Studies in Linguistics and Literature
ISSN 2573-6434 (Print) ISSN 2573-6426 (Online)
Vol. 7, No. 1, 2023
www.scholink.org/ojs/index.php/sll

Original Paper

Linguistic Codeswitching as a Cross-linguistic Lexical Bridge in Bilingual Communication

Longxing Wei[1*]

[1] Department of Linguistics, Montclair State University, New Jersey, USA

[*] Longxing Wei, Department of Linguistics, Montclair State University, New Jersey, USA

Received: February 5, 2023 Accepted: February 16, 2023 Online Published: February 24, 2023

doi:10.22158/sll.v7n1p69 URL: http://dx.doi.org/10.22158/sll.v7n1p69

Abstract

Most studies of linguistic codeswitching (CS) focus on what language items can be switched and how such switched items are intrasententially configurated at the surface sentence level. This study investigates linguistic CS at a rather abstract level by adopting the Bilingual Lemma Activation (BLA) Model (Wei, 2020). This model claims that lemmas (i.e., abstract entries in the mental lexicon about lexemes) are language-specific, language-specific lemmas are in contact in bilingual speech involving CS, and thus CS is cross-linguistically and lexical-conceptually driven in bilingual communication. In support of such a claim, this study provides evidence that bilinguals perform CS as a communicative strategy to make their intended meanings realized in terms of language-specific lemmas activated for the current exchange. Some typical instances of naturally occurring CS as observed in various language pairs involved in CS are described and explained at two levels of abstract lexical structure: lexical-conceptual structure and predicate-argument structure. This study offers some explanations of linguistic CS from a particular perspective and aims to explore the nature and activity of the bilingual mental lexicon during CS.

Keywords

codeswitching, CS, lemma, bilingual, mental lexicon, language-specific, lexical-conceptual, predicate-argument, activation

1. Introduction

As commonly observed in bilingual speech production, bilinguals may switch between two linguistic codes in their communication with other bilinguals who share the same languages. This phenomenon is known as linguistic “codeswitching”. Bilinguals may codeswitch intersententially (i.e., across sentence boundaries) or intrasententially (within sentence boundaries). Different from intersentential

codeswitching, intrasentential codeswitching (hereafter "CS" for short) involves particular types of morphemes (i.e., types of constituents) switched into the syntactic slots within a clause or sentence boundary, and the syntactic slots are determined by a particular grammatical frame provided by the "main" (traditionally recognized as the "host" language) language being currently used by the bilingual speech. This "main" language is recognized as the "Matrix Language" (ML), and the other language (traditionally recognized as the "guest" language) which contributes particular types of morphemes is recognized as "Embedded Language" (EL) in the Matrix Language Frame (MLF) Model (Myers-Scotton, 1993 [1997], 2002).

Most previous studies of CS described the types of items which can be switched and surface configurations of switched items in terms of structural positions (e.g., Lipski, 1977; Pfaff, 1979; Poplack, 1980; Sridhar & Sridhar, 1980; Gumperz, 1982; Woodford, 1983; Muysken, 1990, 1991; Azuma, 1991; Toribio & Robin, 1996; MacSwan, 1997, 1999a, 1999b; Ritchie & Bhatia, 1999, among others). Different from such studies, the Bilingual Lemma Activation (BLA) Model (Wei, 2006, 2009a, 2015, 2020) focuses on the nature and activity of the bilingual mental lexicon during the bilingual speech production process involve in CS. It proposes that "lemmas" in the bilingual mental (i.e., abstract entries in the mental lexicon about particular lexemes) are language-specific, and language-specific lemmas are in contact in CS. The BLA Model claims that it is cross-linguistic lemma variations that motive CS, and bilinguals may switch certain content morphemes from the EL into the grammatical frame of the ML as a cross-linguistic lexical bridge to realize their communicative intentions. Thus, this study defines CS as a linguistic outcome of language-specific lemmas in contact and explains CS at a rather abstract level.

2. Constraints on Morphosyntactic Frame and Morpheme Types in Codeswitching

The MLF Model proposes two asymmetries between the participating languages involved in CS. The first asymmetry between the participating languages is their respective grammatical roles in constructing CS utterances. As claimed, bilinguals can activate whichever language as the ML, and it is the ML that provides the sentential frame into which the items from the EL are switched. The second asymmetry between the participating languages is their respective contribution of morphemes to CS utterances. As claimed, The ML provides most content morphemes and all system morphemes, and the EL only provides content morphemes. *The Matrix Language Hypothesis*: The ML provides the morphosyntactic frame for ML + EL constituents is the most important premise of the MLF Model, which contains two specific principles: *the Morpheme Order Principle*: In ML + EL constituents, the surface morpheme order must not violate that of the ML, and *the System Morpheme Principle*: In ML + EL constituents, all system morphemes having grammatical relations external to their head constituents must come from the ML (Myers-Scotton, 1993, pp. 6-7).

The key assumption underlying the MLF Model is that the ML is central in building the morphosyntactic frame and the EL only contributes content morphemes to CS utterances. The first asymmetry (i.e., the

distinction between the ML and the EL) constrains the morphosyntactic frame in CS, and the second asymmetry (i.e., the distinction between content and system morphemes) constrains the morpheme types that can be switched in CS. This study assumes that bilinguals switch content morphemes from another language to bridge cross-linguistic lexical gaps. Thus, a general definition of the distinction between content and system morphemes becomes necessary.

Content morphemes are the lexical categories having their independent lexical content, such as lexical nouns, verbs, adjectives, adverbs, and most prepositions. Lexical nouns are thematic role receivers, and lexical verbs are thematic role assigners. Lexical adjectives, adverbs and prepositions contain their descriptive meanings. Lexical prepositions are also thematic role assigners. "The characteristic properties of content morphemes should be largely self-evident; they convey the core semantic/pragmatic content of language" (Myers-Scotton & Jake, 2000a, p. 1054).

System morphemes are auxiliary/model verbs, determiners, degree words, inflectional morphemes, and certain prepositions. Such morphemes do not have independent lexical content and only play grammatical/functional roles. "In ML + EL constituents, all system morphemes which have grammatical relations external to their constituent (i.e., which participates in the sentence's thematic role grid) will come from the ML" (Myers-Scotton, 1997, p. 98).

Below are some typical examples of the distinction between the ML and the EL and the distinction between content and system morphemes as observed in CS.

[1] a ʃ u ad-ɖa-**ħku**-ɖ kam a-**xalt**-I Zaina?

what perfective aff-2nd sing fem aff- tell-2nd sing aff you Oh- aunt-1st sing pos clit aff Zaina

"What can you tell us aunt Zaina?"

[2] hədaar aθ-□**aɖaɛ**-ɖ **əl-mux**-iw.

watch (it)-null imperative aff 2nd sing fem aff-annoy-2nd sing aff def-brain-1st sing possessive clit aff

"Be careful you started to annoy my brain."

(Berrber/Algerian Arabic; Benhattab, Ouahmiche, & Labed, 2017, p. 7)

[3] **Idea** bubua de gale asiwoa?

"Do you have another idea?"

(Ewe/English; Dzmeshie, 1989, p. 2)

[4] anata wa **registration** o shimashi-ta ka?

you TOP registration OBJ do-PERF PARTIC/QUE

"Have you done your registration?"

(Japanese/English; Wei, 2006, p. 170)

[5] dore gurai koko ni **stay** suru no?
how long about here PREP/LOC stay do PARTIC/QUE
“About how long will you stay here?”
(Japanese/English; Wei, 2006, p. 164)

[6] **Mailbox** li you nidexin.
mailbox PREP/in exist your letter
“There’s a letter for you in the mailbox.”
(Chinese/English; Wei, 2015, p. 55)

[7] Ha-u ku-on-a a-ki-ni-**buy**-i-a **beer** sikuhiyo?
NEG-2s NEG.PST-see-FV 3s-PROG-1s.OBJ-buy-APPL-FV beer day CL9.that
“Didn’t you see him buying beer for me that day?”
(Swahili/English; Myers-Scotton, 2002, p. 98)

[8] wo zuijin hen **busy**. you san-fen **paper** bixu zaiyue-di qian **finish**.
I recently very busy have three-CLASSIF paper must PREP/TIM month-end finish
“I’m recently very busy. I must finish three papers before the end of this month.”
(Chinese/English; Wei, 2018, p. 85)

In [1], “ħku” (tell) is a verbal stem, and “xalt” (aunt) is a noun. Both are content morphemes from Algerian Arabic, the EL. The affixes on the verb and the noun are system morphemes from Berber, the ML. In [2], “□aḍaɛ” (annoy) is a verb, and “əl-mux” (the brain) is a noun. Both are content morphemes from Algerian Arabic, the EL. The affixes on the verb and the noun are system morphemes from Berber, the ML. In [3], the noun “idea”, a content morpheme from English, the EL, is switched into the Ewe sentential frame, where the object noun being questioned occurs in the sentence initial position and follows the Ewe modifier *bubua* (another) in accordance with the Ewe morpheme order. In [4], “registration”, a content morpheme from English, the EL, is switched into the Japanese predicate verb, where the switched noun occurs before the Japanese verb, following the Japanese subject-object-verb order. In [5], “stay”, a content morpheme from English, the EL, is switched into the Japanese *suru* (do) structural phrase, where the verb is introduced in conjunction with *suru*. In [6], “mailbox” is a compound content noun from English, the EL, is switched into the Chinese sentential frame for the prepositional phrase, where the switched compound content noun occurs before the Chinese *li* (in) rather than after it in English. In [7], the switched items “buy” and “beer” are content morphemes from English, the EL, but it is Swahili, the ML, which provides the sentential frame. In this example, “buy” takes two objects, but the

sentential frame of Swahili determines how those objects are realized; the beneficiary is realized as an object prefix on the verb *-ni-* and is further mapped on the sentential frame through the applied verbal suffix *-i-* on the EL verb from English. In [8], "hen busy" (very busy) is a mixed constituent, where the adjective "busy" is from English, the EL, and the degree word *hen* (very) is a system morpheme from Chinese, the ML. The noun phrase "san-fen paper" (three papers) is a mixed constituent, where the system morpheme *san* (three, a numeral) and *fen* (noun classifier) are from Chinese, the ML, and the content morpheme "paper" is from English, the EL. It should also be noticed that in this mixed noun phrase, the English "-s", a system morpheme, for plural marking does not appear. The whole utterance is grammatically framed by the ML, where the object noun phrase "san-fen paper" occurs before the prepositional phrase *zaiyue-di qian* (before the end of this month) and the verb "finish", a content morpheme from the EL.

The above typical examples of CS demonstrate distinctive roles of the ML and the EL participating in CS. It is the ML which grammatically frames the utterances containing the items switched from the EL and provides most content morphemes and all system morphemes. The EL switches only content morphemes into the sentential slots provided by the ML. However, the ML vs. EL hierarchy itself is observational and may not be sufficient enough to explain why the EL only switches content morphemes into the ML sentential frame and why certain EL system morphemes may also be switched with its content morphemes.

Adopting the MLF Model, the BLA Model describes and explains CS at some abstract levels. It claims that the speaker's preverbal message (i.e., intention before speech) at the conceptual level determines which language to be used as the ML in CS. The ML activated at the conceptual level, together with the semantic/pragmatic feature bundles as desired (i.e., intended meaning), activates language-specific lemmas at the lemma level to satisfy the lexical-conceptual structure The BLA Model claims that it is the activated language-specific lemmas which send directions to the speech production formulator at the functional level to satisfy the predicate-argument structure. The encoded predicate-argument structure at the functional is then sent to the positional level (i.e., surface level) for realizing morphological and phonological patterns. Regarding the assumed levels of speech production in general, see Levelt (1989), Levelt, Roelofs and Meyer (1999) and Wei (2002); regarding the bilingual speech production process involving CS in particular, see Myers-Scotton and Jake (2000a) and Wei (2002, 2015).

3. Nature of the Bilingual Mental Lexicon

The BLA Model draws on the model of monolingual speech production and the important notion of "lemmas" (Levelt, 1989) and also the insights in some linguistic and psycholinguistic studies of the bilingual lexical and conceptual representation (Kroll & Stewart, 1994; Kroll & Sunderman, 2003; Costa, 2005; Myers-Scotton & Jake, 1995). As assumed, the mental lexicon contains not only lexemes or lexical items but also abstract information about them (Færch & Kasper, 1984; Talmy, 1985; Ringbom, 1987;

Nation, 1990; Wei, 2001a, 2001b, 2002). Abstract information about particular lexemes contains not only their semantic content but also their phonological structure, morphological structure syntactic environment, pragmatic function, etc. In speech production, speakers retrieve the appropriate lexical items and abstract information about them stored in their mental lexicon to express their intended meanings in a correct and appropriate manner. Pieces of abstract information (i.e., abstract entries) about lexemes in the mental lexicon are defined as "lemma information" or "lemmas" for short (Kempen & Huijbers, 1983; Kempen & Hoenkamp, 1987; Levelt, 1989; Myers-Scotton & Jake, 1995; Levelt, Roelofs, & Meyer, 1999; Wei, 2006). For example, in addition to other pieces of information, the lemmas for *kill* require a subject that carries the thematic role of AGENT (i.e., the person who performs the act of killing), and an object that carries the thematic role of THEME (i.e., the person who undergoes the act of being killed); the lemmas for *give* require a subject that carries the thematic role of AGENT (i.e., the person who performs the act of giving), a direct object that carries the thematic role of THEME (i.e., the thing that is given), and an indirect object that carries the thematic role of RECIPIENT (i.e., the person who receives what is given); the lemmas for *he* require this pronoun to be used as a male subject and the verb must be inflected by *-s* for the subject-verb agreement when the verb is in the present tense; the lemmas for *explode* require a subject that carries the thematic role of THEME (i.e., an entity that does through the process of exploding), rather than an AGENT.

Regarding lemma activation in speech production, the BLA Model draws on the theoretical assumptions underlying Level's model monolingual speech production (1989) and Myers-Scotto and Jake's model of bilingual speech production involving CS (1995, 2000a, 2000b). According to these models, lemmas include three distinctive but related levels of abstract lexical structure. The first is the level of lexical-conceptual structure, where lexical access takes place on the basis of the speaker's preverbal message (i.e., the speaker's communicative intention before speech production). At this level, the speaker's preverbal message activates semantic/pragmatic feature bundles, which are mapped onto lemmas in the mental lexicon as lexical-conceptual structure. The second is the level of predicate-argument structure, where the thematic structure of a particular verb is mapped onto grammatical relations (i.e., thematic role assignment to each argument). The third is the level of morphological realization patterns, where surface grammatical relations, such as word order, auxiliaries, subject-verb agreement, all system morphemes, including inflectional morphology for tense, aspect, voice, mood marking, etc. are realized.

Regarding the nature of the bilingual mental lexicon, the BLA Model draws on the insights in some linguistic and psycholinguistic studies of the bilingual lexical-conceptual representation. It claims that the bilingual mental lexicon is fundamentally different from the monolingual mental lexicon in that lemmas contained in the bilingual mental lexicon are language-specific. This is because though same lexemes may be shared by languages, the lemmas for particular lexemes may differ cross-linguistically. "Mental lexicon represents a complex self-organizing system", but the "bilingual mental lexicon, as

opposed to the monolingual mental one, integrates the units of two linguistic systems and, therefore, ensures the processes of speech perception and production in two languages" (Leshchenko, Dotsenko, & Ostapenko, 2015, p. 1040). The BLA Model claims that bilingual lemmas are language-specific and are in contact during a discourse involving CS.

Regarding the nature and activity of bilingual language systems and the bilingual mental lexicon in speech production, the BLA Model draws on the postulations and assumptions presented in some bilingual studies. Bilingual language systems are assumed to be kept separate and may be activated at different levels as needed at the moment of speaking (Færch & Kasper, 1986; Grosjean & Soares, 1986). The language system of a bilingual is assumed to be organized in two subsets, one for each language, that can be selectively activated, simultaneously activated to different degrees, or independently deactivated of one another (Green, 1986; Paradis, 1989, 1997). Such models of activation vs. deactivation of language modes postulate a specifier which directs how the bilingual system is to be controlled in bilingual speech involving CS. They also pay much attention to the resources that are needed to control the levels of activation. That is, bilinguals often find themselves in their everyday life at various points along the language mode continuum, along which the two languages are activated at different levels in CS (Grosjean, 1985, 1989, 1994, 1997). The BLA Model postulates that when the bilingual is in the bilingual mode to carry out CS, both languages are activated, wit the ML more strongly activated than the EL. It is the language mode chosen and the relative degrees of activation of the ML and the EL that cause the amount of CS in the bilingual speech (Wei, 2000a, 2000b, 2002, 2006).

Different from most models, the BLA Model views activation of bilingual modes at a rather abstract level by postulating another level of activation called the level of "bilingual lemma activation" when bilingual language systems are in contact. The bilingual lemma activation in face-to-face and short message service conversations among Spanish/English and Tagalog/English bilinguals "facilitates the interpretation of bilingual speech behavior and switches between languages as cognitively based strategies at an abstract level" (Sotillo, 2016, p. 21). The BLA Model further proposes that bilingual lemma activation of particular lexical items in the bilingual menta lexicon must mediate between the conceptual level, where lexical-conceptual structure is activated as desired for communication, and the functional level, where predicate-argument structure is projected for the surface formulation at the positional level (Wei, 2020).

4. Codeswitching as Bilingual Lemma Activation

Drawing on the proposals and insights of other models of CS, the BLA Model describes and explains CS at an abstract level by exploring the nature and activity of the bilingual mental lexicon. It proposes that the CS juxtapositions (i.e., the ML vs. the EL, and content vs. system morphemes) originate with grammatical and lexical directions contained in language-specific lemmas contained in the bilingual mental lexicon (Myers-Scotton & Jake, 1995; Wei, 2001a, 2001b, 2015, 2020). As introduced earlier,

lemmas contain abstract entries (i.e., pieces of information) about lexemes stored in the mental lexicon, including phonological, morphological, syntactic, semantic, and pragmatic information. In other words, lemma information stored in the mental lexicon is the speaker's internal representation of knowledge about particular lexemes, their use in actual speech production, and their surface forms.

The BLA Model further proposes that lemmas are language-specific, and CS is a linguistic outcome of language-specific bilingual lemmas in contact. Language-specific bilingual lemmas are in contact because languages differ in their lexicalization patterns in terms of configurations of semantic and pragmatic features across related lemmas. According to Green (1986) and de Bot and Schreuder (1993), lexical items belonging to different languages must be organized in subsets and can be activated or deactivated as needed in bilingual speech. Following this line of thinking, the BLA Model assumes that cross-linguistic differences in lexical information can be realized at the two levels of abstract lexical structure: lexical-conceptual structure and predicate-argument structure. To be demonstrated in this study, it is such cross-linguistic differences at both levels of abstract lexical structure that affect the speaker's code choice. One of the crucial assumptions underlying the BLA Model is that language-specific lemmas drive particular lexicalization patterns, and it is different configurations of semantic and pragmatic feature bundles across related lemmas in different languages that motivate CS. Thus, the BLA Model views CS as a bilingual strategy to activate language-specific lemmas for particular lexical items in another language to satisfy the speaker's intended meaning during bilingual speech involving CS.

5. Activation of Content Morphemes for Switches in Lexical-conceptual Structure

The notion of abstract lexical structure described above is similar to the matching principle that a Semantic Form (SF) triggers a particular lemma "if and only if there exists a complete match of all structures in the SF (i) with all structures in the semantic representation of the lemma" (Bierwisch & Schreuder, 1992, p. 51). Thus, the notion of lexical-conceptual structure (i.e., one of the levels of abstract lexical structure) as proposed in the BLA Model is related to the election of a particular lemma based on whether it has all the primitives contained in the conceptual chunk to be lexicalized. According to de Bot and Schreuder (1993), different languages may have different lexicalization patterns (i.e., lexicalize similar concepts in different ways) and, thus, the language to be used in second language production must be specified before conceptual chunking takes place. According to Wei (2002), the retrieval of lexical items from the bilingual mental lexicon is triggered by the information concerning language choice as contained in the speaker's preverbal message. One of the most important assumptions underlying this study is that it is cross-linguistic differences in semantic/pragmatic features bundles encoded in lexical-conceptual structure which trigger the switch to particular EL lexical items (Myers-Scotton & Jake, 1995; Wei, 2006, 2009a, 2009b, 2020).

Most studies of CS recognize that most items switched from another language are content morphemes, but few studies explain why only content morphemes are frequently switched. This study not only

recognizes the distinction between content and system morphemes identified as one of the hierarchies under the MLF Model but also aims to explain why only content morphemes, rather than system morphemes, are activated from the bilingual mental lexicon in CS. One of the most important claims of the BLA Model is that lemmas are language-specific and language-specific lemmas for certain EL content morphemes are lexical-conceptually projected from the bilingual mental lexicon to satisfy the speaker's intended or desired meaning at the moment of speaking. This is because before CS takes place, a particular EL conceptual chunk must be specified in the speaker's preverbal message at the conceptual level (Poulisse & Bongaerts, 1994; Myers-Scotton & Jake, 1995; Wei, 2002). As introduced earlier, the BLA Model inserts another level between the conceptual level and the functional level: the lemma level, where the activated concepts in the speaker's preverbal message activate the corresponding lemmas. In turn, the sufficiently activated lemmas will activate the associated lexemes (cf. Roelofs, 1992; Levelt, 1989, 1995; Myers-Scotton & Jake, 1995; Wei, 2001a). The BLA Model proposes three levels of abstract lexical structure: lexical-conceptual structure, predicate-argument structure, and morphological realization patterns. This study claims that it is cross-linguistic variations in lexical-conceptual structure (i.e., semantic/pragmatic feature bundles) which motivate language-specific lemma activation in CS. It considers the switched items in terms of their relative importance of lexical-conceptual differences in the language-specific lemmas for particular lexemes.

As observed by Grosjean (1982), Li (1996), Nishimura (1997), and Wei (2001b), speakers practice CS because of the lack of a particular word in one of the languages or the greater availability of a word in the other language which is needed to convey their intended meaning. This study emphasizes that particular lemma differences at the level of lexical-conceptual structure is one of the major reasons for speakers to switch certain content morphemes from the EL as chosen. In other words, speakers may prefer to use certain EL content morphemes because they are aware of the lemma specifications for these morphemes. It is in this sense that language-specific lemmas for certain EL content morphemes are lexical-conceptually projected from the bilingual mental lexicon. Below are some typical examples showing that all the switched items are content morphemes and also revealing that there exist cross-linguistic variations in the semantic/pragmatic feature bundles of conceptually related lexemes.

[9] wo you liang-fen **paper** mintian bixu jiaoshangqu.
I have two-CLASSIF paper tomorrow must turn in
"I must turn in two papers tomorrow."

[10] zhuzaizheli hen fanbian, meitian you **school bus**.
live PREP/LOC here very convenient everyday have school bus
"It's very convenient to live here (since) there is a school bus every day."

[11] wo xiawu qu jian wode **advisor**. Wo bu neng he ni qu **mall** le.

I afternoon go see my advisor I not can with you together go mall PARTIC/AFFIRM

"I'm going to see my advisor this afternoon. I can't go to the mall with you."

[12] naxie **visiting scholar** but shi hen youqian ma? Bi women **student** you qian duo le.

those visiting scholar not/EMPH COP very rich PARTIC/AFFIRM PREP/than us student have money a lot more PARTIC/AFFIRM

"Aren't those visiting scholars very rich? The have a lot more money than us students."

(Chinese ML/English EL; Wei, 2006, pp. 163-169)

In [9], the speaker switches to *paper*, an EL content morpheme, but "liang-fen" is a combined ML system morpheme consisting of the numeral "liang" (two) and the noun classifier "fen". The speaker switches this particular EL content morpheme most probably because of the lemma difference between the two equivalent nouns: "paper" in English and "zhi" in Chinese. While "paper" includes a piece of writing, such as an article, an essay or a research paper, that students are required to complete as an assignment, "zhi" itself only means a piece of paper as a physical material for wrapping things up, for writing something on it or for cleaning something with it. The speaker selects "paper" to replace "zhi" because of the obvious lexical-conceptual differences between the two content morphemes. Thus, the speaker's intended meaning is accurately conveyed. In [10], the speaker switches to *school bus*, an EL content morpheme, without the determiner (an indefinite article) "a", an EL system morpheme. A "school bus" in English pays its particular functions by transporting students to and from a school. A school district has several school buses to pick up students at several designated community locations and drop them up at their schools, and after school these school buses deliver them to where they are picked up. Chinese has the equivalent lexical item "xiaoche", but it does not have the same functions. A "xiaoche" mainly transports a school's sports team, a performance group and/or school equipment. Few schools in China have such "xiaoche". In today's China, some colleges and universities may possess their own "xiaoche" mainly to transport their faculty/staff, not students, to and from their branch campuses which are very far from their main campuses. The speaker is aware of the lemma difference between the two equivalent content morphemes and selects "school bus" to convey his intended meaning more accurately. [11], the speaker switches to *advisor*, an EL content morpheme, but the determiner (a possessive pronoun) "wode" (my), a system morpheme, is from the ML. In an academic/educational setting, an "advisor" in English means an instructor or professor who offers advice, guidance or counsel to students regarding their academic progress or improvement, sequential course requirements, research projects, thesis/dissertation writing, personal issues, and all other education related matters. Most of such advisors also recommend their students to the job market, professional agencies or other institutions for higher learning, such as graduate schools. Though Chinese possesses the lexical item "daoshi", equivalent to "advisor", a

Chinese “daoshi” does not assume the same responsibilities as an English “advisor”. In a Chinese academic/educational setting, only graduate students have their individual “daoshi”, whose only or main responsibility is to supervise their students’ research projects and/or thesis/dissertation writing. In [11], the speaker also switches to *mall* most because the Chinese equivalent lexical item “goumuzhongxin” does not contain some outstanding features of an English “mall”. In [12], *visiting scholar* and *student* are the content morphemes from the EL, but the determiner (a demonstrative pronoun) “naxie” (those) is an ML system morpheme, and there is no plural marking “-s”, an EL system morpheme, on “visiting scholar” or “student”. The speaker switches to “visiting scholar” probably because the English lexical concept of “visiting scholar” is rather new to Chinese. The speaker also switches to “student” to reflect the conceptual difference between “scholar” and “student”.

[13] ima wa **summer course** o tot-te iru n.
now TOP summer course PARTIC/OBJ take-PROG AUX/be PART
“I”m taking a summer course now.”

[14] futatsu no **bedroom** ga ate, hitori, Maria to iu ko wa hitori de **one bedroom** o mot-te imasu yo.
two POSS bedroom PARTIC/NOM COP one person and call person PARTIC/TOP one person PERF/by one bedroom PARTIC/OBJ have-PROG AUX PARTIC/AFFIRM
“We have two bedrooms. One person, called Maria, has one bedroom.”

[15] anata wa **registration** o shimashita ka?
you PARTIC/TOP registration PARTIC/OBJ do-PERF PARTIC/INTERROG
“Have you done your registration?”

[16] moshi Nihon ga soo iu **community force** mitaina no ga naku nattara Nihon mo **America** mitai ni nacchau no ja nai ka?
if Japan PARTIC/NOM so say community force like PARTIC/NOM PARTIC/NOM no become PERF if Japan also America same PREP/COND because PARTIC/NOM COP/be not PARTIC/INTERROG
“If Japan had no such thing as a community force, would Japan become America?”
(Japanese ML/English EL; Wei, 2002, p. 282)

In [13], *summer course* is a compound noun from the EL, but “o” is an ML system morpheme marking the accusative case of “summer course”. The speaker switches to “summer course” probably because of its English academic concept that may not exist or is not popular in a Japanese academic/educational

setting. American college/university students have opportunities to take summer courses in order to complete their academic requirements earlier, but such opportunities may not be available in Japan. In [14], bedroom and one bedroom are the content morphemes from the EL. In “futatsu no bedroom” (two bedrooms), the EL system morpheme “-s” for plural marking does not appear, and “ga” is an ML system morpheme marking the normative case of “futatsu no bedroom”. It should be noticed that the numeral “one” is an EL system morpheme activated together with the EL content morpheme “bedroom” as a noun phrase. The speaker switches to “bedroom” for the possible reason that in Japan the concept of “bedroom” is relatively new or is not the same as the one in English. A traditional Japanese room is used not only for sleeping (as a bedroom) but also for eating (as a dining room), studying (as a study), entertaining guests (as a sitting/living room), and other daily functions. In [15], *registration* is a content morpheme from the EL, but “o” is an ML system morpheme marking the accusative case of “registration”. Japanese has the lexical item “toroku” equivalent to “registration”. The speaker switches to “registration” because the lemmas for “toroku” are not the same as those underlying “registration”. That is, the general concept of “registration” may be shared between English and Japanese, but the semantic/pragmatic feature bundles of the concept are not the same. Though in Japanese colleges/universities, students must register for the courses to take, they are not entirely free to select the courses which they are interested in and want to take. In [16], the speaker switches to *community force* most probably for some semantic/pragmatic reasons. In the American social context, the general semantic/pragmatic feature bundles of “community force” may include “neighborhood crime watch”, “drug free zone”, “organized community activities”, and so on. The Japanese lexical item similar to “community force” is “chouka”. In Japan, “chouka” is a neighborhood association mainly for organizing local social and cultural activities, overseeing environmental sanitation taking care of the old, mediating a dispute, and so on. The speaker selects “community force” to convey the meaning more accurately beyond what “chouka” can lexically-conceptually realize.

The above examples provide evidence that all the system morphemes from the ML, and all the switched items are content morphemes from the EL. It also looks obvious that it is the ML that provides the sentential frame into which El content morphemes are switched. What is most relevant to this study is the revelation that switched items are driven by language-specific lemma activation. Such instances of language-specific lemma activation are also observed in other language pairs involved in CS. Below are a few representative ones.

[17] Se sai semmose-n **stroke**-Ø.

she get-IMP3SG like-ACC stroke

“She had like a stroke.”

(Marathi ML/English EL; Joshi, 1985, p. 197)

[18] Mi tyala ghar ghyayla **persuade** kela la.
I he-DAT house to buy persuade did to
“I persuaded him to buy a house.”
(Marathi ML/English EL; Joshi, 1985, p. 197)

[19] Kerran sä olit pannu si-tä mun **lunchbox**-iin.
once you had put it-PRT my lunchbox-IL
“You had once put it in my lunchbox.”
(Finnish ML/English EL; Halmari, 1997, p. 59)

[20] I command you to do the **nokum**.
I command you to do the recording
“I command you to do the recording.”
(English ML/Korean EL; Choi, 1991, p. 899)

[21] evet, **terras**-ta oturuyorlar.
yes café-LOC sit-PROG.3PL
“Yes, they are sitting at the outdoor café.”
(Turkish ML/Dutch EL; Backus, 1996, p. 140)

[22] nei5 zou6 saai3 di **assignment** mei6.
you do ASP CL assignment SFP
“Have you done all the assignments?”
(Cantonese ML/English EL; Chan, 1998, p. 193)

[23] Ha-u ku-on-a a-ki-ni-**buy**-i-a **beer**sikuhiyo?
NEG-2s NEG.PST-see-FV 3s-PROG-1s.OBJ-buy-APPL-FV beer day CL9.that
“Didn’t you see him buying beer for me that day?”
(Swahili ML/English EL; Myers-Scotton, 2002, p. 98)

[17]-[23] show again all the switched items are EL content morphemes selected by the speakers as lexical-conceptually appropriate or desirable to their intended meanings. Although it is difficult to tell what motivates speakers for switching to certain content morphemes from another language, what becomes clear is that bilingual lemmas are in contact and are not equally activated in CS. EL content morphemes can be lexical-conceptually activated for the speaker’s intend or preferred meaning at a certain point during a discourse, but EL system morphemes cannot.

The BLA Model assumes that it is the preverbal message at the conceptual level that motivates bilinguals to make appropriate choices of the semantic/pragmatic feature bundles that they can employ for their intended meanings. The BLA Model further assumes that if the lemmas activated from the EL do not sufficiently match those underlying the ML counterpart, but the speaker prefers CS, some compromise strategies must be taken to overcome cross-linguistic differences in lexicalization patterns. One of such compromise strategies is to produce an "EL island". An EL island is a constituent in which an EL content morpheme with only other EL morphemes, including EL system morphemes (Jake & Myers-Scotton, 1997). Below are some typical examples of EL islands.

[24] nali you wu-tai jiqi dan san-tai si **out of order**.
there have five-CLASSIFI machine but three-CLASSIFI COP/be out of order
"There were five machines, but three of them were out of order."

[25] jiao ni nu'er **come to** Xiao Ying de **birthday party**.
ask your daughter come to Xiao Ying's birthday party
"Ask your daughter to come to Xiao Ying's birthday party."

[26] na wo yi dian **come to pick you up**.
so I one o/clock come to pick you up
"So, I'll come to pick you up at one o'clock."

[27] name ni mingtian **call me**.
then you tomorrow call me.
"Then, you call me tomorrow."

[28] ni neng-bu-neng **give me a ride**.
you can-not-can give me a ride
"Can you give me a ride?"
(Chinese ML/English EL; Wei, 2001b, pp. 160-163)

In [24], *out of order* is an EL island. The Chinese equivalent expression is "chu guzhang" (something going wrong), but the speaker prefers the lexical-concept of "out of order", which is activated as a single lexical unit (i.e., a fixed idiomatic expression). In [25], *come to* is an EL island. When the speaker selects the English verb "come", the preposition "to" indicating GOAL is simultaneously activated. By contrast, in Chinese the concept of GOAL is conflated in verbs themselves, such as "lai" (come) and "qu" (go) (i.e., no preposition is needed to introduce GOAL). In this example, "come to" is accessed as a single verbal

unit. In [26], *pick you up* is an EL island. The speaker prefers the EL lemmas for "pick up" most probably because this phrasal verb contains the meaning of "to take on as a passenger", but the Chinese equivalent verb "jie" may not. "jie" means "meet somebody at a bus/train station or airport", which does not necessarily involve providing personal transportation. It should also be noticed that the infinitive marker "to", an EL system morpheme, is accessed together with "come" to introduce the verbal phrase "pick you up" as an EL island. In [27], *call me* is an EL island. In the EL, the lexical-conceptual feature bundles of "communicate with by telephone" are conflated in the verb "call". In the ML equivalent expression "da dianhua gei wo" (make telephone to me), the means of communication is expressed in the noun "telephone" itself. The speaker activates the lemmas for "call", and thus the whole verbal phrase "call me" is produced as an EL island. In [28], *give me a ride* is an EL island. While in the EL, the means of transportation is conflated in the noun "ride" as the direct object of the verb "give", in the ML, it is conflated in the verb "song" (send), but "song" itself may not contain the means of transportation at all. In other words, "song wo yixia" (send me once) does not necessarily means "give me a ride". The speaker prefers this EL island most probably in order to convey his intended meaning more specifically than he can be with the Chinese counterpart.

Such typical examples of CS reveal that bilinguals may switch to particular items form an EL, whether single EL lexical items or EL islands, most probably because of cross-linguistic lemma differences underlying the abstract lexical-conceptual structure of particular lexemes. As assumed in this study, bilinguals may to certain EL content morphemes as a cross-linguistic lexical bridge to realize speakers' semantic/pragmatic intentions (cf. Talmy, 1985; Li 1996; Nishimura, 1997; Wei 2001b, 2002). These examples of CS also reveal that when EL content morphemes are selected but their lemmas do not sufficiently match the counterpart lexical-conceptual structure in the ML, speakers may take a compromise strategy to activate EL lexical items as EL islands which may contain EL system morphemes. The BLA Model aims to describe and explain CS by assuming that lemmas are tagged with a language label (cf. Green, 1986; de Bot & Schreuder, 1993; Poulisse & Bongaerts, 1994) and in CS, speakers switch to EL content morphemes and El islands either because of lemma differences underlying similar or equivalent ML and EL lexical items of because of the lack of the lexical items in the ML for particular semantic/pragmatic feature bundles as desired or preferred by speakers at a certain moment during a discourse.

6. Activation of Content Morphemes for Switches in Predicate-argument Structure

As specified in the MLF Model (Myers-Scotton, 1993 [1997], 2002), it is the ML which provides the sentential frame and also controls the predicate-argument structure by supplying subcategorization frames for verbs and surface morpheme order. The BLA Model claims that is that when a certain EL verb is activated at the level of lexical-conceptual structure, but it generates a particular EL predicate-argument structure (i.e., the second level of abstract lexical structure), speakers may switch to

the EL predicate-argument if they select a particular EL verb as appropriate. According to Kroll and de Groot, “Language specific lemmas form the interconnection between the lexical-conceptual mappings to and from syntax” (1997, p. 190). In other words, when the lemmas for a particular EL verb are activated, the predicate-argument structure as controlled by the verb is also activated as grammatically necessary. Thus, if the EL predicate-argument structure is activated, an EL island is produced, in which all morphemes are from the EL, including all EL system morphemes. In other words, if the ML and the EL do not share the same predicate-argument structure, because speakers have two speech plans available to them, they may stop the encoding of one of them and continue with the other in order to solve the typological problem. In CS, the choice of one EL predicate-argument structure versus another is determined by the larger ML sentential frame. Below are some typical examples of CS in predicate-argument structure.

[29] wo keyi **wait for you** dao liang dian.
I can wait for you PREP/till two o’clock
“I can wait for you till two o’clock.”
(Chinese ML/English EL; Wei, 2001b, p. 166)

[30] tingshuo nei-ge professor hen crazy. ta jingchang **fails students in exams**.
hear that-CLASSIF professor every crazy she often fails students in exams
“(I) heard that professor is very crazy. She often fails students in exams.”

[31] ni biye hou keyi **teach English to nonnative speakers**.
you graduate CONJ/after can teach English to nonnative speakers
“After you graduate, you can teach English to nonnative speakers.”
(Chinese ML/English EL; Wei, 2001b, 168)

[32] wo meitian dei **help her with her homework**.
I every day have to help her with her homework
“I have to help her with her homework every day.”
(Chinese ML/English EL; Wei, 2005, p. 2346)

In [29], *wait for you* is accessed as a phrasal verb (i.e., a single lexical unit) switched into the ML sentential frame, where the THEME (i.e., in this case, the direct object) “you” is introduced by the preposition “in”. In Chinese, the same meaning is expressed by a single verb “deng” (wait) (e.g., deng ni (wait you)). Since the speaker switches to the EL content morpheme “wait”, the result is the maximal projection of the EL phrasal verb “wait for you”, an EL island. In [30], *fails students in exams* is an EL

island, where “fail” is used as a causative verb and thus takes the grammatical subject as the AGENT who makes the failure happen. The equivalent verb in Chinese is “shibai” (be defeated in…), but it is used only as a noncausative verb with the grammatical subject as the EXPERIENCER. The speaker switches to the EL content morpheme “fail”, which generates the EL predicate-argument structure, resulting in an EL island. In [31], *teach English to nonnative speakers* is an EL island, where “nonnative speakers”, the RECIPIENT (i.e., the indirect object), is introduced by the preposition “to”. The equivalent verb in Chinese is “jiao” (teach), but it only takes the double object construction (e.g., jiao nonnative speakers English). The speaker switches to the EL content morpheme “teach”, which generates the EL predicate-argument structure, resulting in an EL island, where all the content and system morphemes are from the EL, including the word order headed by “teach”. In [32], *help her with her homework* is an EL island, where “her homework”, the THEME, is introduced by the preposition “with”. The equivalent verb in Chinese is “bangzhu” (help), but the THEME must be introduced by a specific verb identifying an act. In this case, the Chinese verb “zuo” (do) must be used to introduce the THEME in addition to the main verb “bangzhu”. For example, wo meitain de bangzhu ta zuo zuoye (I every day have to help her do homework). The speaker switches to the EL content morpheme “help”, which generates the EL predicate-argument structure, resulting in an EL island, where all the content and system morphemes are from the EL, including the word order headed by “help”.

The above examples of EL islands show that when typological differences between the ML and the EL at the level of predicate-argument structure occur, but speakers switch to particular EL verbs, a compromise strategy, such as the production of EL islands, must be taken in order for CS to occur. What should also be noticed is that any EL island is lexica-conceptually driven, and it must be switched into the sentential frame of the ML.

7. Conclusion

This study regards linguistic CS as a cross-linguistic lexical bridge in bilingual communication. By adopting the MLF Model and the BLA Model, it describes and explains CS at a rather abstract level. Beyond the surface observation and description of constraints on CS configurations, it explores the nature and activity of the bilingual mental lexicon during CS. One of the most important theoretical assumptions underlying this study is that the bilingual mental lexicon contains language-specific lemmas, which are in contact during a discourse involving CS. It claims that bilingual lemma activation at three interrelated levels of abstract lexical structure: lexical-conceptual structure, predicate-argument structure, and morphological realization patterns is a crucial interface between bilingual speaker intention and CS. As evidenced in this study, CS is fundamentally lexical-conceptually driven as a bilingual linguistic and communicative strategy. This study reaches several conclusions.

(1) During a discourse involving CS, the speaker’s two languages are “on”, but they are not equally activated at the same time. Whichever language is activated as the ML controls the sentential frame for

the structural configuration of CS and provides most content morphemes and all system morphemes. The EL only provides certain content morphemes as a cross-linguistic lexical bridge.

(2) The bilingual mental lexicon contains lemmas (i.e., abstract entries about lexemes stored in the mental lexicon) tagged for specific languages, and language-specific lemmas are in contact during a discourse involving CS. Speakers may activate the EL lemmas as desired for communication because of the lexical-conceptual gap or the appropriateness of a particular lexical item available in the other language. It is the bilingual speaker's intention contained in the preverbal message at the conceptual level which calls for an EL content morpheme, and it is this intention which activates the EL lemmas which support the content morpheme to be switched in CS.

(3) The activated EL content morphemes must be sufficiently congruent with the counterparts of the ML at each level of abstract lexical structure. Otherwise, speakers must take some compromise strategies if they still engage themselves in CS. One of the compromise strategies is to produce EL islands in order for CS to occur. An EL island must be headed by an EL content morpheme in the first place. It is in this sense that all EL islands are also lexical-conceptually driven.

References

Azuma, S. (1991). *Two level processing hypothesis in speech production: Evidence from intrasentential codeswitching*. Paper presented at the 27th Chicago Linguistic Society.

Backus, A. (1996). *Two in one: Bilingual speech of Turkish immigrants in the Netherlands*. Tilburg, The Netherlands: Tilburg University Press.

Benhattab, A. L., Ouahmiche, G., & Labed, Z. (2017). The feasibility of content and system morpheme hierarchy in the analysis of Tamazight bilingual corpora: The case of Kabyle and Mzabi bilingual speech in Oran. *International Journal of Language and Linguistics*, *5*(3-1), 6-14.

Bierwisch, M., & Schreuder, R. (1992). From concepts to lexical items. *Cognition*, *41*, 23-60.

Chan, B. H.-S. (1998). Functional heads, Cantonese phrase structure and Cantonese-English code-switching. *UCL Working Papers in Linguistics*, *10*, 253-284.

Choi, J. O. (1991). Korean-English code switching: Switch-alpha and linguistic constraints. *Linguistics*, *29*(5), 977-902.

Costa, A. (2005). Lexical access in bilingual production. In J. F. Kroll, & A. M. B. de Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 308-325). Oxford: Oxford University Press.

de Bot, K., & Schreuder, R. (1993). Word production and the bilingual lexicon. In R. Schreuder, & B. Weltens (Eds.), *The bilingual lexicon* (pp. 191-214). Amsterdam: John Benjamins.

Dzameshie, A. (1989). *Codeswitching in EWE and English*. Paper presented at African Linguistics Conference. Urbana, Ill.

Færch, C., & Kasper, G. (1984). Two ways of defining communication strategies. *Language Learning*, *34*, 45-63.

Færch, C., & Kasper, G. (1986). Cognitive dimensions of language transfer. In E. Kellerman, & M. Sharwood Smith (Eds.), *Crosslinguistic influence in second language acquisition* (pp. 49-65). Elmsford, NY: Pergamon Press.

Green, D. W. (1986). Control, activation and resource: A framework and model for the control of speech in bilinguals. *Brain and Language*, *27*(2), 210-223.

Grosjean, F. (1982). *Life with two languages: An introduction to bilingualism*. Cambridge, MA: Harvard University Press.

Grosjean, F. (1985). The bilingual as a competent but specific speaker-hearer. *Journal of Multilingual and Multicultural Development*, *6*, 467-477.

Grosjean, F. (1989). Neurolinguists, beware! The bilingual is not two monolinguals in one person. *Developmental Psychology*, *25*, 577-588.

Grosjean, F. (1994). Individual bilingualism. In R. E. Asher, & J. M. Y. Simpson (Eds.), *The encyclopedia of language and linguistics* (pp. 1656-1660). Oxford, UK: Pergamon.

Grosjean, F. (1997). Processing mixed languages: Issues findings, and models. In A. M. B. de Groot, & J. F. Kroll (Eds.), *Tutorials in bilingualism: Psycholinguistic perspectives* (pp. 225-254). Mahwah, NJ: Erlbaum.

Grosjean, F., & Soares, C. (1986). Processing mixed languages: Some preliminary findings. In J. Vaid (Ed.), *Language processing in bilinguals: Psycholinguistic and neuropsychological perspectives* (pp. 145-179). Hillsdale, NJ: Lawrence Erlbaum Associates.

Gumperz, J. J. (1982). Conversational code-switching. In J. J. Gumperz (Ed.), *Discourse strategies* (pp. 55-99). Cambridge: Cambridge University Press.

Halmari, H. (1997). *Government and codeswitching: Explaining American Finnish*. Amsterdam: John Benjamins.

Jake, J. L., & Myers-Scotton, C. (1997). Codeswitching and compromise strategies: Implications for lexical structure. *International Journal of Bilingualism*, *1*, 25-39.

Joshi, A. K. (1985). Processing of sentences with intrasentential code switching. In D. R. Dowty, L. Karttunen, & A. M. Zwicky (Eds.), *Natural language parsing: Psychological, computational, and theoretical perspectives* (pp. 190-205). Cambridge: Cambridge University Press.

Kempen, G., & Hoenkamp, E. (1987). An incremental procedural grammar for sentence formulation. *Cognitive Science*, *11*, 201-258.

Kempen, G., & Huijbers, P. (1983). The lexicalization process in sentence production and naming: Indirect election of words. *Cognition*, *14*, 185-209.

Kroll, J. F., & de Groot, A. M. B. (1997). Lexical and conceptual memory in the bilingual: Mapping form to meaning in two languages. In A. M. B. de Groot, & J. F. Kroll (Eds.), *Tutorials in*

bilingualism: Psycholinguistic perspectives (pp. 169-200). Mahwah, NJ: Erlbaum.

Kroll, J. F., & Stewart, E. (1994). Category interference in translation and picture naming: Evidence for asymmetric connections between bilingual memory representations. *Journal of Memory and Language, 33*, 149-174.

Kroll, J. F., & Sunderman, G. (2003). Cognitive processing in second language learners and bilinguals: The development of lexical and conceptual representations. In C. J. Doughty, & M. H. Long (Eds.), *The handbook of second language acquisition* (pp. 104-129). Malden, MA: Blackwell.

Leshchenko, Y., Dotsenko, T., & Ostapenko, T. (2015). Cross-linguistic interaction in bilingual mental lexicon and professional linguistic competence formation: An experimental research with native speakers of the Komi-Permyak and Russian languages. *Procedia—Social and Behavioral Sciences*, *214*, 1039-1047.

Levelt, W. J. M. (1989). *Speaking: From intention to articulation*. Cambridge, MA: MIT Press.

Levelt, W. J. M. (1995). The ability to speak: From intention to spoken words. *European Review, 3*, 13-23.

Levelt, W. J. M., Roelofs, A., & Meyer, A. S. (1999). A theory of lexical access in speech production. *Behavioral and Brain Science, 22*(1), 1-38.

Li, D. C. S. (1996). *Issues in bilingualism and biculturalism: A Hong Kong case study*. New York: Peter Lang.

Lipski, J. (1977). Codeswitching and the problem of bilingual competence. In M. Paradis (Ed.), *Aspects of bilingualism* (pp. 250-265). Columbia, SC: Hornbeam Press.

MacSwan, J. (1997). A minimalist approach to intrasentential code switching: Spanish-Nahuatl bilingualism in Central Mexico. Unpublished doctoral dissertation, UCLA.

MacSwan, J. (1999a). The argument status of NPs in Southeast Puebla Nahuatl: Comments on the polysynthesis parameter. *Southwest Journal of Linguistics, 17*(2), 101-114.

MacSwan, J. (1999b). *A minimalist approach to intrasentential code switching*. New York: Garland.

Muysken, P. (1990). Concepts, methodology, and data in language contact research: Ten remarks from the perspective of grammatical theory. In *Papers for the workshop on concept. Methodology and data* (pp. 15-30). Strasbourg: European Science Foundation.

Muysken P. (1991). Needed: A comparative approach. In *Papers for the symposium on code-switching in bilingual studies: Theory, significance and perspectives* (pp. 253-272). Strasbourg: European Science Foundation.

Myers-Scotton, C. (1993 [1997]). *Duelling languages: Grammatical structure in codeswitching*. Oxford: Clarendon Press.

Myers-Scotton, C. (2002). *Contact linguistics: Bilingual encounters and grammatical outcomes*. New York: Oxford University Press.

Myers-Scotton, C., & Jake, J. L. (1995). Matching lemmas in a bilingual language competence and production model: Evidence from intrasentential code switching. *Linguistics*, *33*(5), 981-1024.

Myers-Scotton, C., & Jake, J. L. (2000a). Four types of morpheme: Evidence from aphasia, codeswitching, and second language acquisition. *Linguistics*, *38*(6), 1053-1100.

Myers-Scotton, C., & Jake, J. L. (2000b). Testing a model of morpheme classification with language contact data. *International Journal of Bilingualism*, *4*(1), 1-8.

Nation, P. (1990). *Teaching and learning vocabulary*. New York: Newbury House.

Nishimura, M. (1997). *Japanese/English code-switching: Syntax and pragmatics*. New York: Peter Lang.

Paradis, M. (1989). Bilingual and polyglot aphasia. In F. Boller, & J. Grafman (Eds.), *Handbook of neuropsychology* Vol. 2 (pp. 117-140). Amsterdam: Elsevier.

Paradis, M. (1997). The cognitive neuropsychology of bilingualism. In A. M. B. de Groot, & J. F. Kroll (Eds.), *Tutorials in bilingualism: Psycholinguistic perspectives* (pp. 331-354). Mahwah, NJ: Erlbaum.

Pfaff, C. (1979). Constraints on language mixing: Intrasentential code-switching and borrowing in Spanish/English. *Language*, *55*, 291-318.

Poplack, S. (1980). Sometimes, I'll start a sentence in Spanish termino en español: Toward a typology of code-switching. *Linguistics*, *18*, 581-618.

Poulisse, N., & Bongaerts, T. (1994). First language use in second language acquisition. *Applied Linguistics*, *15*, 36-57.

Ringbom, H. (1987). *The role of the first language in foreign language learning*. Clevedon: Multilingual Matters.

Ritchie, W., & Bhatia, T. (1999). Codeswitching, grammar, and sentence production: The problem of light verbs. In E. C. Klein, & G. Martoharjono (Eds.), *The development of second language grammar* (pp. 269-287). Amsterdam: Benjamins.

Roelofs, A. (1992). A spreading-activation theory of lemma retrieval in speaking. *Cognition*, *42*, 107-142.

Sotillo, S. M. (2016). Structural features and sociolinguistic functions in bilinguals' code switches face-to-face and short message service conversations. *International Journal of Language and Linguistics*, *3*(4), 11-23.

Sridhar, S. N., & Sridhar, K. (1980). The syntax and psycholinguistics of bilingual code-switching. *Canadian Journal of Psychology*, *34*, 7-16.

Talmy, L. (1985). Lexicalization patterns: Semantic structure in lexical forms. In T. Shopen (Ed.), *Language typology and syntactic description* (Vol. 3, pp. 57-149). Cambridge: Cambridge University Press.

Toribio, A., & Rubin, E. (1996). Code-switching in generative grammar. In A. Roca, & J. Jensen (Eds.), *Spanish in contact: Issues in bilingualism* (pp. 203-226). Somerville, MA: Cascadilla.

Wei, L. (2000a). Unequal election of morphemes in adult second language acquisition. *Applied Linguistics*, *2*, 106-140.

We, L. (2000b). Types of morphemes and their implications for second language morpheme acquisition. *International Journal of Bilingualism*, *4*(1), 29-43.

Wei, L. (2001a). The multilingual mental lexicon: Language separation/activation in trilinguals. *Papers Selected from the Second International Conference on Third Language Acquisition and Trilingualism: Interactive CD-ROM*, 13-15. Fryske Akademy.

Wei, L. (2001b). Lemma congruence checking between languages as an organizing principle in intrasentential codeswitching. *International Journal of Bilingualism*, *5*, 153-173.

Wei, L. (2002). The bilingual mental lexicon and speech production process. *Brain and Language*, *81*, 691-707.

Wei, L. (2005). Verbs in Chinese/English codeswitching. *The Proceedings of the 4th International Symposium on Bilingualism CD-ROM*. Cascadilla Press.

Wei, L. (2006). Intrasentential codeswitching as conceptual projection of lemmas in the bilingual mental lexicon. *Journal of Cognitive Science*, *7*(2), 149-178.

Wei, L. (2009a). Code-switching and the bilingual mental lexicon. In B. E. Bullock, & A. J. Toribio (Eds.), *The Cambridge handbook of linguistic code-switching* (pp. 270-288). Cambridge, UK: Cambridge University Press.

Wei, L. (2009b). Intrasentential codeswitching: Bilingual lemmas in contact. *Concentric: Studies in Linguistics*, *35*(2), 307-344.

Wei, L. (2015). *Interlanguage: The abstract level in language acquisition*. New York: The Edwin Mellen Press.

Wei, L. (2018). The bilingual lemma activation model as a comparative approach to codeswitching. *Studies in Linguistics and Literature*, *2*(2), 77-109.

Wei, L. (2020). *The bilingual mental lexicon*. UK: Cambridge Scholars Publishing.

Woodford, E. (1983). Bilingual code-switching and syntactic theory. *Linguistic Inquiry*, *14*, 520-536.