), *Inquiries in language development - Studies in honor of Lydia White* (pp. 335-359). Amsterdam: John Benjamins.

- Montrul, S. (2008). *Incomplete acquisition in bilingualism*. Amsterdam/Philadelphia: John Benjamins.
- Montrul, S. (2013). Incomplete L1 acquisition. In J. Herschensohn & M. Young-Scholten (Eds.), *The Cambridge Handbook of Second Language Acquisition* (pp. 338-352). Cambridge: Cambridge University Press.
- Morales-Reyes, A., & Gómez Soler, I. (2016). Transfer and semantic universals in the L2 acquisition of the English article system by child L2 learners. *Language Acquisition*, 23(1), 57-74.
- Moxley, R. (2004). Pragmatic Selectionism: The Philosophy of Behavior Analysis. *The Behavior Analyst Today*, 5(1), 108-125.
- Müller, N., & Hulk, A. (2001). Crosslinguistic influence in bilingual language acquisition: Italian and French as recipient languages. *Bilingualism: Language and Cognition*, 4(1), 1-21.
- Muñoz, M. L., & Marquardt, T. P. (2003). Picture naming and identification in bilingual speakers of Spanish and English with and without aphasia. *Aphasiology*, 17, 1115-1132.
- Muñoz, M. L., Marquardt, T. P., & Copeland, G. (1999). A comparison of the code-switching patterns of speakers with aphasia and neurologically normal bilingual speakers of English and Spanish. *Brain and Language*, 66, 249-274.
- Murphy, E. (2015). The brain dynamics of linguistic computation. *Frontiers in Psychology*, 6, 1515.
- Myklebust, H. (1954). *Auditory disorders in children: A manual for differential diagnosis*. New York: Grune & Stratton.
- Myles, F. (2005). The emergence of morpho-syntactic structure in French L2. In J.-M. Dewaele (Ed.), *Focus on French as a foreign language* (pp. 88-113). Clevedon: Multilingual Matters.
- Nagy, W. E., & Anderson, R. C. (1995). *Metalinguistic awareness and literacy acquisition in different languages*. Retrieved from Center for the Study of Reading, College of Education, University of Illinois at Urbana-Champaign: https://www.ideals.illinois.edu/bitstream/handle/2142/17594/ctrstreadtechrepv01995i00618_opt.pdf
- Newbury, D., & Monaco, A. (2002). Molecular genetics of speech and language disorders. *Current Opinion in Pediatrics*, 14, 696-701.
- Ng, M., Hsueh, G., & Leung, C. S. (2010). Voice pitch characteristics of Cantonese and English produced by Cantonese - English bilingual children. *International Journal of Speech - Language Pathology*, 12(3), 230-236.
- Nicholas, H., & Lightbown, P. (2008). Defining child second language acquisition, defining roles for L2 instruction. In J. Philp, R. Oliver, & A. Mackey (Eds.), *Second language acquisition and the younger learner: child's play?* (pp. 27-51). Amsterdam: John Benjamins.
- Nicoladis, E. (2002). What's the difference between "toilet paper" and "paper toilet"? French-English children's crosslinguistic transfer in compound nouns. *Journal of Child Language*, 29, 1-20.
- Nicoladis, E., & Genesee, F. (1997). Language development in preschool children. *Journal of Speech Language Pathology and Audiology*, 21, 258-270.
- Nitschke, S., Kidd, E., & Serratrice, L. (2010). First language transfer and long-term structural priming in comprehension. *Language and Cognitive Processes*, 25(1), 94-114.
- Norman, J. (1988). *Chinese*. Cambridge: Cambridge University Press.
- Norris, J. M., & Ortega, L. (2012). Assessing learner knowledge. In S. Gass & A. Mackey (Eds.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 573-589). London/New York: Routledge.

- O'Grady, W. (2008). Innateness, universal grammar, and emergentism. *Lingua*, 118, 620-631.
- O'Grady, W., Archibald, J., Aronoff, M., & Rees-Miller, J. (Eds.). (2001). *Contemporary Linguistics*. Boston: Bedford/St. Martin's.
- O'Shannessy, C. (2011). Competition between word order and casemarking in interpreting grammatical relations: a case study in multilingual acquisition. *Journal of Child Language*, 38(4), 763-792.
- Oakes, A., Kover, S. T., & Abbeduto, L. (2013). Language Comprehension Profiles of Young Adolescents With Fragile X Syndrome. *American Journal of Speech Language Pathology*(615-626).
- Odlin, T. (1989). *Language Transfer: Cross-linguistic Influence in Language Learning*. Cambridge: Cambridge University Press.
- Odlin, T. (2003). Cross-linguistic influence. In C. Doughty & M. Long (Eds.), *Handbook of Second Language Acquisition* (pp. 436-486). Oxford: Blackwell.
- Odlin, T. (2013). Cross-linguistic influence. In P. Robinson (Ed.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 151-155). New York/London: Routledge.
- Oller, D. K., Pearson, B. Z., & Cobo-Lewis, A. (2007). Profile effects in early bilingual language and literacy. *Applied Psycholinguistics*, 28, 191-230.
- Ooi, C. C., & Wong, A. M. (2012). Assessing bilingual Chinese-English young children in Malaysia using language sample measures. *Int J Speech Lang Pathol*, 14(6), 499-508.
- Ortega, L. (Ed.) (2011). *Second language acquisition - Critical concepts in linguistics (Vol. III)*. New York: Routledge.
- Orton, S. (1937). *Reading, writing and speech problems in children: A presentation of certain types in the development of the language faculty*. New York: W. W. Norton.
- Oshita, H. (2004). Is there anything there when there is not there? Null expletives and second language data. *Second Language Research*, 20(2), 95-130.
- Ostern, A. L. (1991). Proficiency in correct syntax as an expression of linguistic awareness. In K. Herberts & C. Lauren (Eds.), *Multilingualism in Nordic countries and beyond*. Finland: Abo Akademi.
- Oxford, R. L. (2013). Individual differences in SLA. In P. Robinson (Ed.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 302-308). New York/London: Routledge.
- Özçelik, Ö. (2017). Interface Hypothesis and the L2 acquisition of quantificational scope at the syntax-semantics-pragmatics interface. *Language Acquisition*, 1-10.
- Paivio, A., Clark, J. M., & Lambert, W. (1988). Bilingual dual-coding theory and semantic repetition effects on recall. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 33, 17-28.
- Pallier, C., Colome, A., & Sebastian-Galles, N. (2001). The influence of native-language phonology on lexical access: Exemplar-based versus abstract lexical entries. *Psychological Science*, 12, 445-449.
- Pancsofar, N., & Vernon-Feagans, L. (2010). Fathers' early contributions to children's language development in families from low-income rural communities. *Early Childhood Research Quarterly*, 25, 450-463.
- Papadopoulou, D., & Clahsen, H. (2003). Parsing strategies in L1 and L2 sentence processing: A study of relative clause attachment in Greek. *Studies in Second Language Acquisition*, 25, 501-528.
- Papapavlou, A., & Kouridou, T. (2007). Bidialectism and metalinguistic awareness. In A. Papapavlou & P. Pavlou (Eds.), *Sociolinguistic and Pedagogical Dimensions of Dialects in Education* (pp. 216-235). Cambridge: Cambridge Scholars Press.
- Paradis, J. (2001). Do bilingual two-year olds have separate phonological systems? *International Journal of Bilingualism*, 5, 19-38.

- Paradis, J. (2005). Grammatical morphology in children learning English as a second language: Implications of similarities with Specific Language Impairment. *Language, Speech and Hearing Services in Schools*, 36, 172-187.
- Paradis, J. (2007). Bilingual children with specific language impairment: Theoretical and applied issues. *Applied Psycholinguistics*, 28, 551-564.
- Paradis, J. (2010a). The interface between bilingual development and specific language impairment. *Applied Psycholinguistics*, 31, 227-252.
- Paradis, J. (2010b). Response to Commentaries on the interface between bilingual development and specific language impairment. *Applied Psycholinguistics*, 31, 345-362.
- Paradis, J., Crago, M., & Genesee, F. (2005). Domain-general versus domain specific accounts of specific language impairment: Evidence from bilingual children's acquisition of object pronouns. *Language Acquisition*, 13(1), 33-62.
- Paradis, J., Crago, M., Genesee, F., & Rice, M. L. (2003). French-English bilingual children with SLI: How do they compare with their monolingual peers? *Journal of Speech, Language and Hearing Research*, 46, 113-127.
- Paradis, J., & Navarro, S. (2003). Subject Realization and Crosslinguistic Interference in the Bilingual Acquisition of Spanish and English: What is the Role of the Input? *Journal of Child Language Acquisition*, 30(2), 371-393.
- Paradis, J., Nicoladis, E., & Genesee, F. (2000). Early emergence of structural constraints on code-mixing: Evidence from French-English bilingual children. *Bilingualism: Language and Cognition*, 3(3), 245-261.
- Paradis, J., Rice, M. L., Crago, M., & Marquis, J. (2008). The acquisition of tense in English: Distinguishing child second language from first language and specific language impairment. *Applied Psycholinguistics*, 29(4), 689-722.
- Park, D. C. (2000). The basic mechanisms accounting for age-related decline in cognitive function. In D. C. Park & N. Schwarz (Eds.), *Cognitive Aging: A Primer*. Philadelphia: Psychology Press.
- Paterson, K., Liversedge, S. P., Rowland, C., & Filik, R. (2003). Children's comprehension of sentences with focus particles. *Cognition*, 89, 263-294.
- Paterson, K., Liversedge, S. P., White, D., Filik, R., & Jaz, K. (2006). Children's interpretation of ambiguous focus in sentences with 'only'. *Language Acquisition*, 13(3), 253-284.
- Patterson, J., & Pearson, B. (2004). Bilingual lexical development. In B. A. Goldstein (Ed.), *Bilingual language development and disorders in Spanish-English speakers* (pp. 77-104). Baltimore, MD: Brookes.
- Patton, M. Q. (2004). *Qualitative research & evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage.
- Paul, R. (2007). *Language disorders from infancy through adolescence: Assessment and intervention* (3rd ed.). St Louis, MO: Mosby Elsevier.
- Paul, R., & Norbury, C. (2007). Models of child language disorders. In R. Paul (Ed.), *Language disorders from infancy through adolescence: Assessment and intervention* (3rd ed., pp. 3-22). St. Louis, MO: Mosby Elsevier.
- Pavlou, S. (1990). *The suppression of the Greek language in Cyprus*. Athens: Pentadahtylos.
- Peña, E. D., Bedore, L. M., & Kester, E. S. (2016). Assessment of language impairment in bilingual children using semantic tasks: two languages classify better than one. *International Journal of Language & Communication Disorders*, 51(2), 192-202.
- Pérez-Leroux, A. T., Cuza, A., & Thomas, D. (2011). Clitic placement in Spanish-English bilingual children. *Bilingualism: Language and Cognition*, 14(2), 221-232.
- Peugh, J. L., & Enders, C. K. (2004). Missing data in educational research: A review of reporting practices and suggestions for improvement. *Review of Educational Research*, 74, 525-556.

- Pham, G., & Ebert, K. D. (2015). A longitudinal analysis of sentence interpretation in bilingual children. *Applied Psycholinguistics*, 1-25.
- Philip, W. (1995). *Event Quantification in the Acquisition of Universal Quantification*. (Doctoral), University of Massachusetts, Amherst, MA.
- Pierce, C. A., Block, R. A., & Aguinis, H. (2004). Cautionary Note on Reporting Eta-Squared Values from Multifactor ANOVA Designs. *Educational and Psychological Measurement*, 64(6), 916-924.
- Pinker, S. (1994). *The Language Instinct*. New York: Morrow.
- Pinker, S. (1995). Language acquisition. In L. Gleitman & M. Liberman (Eds.), *An invitation to cognitive science: Language* (pp. 135-182). Cambridge, MA: MIT Press.
- Pinker, S. (2007). *The language instinct: How the mind creates language* (P.S. ed.). New York: Harper Collins.
- Pladevall-Ballester, E. (2010). Child L2 development of syntactic and discourse properties of Spanish subjects. *Bilingualism: Language and Cognition*, 13, 185-216.
- Platzack, C. (2001). The Vulnerable C-domain. *Brain and Language*, 77, 364-377.
- Plonsky, L., & Gass, S. (2011). Quantitative Research Methods, Study Quality, and Outcomes: The Case of Interaction Research. *Language Learning*, 61(2), 325-366.
- Plonsky, L., & Oswald, F. L. (2012). How to do a meta-analysis. In A. Mackey & S. Gass (Eds.), *A guide to research methods in second language acquisition* (pp. 275-295). London: Blackwell.
- Plunkett, K., & Wood, C. (2004). The development of children's understanding of grammar. In J. Oates & A. Grayson (Eds.), *Cognitive and language development in children*. Oxford: Blackwell.
- Poland, B. (2002). Transcription quality. In J. Gubrium & J. Holstein (Eds.), *Handbook of interview research: Context & method* (pp. 629-649). Thousand Oaks, CA: Sage.
- Porte, G. (2003). English from a distance: Code-mixing and blending in the L1 output of long-term resident overseas EFL teachers. In V. Cook (Ed.), *Effects of the second language on the first* (pp. 103-119). Clevedon: Multilingual Matters.
- President Order. (2000). Law of the People's Republic of China on the Standard Spoken and Written Chinese Language (No. 37) (Order of the President of the People's Republic of China). Retrieved 6 December 2016, from 18th Meeting of the Standing Committee of the Ninth National People's Congress of the People's Republic of China http://www.gov.cn/english/laws/2005-09/19/content_64906.htm
- Prévost, P., & White, L. (2000). Missing surface inflection or impairment in second language acquisition? Evidence from tense and agreement. *Second Language Research*, 16, 103-133.
- Price, J., Roberts, J., Vandergrift, N., & Martin, G. (2007). Language comprehension in boys with fragile X syndrome and boys with Down syndrome. *Journal of Intellectual Disability Research*, 51(4), 318-326.
- Prizant, B., & Whetherby, A. (2005). Critical issues in enhancing communication abilities for persons with autism spectrum disorders. In F. Volkmar, R. Paul, A. Klin, & D. Cohen (Eds.), *Handbook of autism and pervasive developmental disorders* (Vol. II, pp. 925-945). New York: Wiley.
- Punch, K. F. (1998). *Introduction to Social Research*. London: Sage.
- Radford, A., Atkinson, M., Britain, D., Clahsen, H., & Spencer, A. (2009). *Linguistics: An Introduction* (2nd ed.). London: Longman.
- Rampton, B. (2005). *Crossing: Language & Ethnicity among Adolescents* (2nd ed.). Manchester: St Jerome Publishing.

- Ramscar, M., & Yarlett, D. (2007). Linguistic self-correction in the absence of feedback: a new approach to the logical problem of language acquisition. *Cognitive Science*, 31(6), 927-960.
- Rankin, T. (2012). The transfer of V2: inversion and negation in German and Dutch learners of English. *International Journal of Bilingualism*, 16(1), 139-158.
- Ransdell, S., Barbier, M. L., & Niit, T. (2006). Metacognitions about language skill and working memory among monolingual and bilingual college students: When does multilingualism matter? *International Journal of Bilingual Education and Bilingualism*, 9(6), 728-741.
- Ravid, D., Levie, R., & Avivi Ben-zvi, G. (2003). The role of language typology in linguistic development: Implications for the study of language disorders. In Y. Levy & J. Schaeffer (Eds.), *Language competence across populations: Towards a definition of specific language impairment* (pp. 171-196). Mahwah, NJ: Erlbaum.
- Reinhart, T. (2006). *Interface strategies*. Cambridge, MA: MIT Press.
- Renfrew, C., McMahon, A. M. S., & Trask, R. L. (2000). *Time depth in historical linguistics*. Cambridge: McDonald Institute for Archaeological Research.
- Rescorla, L., & Lee, E. (2001). Language impairment in young children. In T. Layton, E. Crais, & L. Watson (Eds.), *Handbook of Early Language Impairment in Children: Nature (Early Childhood Education Series)* (pp. 1-55). Albany, NY: Delmar.
- Riazi, A. M. (Ed.) (2016). *The Routledge Encyclopedia of Research Methods in Applied Linguistics: Quantitative, qualitative, and mixed-methods research*. London & New York: Routledge.
- Rice, M. L. (2000). Grammatical symptoms of specific language impairment. In D. V. M. Bishop & L. B. Leonard (Eds.), *Speech and language impairments in children: Causes, characteristics, intervention, and outcome* (pp. 17-34). East Sussex: Psychology Press.
- Rice, M. L. (2004). Growth models of developmental language disorders. In M. L. Rice & S. Warren (Eds.), *Developmental language disorders: From phenotypes to etiologies*. Mahwah, NJ: Erlbaum.
- Rice, M. L., & Wexler, K. (2001). *Test of early grammatical impairment*. New York: Psychological Corporation.
- Richards, J., Platt, J., & Weber, H. (1985). *Longman dictionary of applied linguistics*. London: Longman.
- Rickford, J. R. (1996). Regional and social variation in language. In S. McKay & N. Hornberger (Eds.), *Sociolinguistics and Language Teaching* (pp. 151-194). Cambridge: Cambridge University Press.
- Ringbom, H. (1990). Language Transfer: Cross-linguistic Influence in Language Learning. *System*, 18(3), 392-393.
- Ringbom, H. (2007). *Crosslinguistic similarity in foreign language learning*. Clevedon: Multilingual Matters.
- Ringbom, H. (2013). Linguistic transfer. In P. Robinson (Ed.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 396-400). New York/London: Routledge.
- Ritchie, W. C., & Bhatia, T. K. (2013). Bilingualism and SLA. In P. Robinson (Ed.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 66-69). New York/London: Routledge.
- Robinson Kurpius, S. E., & Stafford, M. E. (2005). *Testing and Measurement. A User-Friendly Guide*. London: Sage.
- Romaine, S. (1999). Bilingual language development. In M. Barrett (Ed.), *The development of language*. Hove: Psychology Press Ltd, Publishers.
- Rossi, F., & Pontecorvo, C. (1989). The metalinguistic ability of elementary school children. *Rassegna Italiana di Linguistica Applicata*, 21, 219-240.

- Rothman, J. (2010). On the typological economy of syntactic transfer: Word order and relative clause high/low attachment preference in L3 Brazilian Portuguese. *International Review of Applied Linguistics in Teaching (IRAL)*, 48, 245-273.
- Rothman, J. (2011). L3 syntactic transfer selectivity and typological determinacy: the typological primacy model. *Second Language Research*, 27, 107-127.
- Rothman, J. (2013). Cognitive Economy, Non-Redundancy and Typological Primacy in L3 Acquisition: Evidence from initial stages of L3 Romance. In S. Baauw, F. Dirjkoningen, L. Meroni, & M. Pinto (Eds.), *Romance Languages and Linguistic Theory* (pp. 217-247). Amsterdam/Philadelphia: John Benjamins.
- Rothman, J. (2015). Linguistic and cognitive motivations for the Typological Primacy Model (TPM) of third language (L3) transfer: Timing of acquisition and proficiency considered. *Bilingualism: Language and Cognition*, 18(2), 179-190.
- Rothman, J., & Cabrelli Amaro, J. (2010). What variables condition syntactic transfer? A look at the L3 initial state. *Second Language Research*, 26(2), 189-218.
- Rothman, J., Cabrelli Amaro, J., & de Bot, K. (2013). Third language acquisition. In J. Herschensohn & M. Young-Scholten (Eds.), *The Cambridge Handbook of Second Language Acquisition* (pp. 372-393). Cambridge: Cambridge University Press.
- Rothman, J., & Slabakova, R. (2011). The mind-context divide: on acquisition at the linguistic interfaces. *Lingua*, 121, 568-576.
- Rothweiler, M. (2010). The potential of studying specific language impairment in bilinguals for linguistic research on specific language impairment in monolinguals. *Applied Psycholinguistics*, 31, 327-332.
- Sakai, K. L. (2005). Language acquisition and brain development. *Science*, 310(5749), 815-819.
- Sameroff, A. (2010). A unified theory of development: a dialectic integration of nature and nurture. *Child Development*, 81, 6-22.
- Sanoudaki, E., & Thierry, G. (2015). Language non-selective syntactic activation in early bilinguals: the role of verbal fluency. *International Journal of Bilingual Education & Bilingualism*, 18(5), 548-560.
- Sasaki, Y. (1991). English and Japanese Interlanguage Comprehension Strategies: An Analysis Based on the Competition Model. *Applied Psycholinguistics*, 12, 47-73.
- Saville-Troike, M. (2012). *Introducing Second Language Acquisition* (2nd ed.). Cambridge: Cambridge University Press.
- Schlyter, S. (1993). The weaker language in bilingual Swedish-French children. In K. Hyltenstam & A. Viberg (Eds.), *Progression and regression in language - Sociocultural, neuropsychological and linguistic perspectives* (pp. 289-308). Cambridge: Cambridge University Press.
- Schlyter, S., & Håkansson, G. (1994). Word order in Swedish as the first language, second language and weaker language in bilinguals. *Scandinavian Working Papers on Bilingualism*, 9, 49-66.
- Schmitt, C., & Miller, K. (2010). Using comprehension methods in language acquisition research. In S. Unsworth & E. Blom (Eds.), *Experimental methods in language acquisition research* (pp. 35-56). Amsterdam: John Benjamins.
- Schreiber, T., & Sprouse, R. (1998). Knowledge of topicalization and scrambling in English-German interlanguage. *McGill Working Papers in Linguistics*, 13, 162-172.
- Schwartz, B., & Sprouse, R. (1996). L2 cognitive states and the Full Transfer/Full Access Model. *Second Language Research*, 12, 40-72.
- Schwartz, B., & Sprouse, R. (2013). Generative approaches and the poverty of the stimulus. In J. Herschensohn & M. Young-Scholten (Eds.), *The Cambridge Handbook of Second Language Acquisition* (pp. 137-158). Cambridge: Cambridge University Press.

- Sciriha, L. (1995). The interplay of language and identity in Cyprus. *The Cyprus Review*, 7(2), 7-34.
- Sciriha, L. (1996). *A question of identity: Language use in Cyprus*. Nicosia: Intercollege Press.
- Scott, C. M. (2004). Syntactic ability in children and adolescents with language and learning disabilities. In R. Berman (Ed.), *Language development across childhood and adolescence* (pp. 111-134). Philadelphia: John Benjamins.
- Sears, J., Khan, K., Ardern, C., & Tamim, H. (2013). Potential for patient-physician language discordance in Ontario. *BMC Health Services Research*, 13, 535.
- Serratrice, L. (2007). Referential cohesion in the narratives of bilingual English-Italian children and monolingual peers. *Journal of Pragmatics*, 39, 1058-1087.
- Serratrice, L., Sorace, A., & Paoli, S. (2004). Crosslinguistic influence at the syntax-pragmatics interface: Subjects and objects in English-Italian bilingual and monolingual acquisition. *Bilingualism: Language and Cognition*, 7(3), 183-205.
- Sharwood Smith, M. (1983). Crosslinguistic aspects of second language acquisition. *Applied Linguistics*, 4, 192-199.
- Sharwood Smith, M., & Kellerman, E. (1986). Crosslinguistic influence in second language: an introduction. In E. Kellerman & M. Sharwood Smith (Eds.), *Crosslinguistic Influence in Second Language Acquisition* (pp. 1-9). Oxford: Pergamon.
- Silva-Corvalán, C., Johnson, C., Montes, M., & Sick, R. (2009). *English influence on Spanish language subsystems in bilingual first language acquisition: The role of interfaces*. Paper presented at the Colloquium on Crosslinguistic Influence on Different Grammatical Domains in Bilingual First Language Acquisition, Utrecht, The Netherlands.
- Simon, E. (2010). Child L2 development: a longitudinal case study on Voice Onset Times in word-initial stops. *Journal of Child Language*, 37(1), 159-173.
- Singh, L., Fu, C. S. L., Rahman, A. A., Hameed, W. B., Sanmugam, S., Agarwal, P., . . . Rifkin-Graboi, A. (2015). Back to basics: A bilingual advantage in infant visual habituation. *Child Development*, 86(1), 294-302.
- Singleton, D., & Lengyel, Z. (1995). *The Age Factor in Second Language Acquisition*. Clevedon: Multilingual Matters.
- Sittisakpaiboon, Y. (2008). *Native language interference in learning English as foreign language: Exploratory case studies of Nyo dialect transfer to English phonemes*. Paper presented at the The 1st ELI, OBEC Regional Conference: ELT in Thailand, Udon Thani, Thailand.
- Siu, C. T.-S., & Ho, C. S.-H. (2015). Cross-language transfer of syntactic skills and reading comprehension among young Cantonese-English bilingual students. *Reading Research Quarterly*, 50(3), 313-336.
- Sjöholm, K. (1976). A comparison of the test results in grammar and vocabulary between Finnish- and Swedish-speaking applicants for English. In H. Ringbom & R. Palmberg (Eds.), *Errors made by Finns and Swedish-speaking Finns in the learning of English*. Abo, Finland: Department of English, Abo Akademi.
- Slabakova, R. (2008). *Meaning in the second language*. Berlin: Mouton de Gruyter.
- Slabakova, R. (2010). Semantic theory and second language acquisition. *Annual Review of Applied Linguistics*, 30, 231-247.
- Slabakova, R. (2012). L2 semantics. In S. Gass & A. Mackey (Eds.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 127-146). London/New York: Routledge.
- Slater, A., & Oates, J. (2005). Sensation to perception. In J. Oates, C. Wood, & A. Greyson (Eds.), *Psychological Development and Early Childhood*. Oxford: Blackwell.

- Smirnova, D., Walters, J., Fine, J., Muchnik-Rozanov, Y., Paz, M., Lerner, V., . . . Bersudsky, Y. (2015). Second language as a compensatory resource for maintaining verbal fluency in bilingual immigrants with schizophrenia. *Neuropsychologia*, 75, 597-606.
- Smith, B., Bradlow, A. R., & Bent, T. (2003). *Production and perception of temporal contrasts in foreign-accented English*. Paper presented at the Proceedings of the International Congress on Phonetic Science, Barcelona, Spain.
- Sokolik, M., & Smith, M. (1992). Assignment of Gender to French Nouns in Primary and Secondary Language: A Connectionist Model. *Second Language Research*, 8(1), 39-58.
- Song, L., Spier, E. T., & Tamis-LeMonda, C. S. (2014). Reciprocal influences between maternal language and children's language and cognitive development in low-income families. *Journal of Child Language*, 41(2), 305-326.
- Sorace, A. (2011). Pinning down the concept of "interface" in bilingualism. *Linguistic Approaches to Bilingualism*, 1, 1-33.
- Sorace, A., & Filiaci, F. (2006). Anaphora resolution in near-native speakers of Italian. *Second Language Research*, 22, 339-368.
- Sorace, A., & Serratrice, L. (2009). Internal and external interfaces in bilingual language development: beyond structural overlap. *International Journal of Bilingualism*, 13, 195-210.
- Sorace, A., Serratrice, L., Filiaci, F., & Baldo, M. (2009). Discourse conditions on subject pronoun realization: testing the linguistic intuitions of bilingual children. *Lingua*, 119, 460-477.
- Spaulding, T. J., Plante, E., & Farinella, K. A. (2006). Eligibility criteria for language impairment: Is the low end of normal always appropriate? *Language, Speech, and Hearing Services in Schools*, 37(1), 61-72.
- Stackhouse, J., & Wells, B. (1997). *Children's Speech and Literacy Difficulties: A Psycholinguistic Framework*. Chichester: Whurr.
- Sterne, J. A. C., White, I. R., Carlin, J. B., Spratt, M., Royston, P., Kenward, M. G., . . . Carpenter, J. R. (2009). Multiple imputation for missing data in epidemiological and clinical research: potential and pitfalls. *BMJ*, 338, b2393.
- Steyerberg, E. W. (2009). *Clinical prediction models*. New York: Springer.
- Strijkers, K., Baus, C., Runnqvist, E., Fitzpatrick, I., & Costa, A. (2013). The temporal dynamics of first versus second language production. *Brain and Language*, 127(1), 6-11.
- Su, I. (2001). Transfer of sentence processing strategies: A comparison of L2 learners of Chinese and English. *Applied Psycholinguistics*, 22, 83-112.
- Sutter, J. C., & Johnson, C. J. (1990). School-age children's metalinguistic awareness of grammaticality in verb form. *Journal of Speech and Hearing Research*, 33, 84-95.
- Swain, M. (1991). French immersion and its offshoots: Getting two for one. In F. Barbara (Ed.), *Foreign language acquisition research and the classroom* (pp. 91-103). Lexington, MA: Heath.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using Multivariate Statistics* (5th ed.). Upper Saddle River, NJ: Pearson Allyn & Bacon.
- Tan, S. H. (2008). *Language Background Questionnaire IV* (M.S.), National University of Singapore, Singapore.
- Tang, C., & van Heuven, V. J. (2007). Mutual intelligibility and similarity of Chinese dialects: Predicting judgments from objective measures. *Linguistics in the Netherlands*, 24, 223-234.
- Tang, C., & Van Heuven, V. J. (2009). Mutual intelligibility of Chinese dialects experimentally tested. *Lingua*, 119, 709-732.

- Teoh, W. Q., Brebner, C., & McCormack, P. (2012). Assessing the language skills of children from culturally and linguistically diverse backgrounds: the expressive vocabulary performance of Singaporean English-Mandarin bilingual pre-schoolers. *Int J Speech Lang Pathol*, 14(3), 281-291.
- Terry, G., & Braun, V. (2011). "I'm committed to her and the family": positive accounts of vasectomy among New Zealand men. *Journal of Reproductive and Infant Psychology*, 29, 276-291.
- Tesch, R. (1990). *Qualitative research: Analysis types and software tools*. New York: Falmer.
- Thal, D. J., & Katich, J. (1996). Predicaments in early identification of specific language impairment: does the early bird always catch the worm? In D. J. Thal, K. N. Cole, & P. S. Dale (Eds.), *Assessment of Communication and Language* (pp. 1-28). Baltimore: Brooks Publishing Company.
- Thije, J. D., & Zeevaert, L. (2007). *Receptive multilingualism: linguistic analyses, language policies, and didactic concepts*. Amsterdam/Philadelphia: John Benjamins.
- Thomas, M. (1991). Universal grammar and the interpretation of reflexives in a second language. *Language*, 67, 211-239.
- Thompson, C. K. (2007). Complexity in language learning and treatment. *American Journal of Speech Language Pathology*, 16(1), 3-5.
- Thompson, C. K., & Shapiro, L. P. (2007). Complexity in treatment of syntactic deficits. *American Journal of Speech Language Pathology*, 16(1), 30-42.
- Thompson, C. K., Shapiro, L. P., Kiran, S., & Sobecks, J. (2003). The role of syntactic complexity in treatment of sentence deficits in agrammatic aphasia: The complexity account of treatment efficacy (CATE). *Journal of Speech, Language and Hearing Research*, 46, 591-607.
- Thordardottir, E. T. (2005). Early lexical and syntactic development in Quebec French and English: implications for cross-linguistic and bilingual assessment. *International Journal of Language & Communication Disorders*, 40(3), 243-278.
- Thordardottir, E. T., Cloutier, G., Ménard, S., Pelland-Blais, E., & Rvachew, S. (2015). Monolingual or Bilingual Intervention for Primary Language Impairment? A Randomized Control Trial. *Journal of Speech, Language and Hearing Research*, 58, 287-299.
- Thordardottir, E. T., & Namazi, M. (2007). Specific language impairment in French-speaking children: Beyond grammatical morphology. *Journal of Speech, Language, and Hearing Research*, 50, 698-715.
- Thordardottir, E. T., Rothenberg, A., Rivard, M. E., & Naves, R. (2006). Bilingual assessment: Can overall proficiency be estimated from separate measurement of two languages? *Journal of Multilingual Communication disorders*, 4, 1-21.
- Tinsley, H. E. A., & Weiss, D. J. (2000). Interrater reliability and agreement. In H. E. A. Tinsley & S. D. Brown (Eds.), *Handbook of Applied Multivariate Statistics and Mathematical Modeling*. San Diego, CA: Academic Press.
- Tomasello, M. (2003). *Constructing a language: A usage-based theory of language acquisition*. Cambridge, MA: Harvard University Press.
- Tomblin, J. B., Records, N. L., Buckwalter, P., Zhang, X., Smith, E., & O'Brien, M. (1997). Prevalence of specific language impairment in kindergarten children. *Journal of Speech, Language and Hearing Research*, 40, 1245-1260.
- Tomblin, J. B., Records, N. L., & Zhang, X. (1996). A system for the diagnosis of specific language impairment in kindergarten children. *Journal of Speech and Hearing Research*, 39, 1284-1294.

- Tomblin, J. B., Zhang, X., Buckwalter, P., & O'Brien, M. (2003). The stability of primary language disorders: Four years after kindergarten diagnosis. *Journal of Speech, Language and Hearing Research*, 46(6), 1283-1296.
- Tonoike, S. (2013). Generative linguistics. In P. Robinson (Ed.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 276-278). New York/London: Routledge.
- Trueswell, J. C., Tanenhaus, M. K., & Kello, C. (1993). Verb-specific constraints in sentence-processing: Separating effects of lexical preference from garden-paths. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 19, 528-553.
- Tsang, K. K.-S., & Stokes, S. F. (2001). Syntactic awareness of Cantonese speaking children. *Journal of Child Language*, 28, 703-739.
- Tsang, W. L. (2016). Acquisition of English number agreement: L1 Cantonese–L2 English–L3 French speakers versus L1 Cantonese–L2 English speakers. *International Journal of Bilingualism*, 20(5), 611-635.
- Tsarfaty, R., Seddah, D., Kübler, S., & Nivre, J. (2013). Parsing morphologically rich languages. *Computational Linguistics*, 39(1), 15-22.
- Tse, C.-S., & Pu, X. (2013). Testing effects for novel word learning in Chinese-English bilinguals. In J. Altarriba & L. Isurin (Eds.), *Memory, language, and bilingualism: theoretical and applied approaches* (pp. 256-290). Cambridge: Cambridge University Press.
- Tsimpli, I. M. (2014). Early, late or very late: timing acquisition and bilingualism. *Linguistic Approaches to Bilingualism*, 4, 393-402.
- Tsimpli, I. M., & Dimitrakopoulou, M. (2007). The interpretability hypothesis: evidence from wh-interrogatives in L2 acquisition. *Second Language Research*, 23, 215-242.
- Tsimpli, I. M., & Sorace, A. (2006). Differentiating interfaces: L2 performance in syntax-semantics and syntax-discourse phenomena. In D. Bamman, T. Magnitskaia, & C. Zaller (Eds.), *Proceedings of the 30th Annual Boston University Conference on Language Development* (Vol. II, pp. 635-664). Somerville, MA: Cascadia Press.
- Tsimpli, I. M., Sorace, A., Heycock, C., & Filiaci, F. (2004). First language attrition and syntactic subjects: A study of Greek and Italian near-native speakers of English. *International Journal of Bilingualism*, 8(3), 257-277.
- Tucker, G. R. (1999). *A Global Perspective on Bilingualism and Bilingual Education*. Utrecht: Carnegie Mellon University.
- Tunmer, W. E., Herriman, M. L., & Nesdale, A. R. (1988). Metalinguistic abilities and beginning reading. *Reading Research Quarterly*, 23(2), 134-158.
- Tzeng, O. J. L., & Wang, W. S.-Y. (1983). The First Two R's: The Way Different Languages Reduce Speech to Script Affects How Visual Information Is Processed in the Brain. *American Scientist*, 71, 238-243.
- Ullman, M. (2001). The neural basis of lexicon and grammar in first and second language: the declarative/procedural model. *Bilingualism: Language and Cognition*, 4, 105-122.
- Ullman, M. (2005). A cognitive neuroscience perspective on second language acquisition: the declarative/procedural model. In C. Sanz (Ed.), *Mind and context in adult second language acquisition: methods, theory and practice* (pp. 141-178). Washington, DC: Georgetown University Press.
- Ullman, M., & Pierpont, E. (2005). Specific language impairment is not specific to language: The procedural deficit hypothesis. *Cortex*, 41, 399-433.
- Unsworth, S. (2008). Comparing child L2 development with adult L2 development: how to measure L2 proficiency. In B. Haznedar & E. Gavruseva (Eds.), *Current trends in child second language acquisition: a generative perspective* (pp. 301-333). Amsterdam: John Benjamins.

- Unsworth, S., Argyri, F., Cornips, L., Hulk, A., Sorace, A., & Tsimpli, I. M. (2014). On the role of age of onset and input in early child bilingualism in Greek and Dutch. *Applied Psycholinguistics*, 35, 765-805.
- Valenzuela, E. (2006). L2 end state grammars and incomplete acquisition of Spanish CLLD constructions. In R. Slabakova, S. Montrul, & P. Prevost (Eds.), *Inquiries in Linguistic Development: In Honor of Lydia White* (pp. 283-304). Amsterdam: Johns Benjamins.
- van Wijngaarden, S. J. (2001). Intelligibility of native and non-native Dutch speech. *Speech Communication*, 35, 103-113.
- van Wijngaarden, S. J., Steeneken, H. J. M., & Houtgast, T. (2002). Quantifying the intelligibility of speech in noise for non-native listeners. *Journal of Acoustic Society of America*, 111(1906-1916).
- Vandenbroucke, J. P., von Elm, E., Altman, D. G., Gotzsche, P. C., Mulrow, C. D., Pocock, S. J., . . . Egger, M. (2007). Strengthening the Reporting of Observational Studies in Epidemiology (STROBE): explanation and elaboration. *PLoS Med.*, 4, e297.
- VanPatten, B., & Benati, A. G. (2010). *Key Terms in Second Language Acquisition*. London: Continuum.
- Verdon, S., McLeod, S., & Wong, S. (2015). Reconceptualizing practice with multilingual children with speech sound disorders: people, practicalities and policy. *International Journal of Language & Communication Disorders*, 50(1), 48-62.
- Verreyt, N., Bogaerts, L., Cop, U., Bernolet, S., De Letter, M., Hemelsoet, D., . . . Duyck, W. (2013). Syntactic priming in bilingual patients with parallel and differential aphasia. *Aphasiology*, 27, 867-887.
- von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gotzsche, P. C., & Vandenbroucke, J. P. (2007). The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *Lancet*, 370, 1453-1457.
- Vygotsky, L. S. (1986). *Thought and Language*. Cambridge, MA: MIT Press.
- Walters, J., Armon-Lotem, S., Gagarina, N., & Remennick, L. (2009). *Language acquisition as a window to social integration among Russian language minority children in Germany and Israel*. Paper presented at the The Mitigation and Societal Integration Consortium, Jena, Germany.
- Wang, C.-C., Ding, Q.-L., Tao, H., & Li, H. (2012). Comment on “Phonemic Diversity Supports a Serial Founder Effect Model of Language Expansion from Africa”. *Science*, 657.
- Wang, H. (2012, 5 July). Shanghai pupils taught to speak like a local. *China Daily (Europe)*. Retrieved from http://europe.chinadaily.com.cn/china/2012-07/05/content_15550024.htm
- Watkins, R., & Rice, M. L. (1991). Verb particle and preposition acquisition in language impaired preschoolers. *Journal of Speech and Hearing Research*, 34, 1130-1141.
- Weinreich, U. (1953). *Languages in Contact: Findings and Problems*. The Hague: Mouton.
- White, L. (1985). The “pro-drop” parameter in adult second language acquisition. *Language Learning*, 35, 47-62.
- White, L. (1989). *Universal grammar and second language acquisition*. Amsterdam: John Benjamins.
- White, L. (1996). Universal grammar and second language acquisition: Current trends and new directions. In W. C. Ritchie & T. K. Bhatia (Eds.), *Handbook of second language acquisition* (pp. 85-120). San Diego, CA: Academic Press.
- White, L. (2003). *Second language acquisition and universal grammar*. Cambridge: Cambridge University Press.

- White, L. (2009). Grammatical theory: interfaces and L2 knowledge. In W. C. Ritchie & T. K. Bhatia (Eds.), *The new handbook of second language acquisition* (pp. 49-68). Bingley: Emerald.
- White, L. (2011a). The Interface Hypothesis: How far does it extend? *Linguistic Approaches to Bilingualism*, 1, 108-110.
- White, L. (2011b). Second language acquisition at the interfaces. *Lingua*, 121, 577-590.
- White, L. (2013). Universal grammar and SLA. In P. Robinson (Ed.), *The Routledge Encyclopedia of Second Language Acquisition* (pp. 670-674). New York/London: Routledge.
- Whitley, M. S. (2002). *Spanish/English contrasts: A course in Spanish linguistics* (2 ed.). Washington: Georgetown University Press.
- Wichura, M. J. (2006). *The coordinate-free approach to linear models*. Cambridge: Cambridge University Press.
- Xu-Rattanasone, N. (2016). *Acquisition of plural morphology by English monolingual, Chinese L1 and other L1 speaking children*. Paper presented at the CLaS/CCD Workshop - Issues in Bilingual and Multilingual Language Acquisition, Sydney.
- Xu, B., Tang, Z., You, R., Qian, N., Shi, R., & Shen, Y. (1988). *Shanghai Shiqü Fangyan Zhi [Urban Shanghai Dialects]*. Shanghai: Shanghai Education Press.
- Xu, K., Soli, S. D., Zheng, Y., Liu, S., Li, G., Tao, Y., & Meng, Z. (2015). Quantification of the effects of Mandarin dialect differences on the use of norm-referenced speech perception tests. *International Journal of Audiology*, 54(7), 461-466.
- Yavaş, M. (2002). Voice onset time patterns in bilingual phonological development. In F. Windsor, M. L. Kelly, & N. Hewlett (Eds.), *Investigations in Clinical Phonetics and Linguistics* (pp. 341-350). Mahwah, NJ: Erlbaum.
- Yiakoumetti, A., & Esch, E. (2010). Educational complexities inherent in bidialectal communities and the potential contribution of the Common European Framework to second-dialect development. In L. Carson & B. O'Rourke (Eds.), *Language learner autonomy: Policy, curriculum, classroom* (pp. 291-312). Oxford: Peter Lang.
- Yiakoumetti, A., & Mina, M. (2011). The influence of first-language bidialectism in foreign-language classrooms: observations from Cyprus. *Language, Culture and Curriculum*, 24(3), 287-297.
- Yip, V., & Matthews, S. (2000). Syntactic transfer in a Cantonese-English bilingual child. *Bilingualism: Language and Cognition*, 3, 193-207.
- Yip, V., & Matthews, S. (2006). Assessing language dominance in bilingual acquisition: A case for mean length of utterance differentials. *Language Assessment Quarterly*, 3, 97-166.
- Yuan, B. (2017). Can L2 sentence processing strategies be native-like? Evidence from English speakers' L2 processing of Chinese base-generated-topic sentence. *Lingua*, 191-192, 42-64.
- Zapata, G., Sánchez, L., & Toribio, A. J. (2005). Contact and contracting Spanish. *International Journal of Bilingualism*, 9(3-4), 377-395.
- Zdorenko, T., & Paradis, J. (2008). The acquisition of articles in child second language English: fluctuation, transfer or both? *Second Language Research*, 24, 227-250.
- Zee, E. (1999). Chinese (Hong Kong Cantonese). In I. I. P. Association (Ed.), *Handbook of the International Phonetic Association* (pp. 58-60). Cambridge: Cambridge University Press.
- Zee, E. (2003). *The phonetic characteristics of the sounds in Standard Chinese (Beijing)*. Paper presented at the The 15th North American Conference on Chinese Linguistics,, Michigan State University, East Lansing, MI.

- Zhang, D. (2010). Linguistic distance effect on cross-linguistic transfer of morphological awareness. *Applied Psycholinguistics*, 34(5), 917-942.
- Zhang, Q., Liang, L., Yao, P., Hu, S., & Chen, B. (2017). Parallel morpho-orthographic and morpho-semantic activation in processing second language morphologically complex words: Evidence from Chinese-English bilinguals. *International Journal of Bilingualism*, 21(3), 291-305.
- Zhang, X., & Guo, Z. (2012). Hegemony and counter-hegemony: The politics of dialects in TV programs in China. *Chinese Journal of Communication*, 5, 300-315.
- Zhang, Z. (Ed.) (2013). *Language Atlas of China: The Chinese Dialects* (2nd ed.). Beijing: The Commercial Press.
- Zhengzhang, S., & Zheng, W. (2015). Wu dialect. In W. S.-Y. Wang & C. Sun (Eds.), *The Oxford Handbook of Chinese Linguistics* (pp. 189-202). Oxford: Oxford University Press.
- Zhu, H. (2007). Putonghua (Modern Standard Chinese) speech acquisition. In S. McLeod (Ed.), *The international guide to speech acquisition* (pp. 516 - 527). Clifton Park, NY: Thomson Delmar Learning.
- Zurer-Pearson, B. (2010). We can no longer afford a monolingual norm. *Applied Psycholinguistics*, 31, 339-343.

Appendices

Appendix I - Test targets

[Appendix I has been removed due to confidentiality]

Appendix II – Recruitment Package

[Appendix II has been removed due to confidentiality]

Appendix III – Statistical Outputs

Table 1: Group answers (count) to the ONLY structure

Target No.	Answers	Monodialectal			Bidialectal		
		Beijing	Henan	Total	Shanghai	Shaoxing	Total
1	A	35	37	72	2	0	2
	B	1	1	2	0	0	0
	C	0	0	0	0	0	0
	AB	1	1	2	37	40	77
	AC	0	1	1	0	0	0
	BC	0	1	1	0	0	0
	ABC	0	0	0	0	0	0
2	A	32	38	70	13	9	22
	B	0	1	1	1	1	2
	C	4	1	5	0	0	0
	AB	0	0	0	25	23	48
	AC	1	0	1	0	4	4
	BC	0	1	1	0	0	0
	ABC	0	0	0	0	3	3
3	A	34	36	70	17	10	27
	B	1	1	2	1	0	1
	C	0	2	2	0	1	1
	AB	2	2	4	21	25	46
	AC	0	0	0	0	2	2
	BC	0	0	0	0	0	0
	ABC	0	0	0	0	2	2
4	A	33	32	65	12	5	17
	B	1	2	3	0	0	0
	C	0	3	3	0	0	0
	AB	3	2	5	20	29	49
	AC	0	2	2	5	0	5
	BC	0	0	0	0	0	0
	ABC	0	0	0	2	6	8
5	A	31	34	65	12	12	24
	B	0	3	3	0	2	2
	C	3	2	5	0	0	0
	AB	2	1	3	27	23	50
	AC	1	1	2	0	1	1
	BC	0	0	0	0	0	0
	ABC	0	0	0	0	2	2
6	A	37	36	73	10	6	16
	B	0	1	1	0	1	1
	C	0	0	0	0	0	0
	AB	0	4	4	29	33	62
	AC	0	0	0	0	0	0
	BC	0	0	0	0	0	0
	ABC	0	0	0	0	0	0
7	A	36	22	58	0	3	3
	B	0	2	2	0	1	1
	C	1	1	2	0	0	0
	AB	0	14	14	39	31	70
	AC	0	0	0	0	1	1
	BC	0	2	2	0	0	0
	ABC	0	0	0	0	4	4
8	A	33	30	63	13	7	20
	B	2	1	3	0	0	0
	C	0	0	0	0	0	0
	AB	2	10	12	26	32	58
	BC	0	0	0	0	1	1
	ABC	0	0	0	0	0	0
9	A	31	24	55	6	3	9
	B	3	2	5	0	1	1
	C	2	1	3	0	2	2
	AB	1	10	11	30	22	52
	AC	0	4	4	2	2	4
	BC	0	0	0	0	1	1
	ABC	0	0	0	1	9	10
10	A	20	27	47	6	6	12
	B	2	1	3	0	0	0
	C	12	1	13	2	1	3
	AB	1	7	8	21	25	46
	AC	2	1	3	0	0	0
	BC	0	0	0	0	1	1
	ABC	0	4	4	10	7	17

Table 2: Group answers (count) to the EVERY structure

Target No.	Answers	Monodialectal			Bidialectal		
		Beijing	Henan	Total	Shanghai	Shaoxing	Total
11	A	34	30	64	1	15	16
	B	1	1	2	4	0	4
	C	0	1	1	0	0	0
	AB	2	9	11	33	24	57
	AC	0	0	0	0	0	0
	BC	0	0	0	0	0	0
	ABC	0	0	0	1	1	2
12	A	36	38	74	0	11	11
	B	1	1	2	6	0	6
	C	0	0	0	0	0	0
	AB	0	1	1	30	29	59
	AC	0	1	1	1	0	1
	BC	0	0	0	1	0	1
	ABC	0	0	0	1	0	1
13	A	36	40	76	3	9	12
	B	0	0	0	3	0	3
	C	1	0	1	0	0	0
	AB	0	1	1	31	30	61
	AC	0	0	0	0	0	0
	BC	0	0	0	0	0	0
	ABC	0	0	0	2	1	3
14	A	35	38	73	10	8	18
	B	1	0	1	9	0	9
	C	0	0	0	0	0	0
	AB	1	1	2	19	32	51
	AC	0	2	2	0	0	0
	BC	0	0	0	1	0	1
	ABC	0	0	0	0	0	0
15	A	33	41	74	6	12	18
	B	3	0	3	7	0	7
	C	0	0	0	0	0	0
	AB	1	0	1	21	28	49
	AC	0	0	0	0	0	0
	BC	0	0	0	2	0	2
	ABC	0	0	0	3	0	3
16	A	37	41	78	2	7	9
	B	0	0	0	8	1	9
	C	0	0	0	0	0	0
	AB	0	0	0	28	32	60
	AC	0	0	0	0	0	0
	BC	0	0	0	0	0	0
	ABC	0	0	0	1	0	1
17	A	37	40	77	1	12	13
	B	0	0	0	7	0	7
	C	0	0	0	0	0	0
	AB	0	1	1	31	27	58
	AC	0	0	0	0	1	1
	BC	0	0	0	0	0	0
	ABC	0	0	0	0	0	0
18	A	34	40	74	0	7	7
	B	1	0	1	4	0	4
	C	2	1	3	1	2	3
	AB	0	0	0	22	18	40
	AC	0	0	0	2	2	4
	BC	0	0	0	3	5	8
	ABC	0	0	0	7	6	13
19	A	36	40	76	1	10	11
	B	1	0	1	8	0	8
	C	0	0	0	0	0	0
	AB	0	1	1	29	30	59
	AC	0	0	0	0	0	0
	BC	0	0	0	1	0	1
	ABC	0	0	0	0	0	0
20	A	36	38	74	2	11	13
	B	0	1	1	9	0	9
	C	0	1	1	0	0	0
	AB	1	1	2	28	29	57
	AC	0	0	0	0	0	0
	BC	0	0	0	0	0	0
	ABC	0	0	0	0	0	0

Table 3: Group answers (count) to the BUY structure

Target No.	Answers	Monodialectal			Bidialectal		
		Beijing	Henan	Total	Shanghai	Shaoxing	Total
21	A	18	32	50	34	15	49
	B	0	2	2	1	15	16
	C	0	0	0	1	1	2
	AB	19	6	25	3	9	12
	AC	0	1	1	0	0	0
	BC	0	0	0	0	0	0
	ABC	0	0	0	0	0	0
22	A	33	36	69	38	33	71
	B	1	1	2	0	3	3
	C	0	0	0	0	2	2
	AB	2	3	5	0	0	0
	AC	1	1	2	0	2	2
	BC	0	0	0	0	0	0
	ABC	0	0	0	1	0	1
23	A	31	39	70	34	33	67
	B	6	0	6	2	0	2
	C	0	1	1	0	2	2
	AB	0	0	0	2	4	6
	AC	0	0	0	1	1	2
	BC	0	1	1	0	0	0
	ABC	0	0	0	0	0	0
24	A	28	32	60	36	39	75
	B	4	1	5	1	0	1
	C	0	4	4	0	1	1
	AB	5	3	8	0	0	0
	AC	0	1	1	2	0	2
	BC	0	0	0	0	0	0
	ABC	0	0	0	0	0	0
25	A	9	34	43	32	23	55
	B	5	1	6	1	13	14
	C	0	1	1	0	1	1
	AB	22	3	25	3	3	6
	AC	0	2	2	2	0	2
	BC	1	0	1	0	0	0
	ABC	0	0	0	1	0	1
26	A	6	4	10	36	2	38
	B	26	25	51	0	38	38
	C	0	2	2	0	0	0
	AB	5	8	13	0	0	0
	AC	0	1	1	3	0	3
	BC	0	1	1	0	0	0
	ABC	0	0	0	0	0	0
27	A	7	26	33	33	14	47
	B	7	4	11	0	8	8
	C	0	3	3	1	10	11
	AB	23	4	27	2	2	4
	AC	0	2	2	2	4	6
	BC	0	0	0	0	2	2
	ABC	0	2	2	1	0	1
28	A	25	31	56	32	24	56
	B	7	1	8	1	1	2
	C	0	0	0	0	9	9
	AB	5	3	8	1	2	3
	AC	0	4	4	5	4	9
	BC	0	2	2	0	0	0
	ABC	0	0	0	0	0	0
29	A	12	26	38	22	14	36
	B	9	2	11	6	6	12
	C	0	2	2	9	13	22
	AB	16	6	22	1	2	3
	AC	0	5	5	1	3	4
	BC	0	0	0	0	2	2
	ABC	0	0	0	0	0	0
30	A	11	27	38	22	3	25
	B	6	4	10	4	23	27
	C	0	1	1	7	1	8
	AB	20	8	28	5	10	15
	AC	0	1	1	1	0	1
	BC	0	0	0	0	3	3
	ABC	0	0	0	0	0	0

Table 4: Group answers (count) to the T-C structure

Target No.	Answers	Monodialectal			Bidialectal		
		Beijing	Henan	Total	Shanghai	Shaoxing	South
31	A	10	38	48	36	29	65
	B	0	2	2	1	7	8
	C	0	0	0	0	0	0
	AB	27	0	27	2	4	6
	AC	0	1	1	0	0	0
	BC	0	0	0	0	0	0
	ABC	0	0	0	0	0	0
32	A	10	32	42	30	25	55
	B	0	6	6	8	11	19
	C	0	1	1	0	0	0
	AB	26	1	27	1	4	5
	AC	0	0	0	0	0	0
	BC	0	1	1	0	0	0
	ABC	1	0	1	0	0	0
33	A	0	16	16	27	24	51
	B	4	17	21	11	8	19
	C	0	2	2	0	1	1
	AB	33	6	39	1	7	8
	AC	0	0	0	0	0	0
	BC	0	0	0	0	0	0
	ABC	0	0	0	0	0	0
34	A	5	25	30	34	27	61
	B	2	11	13	3	10	13
	C	0	1	1	0	0	0
	AB	30	3	33	2	2	4
	AC	0	1	1	0	0	0
	BC	0	0	0	0	1	1
	ABC	0	0	0	0	0	0
35	A	3	12	15	33	20	53
	B	3	23	26	5	13	18
	C	0	0	0	0	2	2
	AB	29	6	35	1	5	6
	AC	0	0	0	0	0	0
	BC	0	0	0	0	0	0
	ABC	2	0	2	0	0	0
36	A	6	32	38	37	20	57
	B	3	1	4	1	17	18
	C	0	0	0	0	0	0
	AB	27	7	34	1	2	3
	AC	0	0	0	0	0	0
	BC	0	1	1	0	0	0
	ABC	1	0	1	0	1	1
37	A	2	26	28	37	25	62
	B	2	8	10	1	11	12
	C	0	0	0	0	0	0
	AB	33	6	39	1	4	5
	AC	0	1	1	0	0	0
	BC	0	0	0	0	0	0
	ABC	0	0	0	0	0	0
38	A	3	31	34	38	22	60
	B	3	6	9	0	11	11
	C	0	0	0	0	1	1
	AB	31	3	34	1	5	6
	AC	0	1	1	0	1	1
	BC	0	0	0	0	0	0
	ABC	0	0	0	0	0	0
39	A	4	26	30	35	21	56
	B	0	9	9	3	13	16
	C	0	2	2	0	1	1
	AB	33	3	36	0	5	5
	AC	0	0	0	1	0	1
	BC	0	1	1	0	0	0
	ABC	0	0	0	0	0	0
40	A	4	32	36	34	28	62
	B	1	6	7	2	9	11
	C	0	0	0	0	1	1
	AB	32	2	34	2	2	4
	AC	0	1	1	1	0	1
	BC	0	0	0	0	0	0
	ABC	0	0	0	0	0	0

Table 5: Univariate analysis of variance - Tests of between-subject effects (overall performance)

Dependent Variable: Participants' Overall Performance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7039.532 ^a	16	439.971	20.960	.000	.857
Intercept	279.069	3	279.069	13.295	.001	.192
Lived in Other Places	127.056	3	127.056	6.053	.017	.098
Time Lived in Other Places	63.832	3	63.832	3.041	.087	.052
Mother's Education	62.952	3	62.952	2.999	.089	.051
Mother's Birth Place	29.447	3	29.447	1.403	.241	.024
Mother's Years Residing in Current City	16.009	3	16.009	.763	.386	.013
Father's Education	5.740	3	5.740	.273	.603	.005
Father's Birth Place	2.168	3	2.168	.103	.749	.002
Father's Years Residing in Current City	25.993	3	25.993	1.238	.271	.022
Father's Work Type	1.139	3	1.139	.054	.817	.001
Sibling (Yes/No)	5.829	3	5.829	.278	.600	.005
Number of Siblings	.099	3	.099	.005	.946	.000
Main Dialect Used by the Siblings to the Participants	15.023	3	15.023	.716	.401	.013
Main Dialect Used by the Participants to their Siblings	29.025	3	29.025	1.383	.245	.024
Dialectal Competence Rating (Mandarin Comprehension)	26.718	3	26.718	1.273	.264	.022
Dialectal Competence Rating (Mandarin Production)	14.534	3	14.534	.692	.409	.012
L1 Dialectal Background *Overall performance	2475.463	3	2475.463	117.928	.000	.678
Error	1175.509	56	20.991			
Total	36739.000	73				
Corrected Total	8215.041	72				

a. R Squared = .857 (Adjusted R Squared = .816)

Table 6: Univariate analysis of variance - Tests of between-subject effects (ONLY structure)

Dependent Variable: Participants' performance for the ONLY Structure

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1032.159 ^a	12	86.013	25.255	.000	.793
Intercept	5.650	3	5.650	1.659	.202	.021
Age	1.892	3	1.892	.555	.458	.007
Time Lived in Other Places	1.446	3	1.446	.425	.517	.005
Father's Education	.740	3	.740	.217	.642	.003
Main Dialect Used by Mother	1.557	3	1.557	.457	.501	.006
Main Dialect Used by Father	1.075	3	1.075	.316	.576	.004
Sibling (Yes/No)	.026	3	.026	.008	.930	.000
Number of Siblings	.170	3	.170	.050	.824	.001
Main Dialect Used by the Siblings to the Participants	1.955	3	1.955	.574	.451	.007
Main Dialect Used by the Participants to their Siblings	2.298	3	2.298	.675	.414	.008
Other Carers (Yes/No)	.159	3	.159	.047	.830	.001
Dialectal Competence Rating (Mandarin Production)	.310	3	.310	.091	.764	.001
L1 Dialectal Background*Performance for the ONLY structure	547.694	3	547.694	160.812	.000	.671
Error	269.058	79	3.406			
Total	2904.000	92				
Corrected Total	1301.217	91				

a. R Squared = .793 (Adjusted R Squared = .762)

Table 7: Univariate analysis of variance - Tests of between-subject effects (EVERY structure)

Dependent Variable: Participants' Performance for the EVERY Structure

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	976.085 ^a	6	162.681	39.514	.000	.642
Intercept	.168	3	.168	.041	.840	.000
Age	2.361	3	2.361	.573	.450	.004
Sibling (Yes/No)	.001	3	.001	.000	.985	.000
Number of Siblings	3.439	3	3.439	.835	.362	.006
Main Dialect Used by the Siblings to the Participants	5.097	3	5.097	1.238	.268	.009
Main Dialect Used by the Participants to their Siblings	10.128	3	10.128	2.460	.119	.018
L1 Dialectal Background*Performance for the EVERY structure	595.558	3	595.558	144.655	.000	.523
Error	543.455	132	4.117			
Total	3680.000	139				
Corrected Total	1519.540	138				

a. R Squared = .642 (Adjusted R Squared = .626)

Table 8: Univariate analysis of variance - Tests of between-subject effects (BUY structure)

Dependent Variable: Participants' Performance for the BUY Structure

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	196.211 ^a	13	15.093	3.876	.000	.384
Intercept	9.878	3	9.878	2.537	.115	.030
Age	.851	3	.851	.219	.641	.003
Mother's Education	7.653	3	7.653	1.965	.165	.024
Mother's Birth Place	2.857	3	2.857	.734	.394	.009
Mother's Years Residing in Current City	1.907	3	1.907	.490	.486	.006
Father's Education	.091	3	.091	.023	.879	.000
Father's Birth Place	.403	3	.403	.103	.749	.001
Father's Years Residing in Current City	3.115	3	3.115	.800	.374	.010
Father's Work Type	2.555	3	2.555	.656	.420	.008
Main Dialect Used by Father	7.710	3	7.710	1.980	.163	.024
Main Dialect Used between Mother and Father	2.819	3	2.819	.724	.397	.009
Dialectal Competence Rating (Mandarin Comprehension)	2.607	3	2.607	.670	.416	.008
Dialectal Competence Rating (Mandarin Production)	.003	3	.003	.001	.979	.000
L1 Dialectal Background*Performance for the BUY structure	8.335	3	8.335	2.141	.147	.026
Error	315.410	81	3.894			
Total	4480.000	95				
Corrected Total	511.621	94				

a. R Squared = .384 (Adjusted R Squared = .285)

Table 9: Univariate analysis of variance - Tests of between-subject effects (T-C structure)

Dependent Variable: Participants' Performance for the T-C Structure

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	431.183 ^a	15	28.746	3.505	.000	.484
Intercept	2.364	3	2.364	.288	.593	.005
Age	3.087	3	3.087	.376	.542	.007
Time Lived in Other Places	1.893	3	1.893	.231	.633	.004
Mother's Education	5.330	3	5.330	.650	.424	.011
Mother's Birth Place	95.767	3	95.767	11.677	.001	.173
Mother's Years Residing in Current City	34.046	3	34.046	4.151	.046	.069
Father's Education	2.074	3	2.074	.253	.617	.004
Father's Birth Place	8.504	3	8.504	1.037	.313	.018
Father's Years Residing in Current City	7.685	3	7.685	.937	.337	.016
Sibling (Yes/No)	.729	3	.729	.089	.767	.002
Number of Siblings	2.263	3	2.263	.276	.601	.005
Main Dialect Used by the Siblings to the Participants	1.496	3	1.496	.182	.671	.003
Main Dialect Used by the Participants to their Siblings	.039	3	.039	.005	.945	.000
Dialectal Competence Rating (Mandarin Comprehension)	.002	3	.002	.000	.987	.000
L1 Dialectal Background*Performance for the T-C structure	68.134	3	68.134	8.308	.06	.129
Error	459.262	56	8.201			
Total	3728.000	72				
Corrected Total	890.444	71				

a. R Squared = .484 (Adjusted R Squared = .346)

[End of thesis]