Original Paper

Code-switching as a Bilingual Lexical Strategy

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Abstract

Most previous studies of intrasentential Code-switching (CS) (also known as so-called mixed speech) focus on what language items can be switched and how such switched items are configured at the surface sentence level. Following some theoretical insights and empirical findings of recent psycholinguistic models, this study investigates such a bilingual speech behavior at a rather abstract level by adopting two particular models: the Matrix Language Frame (MLF) Model (Myers-Scotton, 1993b; Myers-Scotton & Jake, 1995), which claims that the two language involved in CS play unequal roles in terms of their respective grammatical and lexical functions, and the Bilingual Lemma Activation (BLA) Model (Wei, 2006, 2020), which claims that lemmas (i.e., abstract entries about a lexeme) are language-specific, language-specific lemmas are in contact in bilingual speech involving CS, and thus the so-called mixed speech is cross-linguistically driven at a lexical level. One of the most important assumptions underlying this study is that bilinguals perform CS as a lexical strategy to make their intended meanings lexical-conceptually and semantic-pragmatically realized. Some typical instances of CS are described and explained at several levels of abstract lexical structure in support of the major claims of the MLF Model and the BLA Model. This study offers an explanation of CS from a particular perspective.

Keywords

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

1. Introduction

As commonly observed, bilinguals may carry out a conversation in two languages, switching between two linguistic codes at will. This phenomenon is called "code-switching". Bilinguals may code-switch across sentence boundaries, that is, they may produce one sentence(s) completely in one language and produce another sentence completely in another language. This is called "intersentential

code-switching", which involves a switch at a clause or sentence boundary, where each clause or sentence is well formed according to one of the languages involved within the stretch of speech in a discourse. This type of code-switching requires great proficiency in both languages. Bilinguals also often engage in "intrasentential code-switching", hereafter "CS" for short, when communicating with other persons who also speak the same languages. Different from intersentential code-switching, CS involves different types of constituents switched into the syntactic slots within a clause or sentence boundary. Most switched elements are "content morphemes" (i.e., morphemes with their semantic meanings), such as verbs, nouns, adjectives, and adverbs, rather than "grammatical morphemes" (i.e., morphemes with their grammatical functions). This study focuses on CS.

From the sociolinguistic point of view, bilinguals may switch from one language to another during a discourse, whether intersententially or intrasententially, for some social motivations, such as particular discourse contexts, social relationships between discourse participants, and speakers' communicative intentions. That is, bilinguals may employ the socio-psychological associations of the languages so as to achieve communicative outcomes as desired (Myers-Scotton, 1993a; Wei, 2016). From the psycholinguistic point of view, CS not only reveals flexibility in bilingual production but also is a means of solving a special "coordination problem" in bilingual speech. It is this special coordination that causes psychological stresses that code-switching itself creates.

Most previous studies of CS (e.g., Lipski, 1977; Pfaff, 1979; Poplack, 1980; Sridhar & Sridhar, 1980; Gumperz, 1982; Woodford, 1983) focus on describing surface configurations of switched items in terms of the switch points (i.e., where the switching is structurally possible) and the switched items (i.e., what items from another language can be switched. Different from such studies, by adopting the Bilingual Lemma Activation BLA) Model (Wei, 2006, 2009a, 2015, 2020), this study focuses on the bilingual speech production process involving CS in relation to the nature and activity of the bilingual mental lexicon at an abstract level. It defines CS as a linguistic outcome of languages in contact and explains CS in terms of the activity and flexibility of bilinguals' two linguistic systems.

2. The Mental Lexicon

Different from most previous studies of CS, this study explores formulation processes of bilingual speech production and the nature of the bilingual mental lexicon and its activity in CS. More specifically, it confronts and expands on Levelt's notion of the mental lexicon (1989) and Myers-Scotton's MLF Model (1993b [1997]) with data drawn from various naturally occurring CS instances.

"The mental lexicon" is a construct commonly used by linguists and psycholinguists to refer to individual speakers' lexical representations. According to Levelt, a "lemma" is defined as the "nonphonological part of an items lexical information" and "it is the lemmas of the mental lexicon that conceptual information is linked to grammatical function" (1989, p. 162). The mental lexicon is

generally defined as the store of information about particular words in one's language. Richards (1976), Færch and Kasper (1984), Nation (1990), Ringbom (1987), Pienemann (1999), and Wei (2001a, 2001b, 2002) hold that knowing a word means the ability to retrieve the word form from the mental lexicon about its spelling and pronunciation its meaning(s), its grammatical class and syntactic environment, its collocations and syntagmatic associations, its lexica and conceptual associations and its registers. In other words, a lexical item is retrieved from the mental lexicon contains not only its lexical content but also its phonological, morphological and syntactic information. For this reason, a lexical item is a rather complex entity. Thus, the mental lexicon does not simply contain lexemes and their meanings but more abstract elements called "lemmas". Lemmas are defined as abstract entries in the mental lexicon that support the surface realization of actual lexemes (Levelt, 1989; Levelt, Roelofs, & Meyer, 1999; Kempen & Huijbers, 1983; Kempen & Hoenkamp, 1987). For example, the lemma the verb "like" requires a subject noun that takes the thematic role of EXPERIENCER and an object noun that takes the thematic role of THEME. That is, the lemma for this particular verb needs two nouns, each of which is assigned a particular thematic role in order for the verb to satisfy the semantic and syntactic requirements. The lemma for "he' specifies that the word must refer to a male, it can only be used as a subject pronoun, any any following present-tense main verb must have the inflectional morpheme "-s" for the subject-verb agreement.

> This means that grammatical and phonological encodings are mediated by lexical
> entries. The preverbal message triggers lexical items into activity. The syntactic,
> morphological, and phonological properties of an activated lexical item trigger, in
> turn, the grammatical, morphological, and phonological encoding procedures
> underlying the generation of an utterance. (Levelt, 1989, p. 181)

What becomes directly relevant to this study is the distinction between the "lexicon" and the "mental lexicon" because the mental lexicon is not just an individual speaker's collection of words but deals with how those words are stored, activated, processed and retrieved by each speaker. Thus, the activation of lemmas in the mental lexicon plays a central role in speech production. Accordingly, the whole set of speech formulation processes is lexically driven.

Researchers differ in their views on how appropriate lemmas are activated to convey speakers' intended meanings. For example, de Bot and Schreuder (1993) think that lemmas are activated by pieces of conceptual structure; Poulisse and Bongaerts (1994) believe that lemmas are not only activated by the conceptual information but also by a language cue; Myers-Scotton and Jake (1995) claim that lemmas are activated by language-specific semantic/pragmatic feature bundles; Grosjean (1997) holds that whatever the origin and the nature of information that lemmas may receive, the actual activation or choice of lemmas must be based on the information sent to the mental lexicon. In Levelt's model, the conceptual information in the preverbal message activates the appropriate lexical items during the formulation of a message. This model is designed for describing the major components and processes

of monolingual production, and it must be adapted to account for bilingual speech behavior such as CS.

3. Features of the Bilingual Lemma Activation Model

The BLA Model (Wei, 2006, 2009a, 2015, 2020) confronts and expands on Levelt's model of monolingual speech production by explaining and emphasizing the role of lemma activation. Regarding lemma activation in speech production involving CS, the BLA Model draws on the theoretical assumptions of Myers-Scotton and Jake (1995, 2000a, 2000b) that all lemmas include three distinctive but related levels of abstract lexical structure. The first level is lexical-conceptual structure. At this level, lexical access takes place on the basis of the information contained in the speaker's preverbal message, that is, the speaker's intention before speech production. It is the speaker's preverbal message which activates language-specific semantic/pragmatic feature bundles, which are then mapped onto lemmas in the mental lexicon as lexical-conceptual structure. The second level is predicate-argument structure. At this level, the thematic structure of a particular verb is mapped onto grammatical relations (i.e., thematic role assignment). The third level is morphological realization patterns. At this level, surface grammatical relations, such as word order, agreement, inflectional morphology for tense/aspect/voice/mood marking, etc. are realized.

Scholars have studied the nature of the bilingual mental lexicon from various perspectives. One of the common questions being asked is whether the bilingual's two lexicons are linked to a shared conceptual store or separated in two conceptual stores (Keatley, 1992). Recent bilingual processing and representation models assume that lexical meanings or concepts are largely shared in the bilingual mental lexicon (Kroll & Stewart, 1994; Kroll & Sunderman, 2003; Costa, 2005). Most studies of conceptual representation have focused on the links between word forms and meanings and factor that affect the bilingual conceptual processing, but not the nature of conceptual representation itself (Kroll & de Groot, 1997; de Groot, 2002; Kroll & Tokowicz, 2005). Other scholars have explored cross-linguistic differences in lexical/conceptual representation (Jiang, 1999, 2000; Pavlenko, 2009; Altarriba & Basnight-Brown, 2009; Jarvis, 2009).

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. As assumed by Leshchenko, Dotsenko, and Ostapenko, the monolingual "mental lexicon represents a complex self-organizing system", but the "bilingual mental lexicon, as opposed to the monolingual one, integrates the units of two linguistic systems and, therefore, ensures the processes of speech perception and production in two languages" (2005, p. 1040). It further claims that language-specific lemmas are in contact during a discourse involving CS. That is, CS is an outcome of bilingual systems in contact at several abstract levels.

The BLA Model also draws on some contemporary proposals and assumptions about the nature and activity of bilingual language modes in speech production. Færch and Kasper (1986) and Grosjean and Soares (1986) assume that the bilingual's language systems can be kept separate because they may be activated at different levels as needed at the moment of speaking. Similarly, Green (1986) and Paradis (1989, 1997) assume that the language system of a bilingual is organized in two subsets, one for each language, that can be selectively activated, activated simultaneously to various degrees, or deactivated independently of one another. Green (1986) postulates that bilingual speakers who wish to select a particular language for the current communication must ensure that its activation exceeds that of the competing language(s). Paradis (1997) also postulates that when bilingual speakers select one language rather than the other, the activation threshold of the nonselected must be raised; however, the language not being selected for sue at the moment is never totally deactivated. Green's model of activation vs. deactivation of language modes has two advantages. One advantage is that it postulates a specifier to set the activation going. It is this specifier which directs how the bilingual system is to be controlled especially in the case of CS. The other advantage is that it pays much attention to the resources that are needed to control the activation levels. According to Grosjean (1985, 1989, 1994, 1997), bilinguals find themselves in their everyday lives at various points along the language mode continuum, which corresponds to different levels of activation of the two languages as involved in CS.

Following the above models of activation vs. deactivation of bilingual modes, the BLA Model postulates that when the bilingual is in the bilingual mode to carry out CS, both languages are activated, with the base language more strongly activated than the guest language. According to Wei (2000a, 2000b, 2002, 2006), it is the language mode chosen and the relative degree of activation of the base and guest languages that cause the amount of CS taking place in the bilingual speech. Different from most other models, the BLA Model views the so-called "activation" of bilingual modes at an abstract level, that is, at the level of the bilingual lemma activation when bilingual systems are in contact as observed in CS. One of the major findings of Sotillo's study of morphosyntactic features and sociolinguistic functions of CS in face-to-face and short message service conversations among Spanish-English and Tagalog-English bilinguals supports the assumption (Wei, 2009a, 2009b) that the bilingual lemma activation "facilitates the interpretation of bilingual speech behavior and switches between languages as cognitively based strategies at an abstract level" (Sotillo, 2016, p. 21). This means that CS can be better explained at an abstract level in the sense that lemma activation of particular lexical items in the bilingual mental lexicon must mediate between the conceptual level, where language-specific semantic-pragmatic feature bundles are selected as desired for communication, and the functional level, where language-specific morphosyntactic procedures are projected for the surface formulation (Wei, 2015, 2020).

4. Code-switching as a Phenomenon of Bilingual Lemma Activation

Departing from most other models which focus on surface linear of typological correspondences between the participating languages in CS, the BLA Model proposes that CS juxtapositions originate with directions contained in lemmas (Myers-Scotton & Jake, 1995; Wei, 2001a, 2001b). This is because lemmas contain phonological, morphological, semantic, syntactic, and pragmatic information, among other pieces of information, about lexemes stored in the mental lexicon. It is in this sense that lemmas in the mental lexicon are defined as the speaker's internal representation of knowledge about the use of particular language items and their surface forms. One of the most crucial assumptions underlying the BLA Model is that lemmas in the bilingual mental lexicon are language-specific, and language-specific lemmas are in contact in the bilingual speech production, especially in CS. The BLA Model regards CS as a bilingual lexical strategy in the sense that language-specific lemmas for particular lexical items in another language can be activated to meet the speaker's communicative needs at the moment of speaking.

Myers-Scotton (1993b [1997]) holds that there is a universal set of semantic and pragmatic features available for the lexical-conceptual structure of lemmas. The BLA Model proposes that lemmas in the bilingual mental lexicon are language-specific and lexicalization patterns across languages reflect the fact that languages differ in configurations of semantic and pragmatic features across related lemmas. This proposal is similar to the one by Green (1986, 1993) and de Bot and Schreuder (1993) that lexical items belonging to different languages must be organized in subsets which can be either activated or deactivated in their entirety. The BLA Model claims that how cross-linguistic differences in how lexical information is realized at the two particular levels of abstract lexical structure: lexical-conceptual structure and predicate-argument structure, whether semantic or pragmatic or semantic with morphological consequences, affect the code choice and both levels of abstract lexical structure which may appear in CS.

The BLA Model is originally developed from the theoretical assumptions proposed in the MLF Model. The type of CS discussed in this study is called "classic codeswitching" (Myers-Scotton, 2002, p. 8). CS is called "classic" in the sense that the speech containing switched items produced by those who are proficient enough to produce well-formed utterances in both languages involved in CS, and who are proficient enough in activating either language as the base language. The MLF Model defines the base language as the "Matrix Language" (ML) and the guest language as the "Embedded Language" (EL). In such a type of CS, it is the ML which provides the grammatical frame (i.e., the abstract morphosyntactic structure) structuring the items contained in CS. In addition, the MLF Model identifies two types of morphemes: content vs. system morphemes. Content morphemes include all free-standing "lexical" morphemes, and system morphemes include all "grammatical" and "inflectional" morphemes. Furthermore, the MLF Model specifies that in CS the ML provides most content and system morphemes, and the EL only provides certain content morphemes. It is up to the

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speaker which language is selected as the ML at the moment of speaking. Thus, classic CS requires speakers have full access to the morphosyntactic frame of one of the participating languages and also have enough proficiency in the other language whether to switch EL content morphemes into the mixed constituents framed by the ML or produce well-formed EL islands. Briefly, EL islands are constituents that show structural dependency relations and are well formed in the EL grammar. Thus, EL islands include not only just EL content morphemes but also all relevant EL system morphemes. It becomes obvious that speakers engaging in classic CS must have some proficiency in the EL. It seems that what is needed in classic CS is that speakers' proficiency must be sufficient enough for them to access whether EL content morphemes can appear in the ML frame, and their EL grammatical proficiency level my be high enough for them to produce EL islands in CS. Following such essential assumptions of the MLF Model, the BLA Model regards the selection of the ML, the activation of ML or EL morphemes, whether they are content or system morphemes, and the production of EL islands as bilingual lemma activation.

5. Code-switching for Cross-linguistic Lexical-Conceptual Structure

As generally assumed, there is a universal set of semantic/pragmatic features available for the lexical structuring of lemmas, but, as commonly observed, there is also cross-linguistic variation in the presence and conflation of these features. In other words, languages differ in lemmas for certain lexemes. One of the major reasons for bilinguals to switch to particular EL content morphemes is that at the lexical-conceptual level, certain EL content morphemes may encode their communicative intention more accurately or desirably than the similar ML content morphemes. At the conceptual level bilinguals do not produce surface level morphemes but rather make appropriate lexical choices about the semantic/pragmatic feature bundles that they intend to convey. Thus, bilingual lemmas are activated for language-specific lexical-conceptual structure to be lexically realized in CS.

The notion of abstract lexical structure is similar to Bierwisch and Schreuder's 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" (1992, p. 51). Related to the notion of lexical-conceptual structure, one of the levels of abstract lexical structure, the election of a particular lemma is based on whether it has all the primitives contained in the conceptual chunk to be lexicalized. Related to cross-linguistic lexical-conceptual structure, de Bot and Schreuder (1993) hold that because different languages may lexicalize in different ways, the language to be used in second language production must be specified before conceptual chunking takes place. This implies that the retrieval of lexical items is triggered by the information concerning language choice as contained in the preverbal message. In the case of CS, cross-linguistic differences in semantic/pragmatic feature bundles encoded in lexical-conceptual structure trigger the switch to particular EL lexical items.

As commonly observed, bilinguals may switch to another language either intersententially or intrasententially during a discourse, and CS becomes part of bilinguals' daily practice or natural bilingual speech patterns (Li, 1996; Nishimura, 1997; Wei, 2001b, 2002). As reported by Grosjean (1982), some code-switches are caused by the lack of a particular word in one of the languages or by the greater availability of a word in the other language which speakers need to convey their intended meaning. In other words, bilinguals may code-switch at a certain point during a discourse deliberately or intentionally to satisfy their lexical needs. The BLA Model emphasizes that it is the cross-linguistic differences in lemmas at the lexical-conceptual level which The BLA Model furthers emphasizes that a partial lemma difference at the level of lexical-conceptual structure is one of the major reasons for certain content morphemes are switched from the EL as chosen. Below are some typical examples showing that all the switched items are content morphemes and also reveal that there exist cross-linguistic differences in the semantic/pragmatic feature bundles of conceptually related lexemes. Although Chinese and Japanese possess conceptually similar lexemes to be realized in particular lexical items, the related lexemes (i.e., lexical items) in English are activated as more appropriate or accurate to convey the speakers' intended meanings.

[1] 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."

     (Chinese/English; Wei, 2001b, p. 159)

In [1], an *advisor* in English assumes more responsibilities than the equivalent *daoshi* in Chinese. In an academic or educational setting, English advisors are instructors or professors who offer advice or counsel to students regarding their academic progress or improvement, sequential course requirements, thesis/dissertation writing, research projects, and all other education related matters. Most English advisors are also those who recommend their students to the job market or professional agencies. Though Chinese has the equivalent lexical item, it does not necessarily mean that a Chinese *daoshi* assumes the same responsibilities as an English *advisor*. In a Chinese academic or educational setting, only graduate students have their *daoshi*, whose only or main responsibility is to supervise their thesis/dissertation writing or research projects. Also, in [1], the speaker switch to *mall* most probably for the reason that the equivalent *gouwuqu* in Chinese may not include some outstanding features of a *mall* in English.

[2] zhu zai zheli hen fanbian, meitian you **school bus**.

live PREP/LOC here very convenient everyday there is a school bus

"It's very convenient to live here (since) there is a school bus every day."

(Chinese/English; Wei, 2001b, p. 159)

In [2], a *school bus* in English means a bus mainly for transporting students to and from a school. A school district assigns several school buses to each school to pick up students at several designated locations and drop them off at their school, and then after school, these school buses deliver them to where they are picked up. The equivalent word *xiaoche* in Chinese usually only transports a school's sports and/or performance team and/or equipment. Few schools have such school buses. In today's China, some colleges and universities may possess their own school buses and transport their faculty and staff, not students, to and from their branch campuses which are usually very far from their main campuses. The speaker switches to *school bus* to replace *xiaoche* most probably because of the lexical-conceptual differences between them.

[3] wo you liang-fen **paper** mintian bixu jiaoshangqu, ke wo xianzai yi-fen hai mei **finish** ne.

I have two-CLASSIF paper tomorrow must turn in but I at the moment one-CLASSIF yet not

finish PARTIC/AFFIRM

"I have two papers I must turn in tomorrow, but at the moment I haven't finished one yet."

(Chinese/English; Wei, 2001b, p. 159)

In [3], *paper* in English may mean any written piece of work, such as an essay, an article, a report or a composition. In an academic or educational setting, *paper* means a piece of writing that students are required to complete as an assignment. The equivalent word *zhi* in Chinese itself only means a piece of paper as a physical material to be used to wrap things up, to write something on it, or to clean something with it. The speaker switches to *paper* to replace *zhi* simply because of the obvious lexical-conceptual differences between the two. It seems that the speaker is fully aware that *paper* in English in this context means a written piece of school work.

[4] futatsu no **bedroom** ga ate, hitori, Maria to iu ko wa hitori de **one bedroom** o mot-te imasu yo.

two POSS bedroom PART/NOM COP one person and call person PARTIC/TOP one person

PREP/by one bedroom PARTIC/OBJ have-PROG AUX PARTIC/AFFIRM

"We have two bedrooms. One person, called Maria, has one bedroom."

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

In [4], the speaker switches to *bedroom* for the possible reason that the lexical concept of *bedroom* in English is relatively rather new to Japanese. In English, a *bedroom* is a room designed for a particular purpose, and anyone familiar with the lexical concept of *bedroom* knows how it looks like and what main functions it plays. A tradition Japanese room is often not only for sleeping but also for eating, studying, entertaining guests, or for any other daily activities. The lexical concept of *room* in Japanese contains much larger semantic/pragmatic feature bundles: a *room* can be used as a "bedroom", a "dining room", a "living room", a "guest room" or a "study". It seems that the speaker switches to *bedroom* to express what is actually intended.

[5] 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 become PARTIC/NOM COP/be not

    PARTIC/INTERROG

    "If Japan had no such thing as a community force, would Japan become America?"

    (Japanese/English; Wei, 2002, p. 282)

In [5], the general semantic/pragmatic feature bundles of *community force* in the American social context may include "neighborhood crime watch", "drug free zone", "organized community activities", and so one. The Japanese expression similar to *community force* is *chouka* (neighborhood association), but such an association is mainly for organizing local social and cultural activities, overseeing environmental sanitation, taking care of the old, mediating a dispute, and so on. The speaker switches to *community force* probably to convey something more accurately beyond what *chouka* can lexical-conceptually realize.

[6] anata wa **registration** o shimashita ka?

    you PARTIC/TOP registration PARTIC/OBJ do-PERF PARTIC/INTERROG

    "Have you done your registration?"

    (Japanese/English; Wei, 2002, p. 283)

In [6], the speaker switches to *registration* for the possible reason that in Japanese colleges/universities, though students must register for the courses to take, they are not entirely free to select the courses which they are truly interested in taking. The equivalent word in Japanese is…In other words, the general concept of "registration" may be shared between English and Japanese, but the semantic/pragmatic feature bundles of *registration* and…are not the same.

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Such content morpheme switches are also frequently observed in other language pairs. Below are a few representative ones.

[7] 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/English; Halmari, 1997, p. 59)

[8] Se sai semmose-n **stroke**-Ø.

   s/he get-IMP3SG like-ACC stroke

   "She had like a stroke."

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

[9] nei5 zou6 saai3 di **assignment** mei6.

   you do ASP CL assignment SFP

   "Have you done all the assignments?"

   (Cantonese/English; Chan, 1998, p. 193)

[10] evet, **terras**-ta oturuyorlar.

   yes café-LOC sit-PROG.3PL

   "Yes, they are sitting at the outdoor café."

   (Turkish/Dutch; Backus, 1996, p. 140)

[11] ima wa **summer course** o tot-te iru n.

   now PARTIC/TOP summer course PART/OBJ take-PROG AUX/be PARTIC

   "I'm taking a summer course now."

   (Japanese/English; Wei, 2009b, p. 322)

In [7]-[11], all the switched items are EL content morphemes selected by the speakers as lexically desirable for their communicative intentions. The BLA Model assumes that at the conceptual level bilinguals make appropriate choices about the semantic/pragmatic information that they intend to convey. If the bilingual mode is chosen at the conceptual level, but the lemmas activated from the EL do not sufficiently match the ML counterparts, some compromise strategies must be taken in order for CS to occur. One of the compromise strategies to overcome cross-linguistic differences in lexicalization patterns is to produce EL islands. In an EL island, all the morphemes are from the EL, including system morphemes.

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[12] ni neng-bu-neng **give me a ride**?

  you can-not-can give me a ride

  "Can you give me a ride?"

[13] name ni mingtian **call me**.

  then you tomorrow call me

  "Then you call me tomorrow."

[14] na wo yidian **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."

  (Chinese/English; Wei, 2001b, p. 162)

In [12], *give me a ride* is incongruent with the ML counterpart *song wo yixia* (literally translated as "send me one time"). While in the EL the lexical-conceptual structure of the means of transportation is conflated in the noun ride as the direct object of the verb, in the ML it is conflated in the verb *song*, but the verb *song* itself may not contain the means of transportation at all. The speaker selects the EL expression most probably in order to be more specific than he can be with the Chinese counterpart. Thus, the whole EL verb phrase is produced as an EL island. In [13], while in the EL the semantic features of "communicate with by telephone" are conflated in the verb *call*, the Chinese equivalent to *call me* is *da dianhua gei wo* (literally translated as "make phone to me"). The speaker chooses the EL lemma which activates the EL lexical-conceptual structure, and thus the whole verb phrase is produced as an EL island. In [14], *pick you up* is an EL island. When the speaker chooses the EL lemma's lexical-conceptual structure, the whole verb phrase with a pronominal object *you* before the particle satellite *up* is accessed. The speaker prefers *pick up* most probably because this phrasal verb contains the meaning of "to take on as a passenger", but the Chinese equivalent verb *jie* usually does not. Chinese *jie* means "meet" (e.g., to go to the station to meet somebody), which does not necessarily involve providing personal transportation. It should also be noticed that *come* is accessed together with the infinitive phrase *to pick you up* as an EL island. The possible explanation is that the English infinitive maker to, a system morpheme, becomes obligatory if two successive verbs are activated and selected simultaneously. It seems that the speaker prefers *pick up* for its lexical-conceptual structure to convey his communicative intention more accurately.

These CS instances show that bilinguals may switch to particular lexical items of another language at a certain point during a discourse most probably because of cross-linguistic differences in language-specific lemmas underlying the lexical-conceptual structure of particular lexemes. It is in this sense that different languages possess different lexicalization patterns to realize speakers' semantic and

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pragmatic intentions (cf. Talmy, 1985). As reported by Li (1996), Nishimura (1997), and Wei (2001b, 2002), in many cases an exact translation of equivalent lexical items across languages becomes incomplete or inaccurate. Thus, bilinguals may switch to certain EL content morphemes as a compensatory lexical strategy when no ML lexical item can present itself in expressing their intended meanings. In other words, language cues may have different values, and when the language cue specifies a particular language at a certain point of speech production, its lexical item receives activation.

Regarding language choices in CS, de Bot and Schreuder (1993) suggest that bilingual speakers are able to separate the language systems they know and to mix them for their communicative intentions. They believe that bilinguals are able to do so by specifying language choices in their preverbal message (i.e., at the conceptual level), which plays a role in the activation of individual language-specific lexical items. This implies that conceptual information and the language cue must work together in activating language-specific lemmas for the appropriate lexical items to serve speakers' communicative intentions. This is because lemmas are tagged with a language label (Green, 1986; Poulisse & Bongaerts, 1994). Sharing such assumptions, the BLA Model assumes that EL lemmas may receive more activation than the corresponding ML lemmas when speakers' preverbal message contains the [+EL] specification for some reason or other. According to the BLA Model, in CS, bilinguals use EL lexical items either because the ML has similar but nonequivalent lexical items or because the ML has not lexicalized a particular concept at all.

The EL lexical items in the above CS instances indicate that their lemmas receive the most activation and are thus selected as appropriate for the speakers' intended meanings. These CS instances also show how cross-linguistic differences in semantic/pragmatic feature bundles may affect lexical selections in mixed constituents and constructions involving CS. It is the ML which provides the sentential frame (i.e., grammatical construction) into which EL content morphemes are switched for lexical-conceptual reasons.

6. Code-switching for Cross-linguistic Predicate-Argument Structure

As introduced earlier, abstract entries in the mental lexicon (i.e., lemmas) contain information about lexical items' phonology, morphology, syntax, semantics, pragmatics, and so on. As discussed in the above section, during the formulation of a message, the conceptual information in the preverbal message activates the appropriate lexical items. Thus, the activation of the appropriate lexical items frees the syntactic information about them, which activates syntactic procedures.

The MLF Model (Myers-Scotton, 1993b [1997], 2002) specifies that one of the languages involved in CS must be selected as the ML, and it is the ML which provides the sentential frame into which the EL content morphemes are switched. Thus, whichever language as selected by bilinguals in CS controls the predicate-argument structure and supplies system morphemes, subcategorization frames for verbs

and surface morpheme order. "Language specific lemmas form the interconnection between the lexical-conceptual mappings to and from syntax" (Kroll & de Groot, 1997, p. 190). Thus, it should be noted that there is an inseparable connection between the level of lexical-conceptual structure and the level of predicate-argument structure with regard to lemma selection from the mental lexicon.

Following these lines of thinking, the BLA Model claims that cross-linguistic differences in predicate-argument structure is another major reason for bilinguals to switch to the EL predicate-argument structure whose lexical-conceptual structure is activated in the first place. This is because when the lemmas for a particular verb are activated, the predicate-argument structure as controlled by the verb is also activated. In other words, in some cases, predicate-argument structure across the two languages differ, but the semantic/pragmatic feature bundles contained in the lexical-conceptual structure of the EL are activated by bilinguals for their communicative intentions, which may also generate the EL predicate-argument structure as grammatically necessary. If the EL predicate-argument structure is activated, EL islands are produced. That is, all the morphemes contained in the EL predicate-arguments structure are from the EL, including the EL system morphemes. Below are some instances of CS for cross-linguistic predicate-argument structure.

[15] tingshuo nei-ge **professor** hen **crazy**. ta jingchang **fails students in exams**.

    hear that-CLASSIF professor very crazy she often fails students in exams

    "(I) heard that professor is very crazy. She often fails students in exams."

[16] 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/English; Wei, 2001b, p. 168)

[17] wo meitian dei **help her with her homework**.

    I everyday have to help her with her homework

    "Every day I have to help her with her homework."

    (Chinese/English; Wei, 2005, p. 2346)

[18] 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/English; Wei, 2001b, p. 166)

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In [15], the verb phrase headed by *fail* is an EL island. The English verb *fail* can be used as a causative verb and thus takes the grammatical subject as the AGENT who makes the failure happen, but the Chinese equivalent verb *shibai* means "be defeated in…" and is used only as a noncausative verb with the grammatical subject as the EXPERIENCER. The speaker switches to the English verb *fail*, and consequently the predicate-argument structure generated by the verb is produced as an EL island. In [16], the RECIPIENT is introduced in the prepositional phrase headed by *to*, which is the English indirect object dative construction, but the Chinese equivalent verb phrase headed by *jiao* (teach) only permits the double object construction (e.g., *jiao ta English* (teach him English)). The speaker switches to the English verb *teach*, and consequently the predicate-argument structure generated by the verb is produced as an EL island. In [17], the THEME (her homework) is introduced in the prepositional phrase headed by *with*, but in Chinese the THEME is always introduced by a specific verb such as *zhuo* (do). The speaker selects the EL help at the level of lexical-conceptual structure, but the EL and the ML are incongruent at the level of predicate-argument structure. Consequently, the speaker produces the whole verb phrase head by *help* as an EL island. In [18], the speaker switches to *wait for* as a single verbal unit, where the direct object *you*, the THEME, is introduced by the preposition *for*. Chinese does not have such equivalent phrase structures, and the same lexical-conceptual structure is realized by a single verb, in this case, by the verb *deng* (e.g., *deng ni* (wait you)). Since the speaker switches to *wait*, the result is the maximal projection of this EL phrasal verb *wait for*, that is, the EL predicate-argument structure is produced as an EL island.

7. Conclusion

This study demonstrates how naturally occurring CS instances provide some empirical evidence for certain specifications about the nature of the bilingual mental lexicon in relation to the bilingual mental activity in the speech production process involving CS. The crucial claim of this study is that lemmas in the bilingual mental lexicon are language-specific, which are in contact during a discourse involving CS, and such a contact occurs at three distinct but related levels of abstract lexical structure: lexical-conceptual structure, predicate-argument structure, and morphological realization patterns. The BLA Model regards CS as bilingual lemmas in contact at any level of abstract lexical structure and explains CS beyond the surface configurations of so-called bilingual mixed speech. This study reaches several conclusions about the linguistic motivations for and constraints on CS as a bilingual speech behavior.

(1) Bilingual speakers' two (or more) languages must turned "on" during a discourse involving CS, but they are never equally activated at the same time. The ML is a lot more strongly activated than the EL. The speaker may choose whichever language as the ML. It is the ML which provides the sentential frame (i.e., grammatical construction), controls morphosyntactic procedures, and provides most content morphemes and all system morphemes.

(2) The bilingual mental lexicon lemmas from the languages known, these lemmas are tagged for their specific languages, and language-specific lemmas are in contact in CS. If bilinguals are engaged in CS, they may activate the language-specific lemmas as desired from their bilingual mental lexicon. However, the EL only supplies content morphemes as desired by speakers to be switched into the ML sentential frame. This is because only conceptually activated EL lemmas can appear in ML+EL mixed constituents to satisfy speakers' communication intentions.

(3) Some switches are motivated by the lack of a particular lexical item in the ML for the speaker's intended meaning. Such switches are motivated to "fill a linguistic need" or to use the word most available in the other language, "the most available word phenomenon" (Grosjean, 1982, p. 151). The major claim of this study is that bilinguals may use compensatory strategies to solve lexical problems cause by the lexical gap between the languages involved.

(4) Bilingual can activate lemmas from whichever language as the EL during a discourse involving CS, but the activated EL lemmas must be sufficiently congruent with eh counterparts of the LM at each of the three levels of abstract lexical structure; otherwise, radical compromise strategies , such as production of EL islands, must be taken in order for CS to be possible.

The main purpose of this study is to apply the BLA Model as well as the MLF Model to the explanations of the CS phenomenon. The typical CS instances as discussed and explained in this study provide strong linguistic evidence that bilinguals may engage themselves in CS as a lexical strategy for effective bilingual communication.

References

Altarriba, J., & Basnight-Brown, D. M. (2009). An overview of semantic processing in bilinguals. In A. Pavlenko (Ed.), *The bilingual mental lexicon: Interdisciplinary approaches* (pp. 79-98). Bristol: Multilingual Matters. https://doi.org/10.21832/9781847691262-006

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

Bierwisch, M., & Schreuder, R. (1992). From concepts to lexical items. *Cognition*, *41*, 23-60. https://doi.org/10.1016/0010-0277(92)90039-K

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

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. https://doi.org/10.1075/sibil.6.10bot

de Groot, A. M. B. (2002). Lexical representation and lexical processing in the L2 user. In V. J. Cook (Ed.), *Portraits of the L2 user* (pp. 32-63). Clevedon: Multilingual Matters. https://doi.org/10.21832/9781853595851-004

Færch, C., & Kasper, G. (1984). Two ways of defining communication strategies. *Language Learning*, *34*, 45-63. https://doi.org/10.1111/j.1467-1770.1984.tb00995.x

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. https://doi.org/10.1016/0093-934X(86)90016-7

Green, D. W. (1986). Control, activation and resource: A framework and model or the control of speech in bilinguals. *Brain and Language*, *27*(2), 210-223. https://doi.org/10.1016/0093-934X(86)90016-7

Green, D. W. (1993). Toward a model of L2 comprehension and production. In R. Schreuder, & B. Weltens (Eds.), *The bilingual lexicon* (pp. 249-277). Amsterdam: John Benjamins. https://doi.org/10.1075/sibil.6.12gre

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. https://doi.org/10.1080/01434632.1985.9994221

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. https://doi.org/10.1017/CBO9780511611834

Halmari, H. (1997). *Government and codeswitching: Explaining American Finnish*. Amsterdam: John Benjamins. https://doi.org/10.1075/sibil.12

Jarvis, S. (2009). Lexical transfer. In A. Pavlenko (Ed.), *The bilingual mental lexicon: Interdisciplinary approaches* (pp. 99-124). Bristol: Multilingual Matters. https://doi.org/10.21832/9781847691262-007

Jiang, N. (1999). Testing processing explanations for the asymmetry in masked cross-language priming. *Bilingualism: Language and Cognition*, *2*, 59-75. https://doi.org/10.1017/S1366728999000152

Jiang, N. (2000). Lexical representation and development in a second language. *Applied Linguistics*, *21*(1), 47-77. https://doi.org/10.1093/applin/21.1.47

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. https://doi.org/10.1017/CBO9780511597855.006

Keatley, C. W. (1992). History of bilingualism research in cognitive psychology. In R. J. Harris (Ed.), *Cognitive processing in bilinguals* (pp. 15-49). Amsterdam: North-Holland. https://doi.org/10.1016/S0166-4115(08)61486-7

Kempen, G., & Hoenkamp, E. (1987). An incremental procedural grammar for sentence formulation. *Cognitive Science*, *11*, 201-258. https://doi.org/10.1207/s15516709cog1102_5

Kempen, G., & Huijbers, P. (1983). The lexicalization process in sentence production and naming: Indirect election of words. *Cognition*, *14*, 185-209. https://doi.org/10.1016/0010-0277(83)90029-X

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. https://doi.org/10.1006/jmla.1994.1008

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. https://doi.org/10.1002/9780470756492.ch5

Kroll, J. F., & Tokowicz, N. (2005). Models of bilingual representation and processing: Looking back and to the future. In J. F. Kroll, & A. M. B. de Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 531-553). Oxford: Oxford University Press.

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. https://doi.org/10.1016/j.sbspro.2015.11.700

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

Levelt, W. J. M., Roelofs, A., & Meyer, A. S. (1999). A theory of lexical access in speech production. *Behavioral and Brain Sciences*, *22*, 1-75. https://doi.org/10.1017/S0140525X99001776

Li, D. C. S. (1986). *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.

Myers-Scotton, C. (1993a). *Social motivations for codeswitching: Evidence from Africa*. Oxford: Clarendon Press.

Myers-Scotton, C. (1993b [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. https://doi.org/10.1093/acprof:oso/9780198299530.001.0001

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. https://doi.org/10.1515/ling.1995.33.5.981

Myers-Scotton, C., & Jake, J. L. (2000a). Four types of morpheme: Evidence from aphasia, codeswitching, and second language acquisition. *Linguistics*, *38*(6), 1053-1100. https://doi.org/10.1515/ling.2000.021

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.

Pavlenko, A. (2009). Conceptual representation in the bilingual lexicon and second language vocabulary learning. In A. Pavelenko (Ed.), *The bilingual mental lexicon: Interdisciplinary approaches* (pp. 125-160). Bristol: Multilingual Matters. https://doi.org/10.21832/9781847691262-008

Pfaff, C. (1979). Constraints on language mixing: Intrasentential code-switching and borrowing in Spanish/English. *Language*, *55*, 291-318. https://doi.org/10.2307/412586

Pienemann, M. (1999). *Language processing and second language development*. Amsterdam: John Benjamins. https://doi.org/10.1075/sibil.15

Poplack, S. (1980). "Sometimes, I'll start a sentence in Spanish termino en español": Toward a typology of code-switching. *Linguistics*, *18*, 581-618. https://doi.org/10.1515/ling.1980.18.7-8.581

Poulisse, N., & Bongaerts, T. (1994). First language use in second language acquisition. *Applied Linguistics*, *15*, 36-57. https://doi.org/10.1093/applin/15.1.36

Richards, J. C. (1976). The role of vocabulary teaching. *TESOL Quarterly*, *10*, 77-89. https://doi.org/10.2307/3585941

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

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. https://doi.org/10.1037/h0081105

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.

Wei, L. (2000a). Unequal election of morphemes in adult second language acquisition. *Applied Linguistics*, *2*, 106-140. https://doi.org/10.1093/applin/21.1.106

Wei, L. (2000b). Types of morphemes and their implications for second language morpheme acquisition. *International Journal of Bilingualism*, *4*(1), 29-43. https://doi.org/10.1177/13670069000040010301

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. https://doi.org/10.1177/13670069010050020201

Wei, L. (2002). The bilingual mental lexicon and speech production process. *Brain and Language*, *81*, 691-707. https://doi.org/10.1006/brln.2001.2557

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 f linguistic code-switching* (pp. 270-288). Cambridge, UK: Cambridge University Press. https://doi.org/10.1017/CBO9780511576331.017

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

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

Wei, L. (2016). Bilingual cognitive faculty and pragmatic markedness in code-switching. *International Journal of Language and Linguistics*, *3*(1), 1-11.

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.