Studies in Linguistics and Literature
ISSN 2573-6434 (Print) ISSN 2573-6426 (Online)
Vol. 2, No. 3, 2018
www.scholink.org/ojs/index.php/sll

Original Paper

Abstract Lexical Structure in Second Language Learning

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Received: August 13, 2018 Accepted: August 27, 2018 Online Published: August 30, 2018

doi:10.22158/sll.v2n3p223 URL: http://dx.doi.org/10.22158/sll.v2n3p223

Abstract

Different from most previous studies of language transfer phenomena in second language learning which remain at an observational and descriptive level, this study proposes that the major source of language transfer is the interference of first language abstract lexical structure. It assumes that any interlanguage system, like other linguistic systems, has an abstract lexical structure containing several discrete but interacting subsystems: lexical-conceptual structure, predicate-argument structure, and morphological realization patterns. Unlike abstract lexical structures in other linguistic systems, the abstract lexical structure in second language learning has different sources. This study claims that any abstract lexical structure in second language learning contains more abstract elements than surface configurations of language, that is, language-specific lemmas underlie lexical entries, and such language-specific lemmas are in contact in second language learning, which can be split and recombined in novel, yet constrained ways in constructing the developing interlanguage system. Some typical instances of language transfer indicate that parts of the abstract lexical structure from first language lexical entries may influence that of the incompletely acquired L2 lexical entries. Thus, successful second language acquisition is driven by the complete acquisition of the abstract lexical structure underlying second language lexical entries.

Keywords

abstract, lexical structure, lexical-conceptual, predicate-argument, morphological, bilingual, mental lexicon, lemma, transfer

1. Introduction

This study offers a brief but critical review of previous studies of second language (L2) learner errors in terms of language transfer as the theoretical background for the current research. Departing from most previous studies of language transfer which identified learner errors by focusing on surface configurations of learner language, this study describes and explains causes of learner errors by describing how language-specific lemmas in the bilingual mental lexicon are activated in the L2 production process. To do so, it adopts the Bilingual Lemma Activation (BLA) Model (Wei, 2002) of bilingual speech production and some current psycholinguistic models of language acquisition. It claims that language transfer must be identified and described at three levels of abstract lexical structure in L2 learning: lexical-conceptual structure, predicate-argument structure, and morphological realization patterns. Thus, language transfer is defined as "lemma transfer". It further claims that the abstract lexical structure in L2 learning contains language-specific lemmas underlying particular lexical entries and such language-specific lemmas are in contact in L2 learning. Some typical instances of language transfer in learning different L2s discussed in this study indicate that parts of first language (L1) abstract lexical entries may influence those of incompletely acquired L2 lexical items in Interlanguage (IL) development. That is, each of the three levels or subsystems of the abstract lexical structure in L2 learning may contain elements from learners' L1 and/or L2, resulting in a composite developing linguistic system. Thus, the complete acquisition of the L2 abstract lexical structure becomes crucial in successful L2 learning.

2. Perspectives on Language Transfer

Language transfer from learners' L1 into their L2 learning has long been observed at all linguistic levels. However, the role of learners L1 in L2 learning has been debated for decades. Different theoretical frameworks define language transfer differently. For example, from a behaviorist point of view, proponents of the Contrastive Analysis (CA) framework view language transfer as the imposition of linguistic information which is considered as the physical carryover of L1 surface forms to an L2 context, whether phonological, lexical, morphological, syntactic or semantic (Fries, 1945; Lado, 1957). According to the behaviorist view, the L1 habits influence the acquisition of the L2 or foreign language habits. CA assumes that it is the difference between learners' L1 and L2 that causes learner difficulty and errors. Hence, the goal of CA is to predict learner difficulty and errors by finding language differences of learners' L1 information on an utterance or sentence in the L2, that is, the use of learners' prior knowledge. Although CS is discredited, the notion of language transfer has been revived from various theoretical perspectives and remains one of the most fundamental in Second Language Acquisition (SLA) research.

The late 1970s and the early 1980s witnessed a body of research which examined language from an increasing number of perspectives. One of the important findings is that L1 transfer in SLA not only occurs as learners' direct linguistic reflexes but also indirectly reflects general organizational principles

that govern natural language and language acquisition. Zobl (1980a, 1980b, 1982) views language transfer and developmental influence as interacting ones in the sense that the L1 effect can prolong or delay the restructuring of L2 learners' rules, or it may create a number of transitional rules for the acquisition of a particular target form. That is, learners' L1 may cause variation in a developmental sequence.

Dulay, Burt and Krashen (1982) and Corder (1983, 1992) voice their opposition to the somewhat simplistic views on language transfer. According to them, differences between two languages do not necessarily cause learning difficulties, and L2 learner errors are more readily attributed to learners' L2 learning strategies than to learners' L1. Dulay et al. (1982) provide evidence that L2 learners with different L1 backgrounds follow similar developmental paths, and the observed SLA orders are similar if not completely identical to those observed in L1 acquisition. According to Schachter (1983, 1992), learners' previous knowledge constrains their hypotheses about the grammatical structure of the L2. Gass and Selinker (1992) claim that it is not incompatible to review SLA as being affected by two interrelated processes: learners' build-up of a body of knowledge in which they test hypotheses formed on the basis of the available L2 data, and learners' utilization of their knowledge of the L1 or other languages known.

What has been undoubtedly recognized is that L1 can have a constraining role in learners' L2 production because not only learners' perception of differences between L1 and L2 may prevent L1 transfer but also learners' perception of similarities may lead to "short-sighted transfer" (Kean, 1986, p. 87). Any study of SLA is in fact the study of transition from one primary language to another. It is the existence of primary languages as reference points that gives rise to some predictable transitional systems. Such transitional systems are now commonly called "Interlanguages" (ILs) as distinct from primary languages (Selinker, 1972; Selinker, Swain, & Dumas, 1975; Corder, 1983). Thus, an "interlanguage" is defined as L2 learners' developing linguistic system. It is undeniable that early L2 learners may transfer certain properties of their L1s into their current ILs, but they do not do so indiscriminately. Thus, the question becomes what L1 properties can be expected to transfer or incorporate into learners' IL. In other words, how learners' "incomplete" or "partial" L2 system can be explained in terms of its developmental process and direction.

According to psycholinguistic explanations of language transfer, it is necessary to consider the degree of processing independence between the two languages in bilingual processing. MacWhinney's Competition Model (1987) assumes that the human brain relies on a type of computation that emphasizes patterns of connectivity and activation in all mental processing. As predicted in the Competition Model, language-specific cues are in competition in L2 learning, and early L2 learners tend to transfer certain L1 cues to L2 production. According to MacWhinney (1997), because analogy and other types of pattern generalization play an active role in bilingual mental processing, all aspects of L1 that can possibly transfer to L2 are predicted to transfer. Though such a prediction is extremely strong and highly

falsifiable, many current studies of transfer effects in L2 learning provide some supporting evidence. Following such a line of thinking, unlike most previous studies of language transfer which identified learner errors by focusing on surface configurations of learner language, from some psycholinguistic perspectives (Levelt, 1989; Bierwisch & Schreuder, 1992; de Bot & Schreuder, 1993; Poulisse, 1997; Myers-Scotton & Jake, 2001; Wei, 2002), this study explains causes of learner errors by describing how language-specific lemmas in the bilingual mental lexicon are activated in L2 learning. In so doing, sources of learner errors are traced to the composite nature of the bilingual mental lexicon, and causes of language transfer are explained in terms of constraints on L2 development.

3. The Bilingual Mental Lexicon

According to some psycholinguists (Kempen & Huijbers, 1983; Roelofs, 1992; Levelt, 1989, 1995; Bock & Levelt, 1994; Myers-Scotton & Jake, 2000; Wei, 2002), the mental lexicon does not simply contain lexemes but also abstract information about them. Pieces of information about a particular lexeme are called "lemmas", which are abstract entries for each item in the mental lexicon. That is, for each item, the mental lexicon contains its lemma information (or "lemma" for short), comprising declarative knowledge about the word's meaning and its syntax and morphology necessary for constructing the word's syntactic environment. "It is in the lemmas of the mental lexicon that conceptual information is linked to grammatical function" (Levelt, 1989, p. 162). For example, the lemma for *give* requires three argument nouns: a subject noun that expresses the thematic role of AGENT, an object noun that expresses the thematic role of THEME (i.e., direct object), and another object noun that expresses the thematic role of RECIPIENT (i.e., indirect object), and in declarative sentences, they may appear in two basic word orders (e.g., *John gave Mary a gift* or *John gave a gift to Mary*). The lemma for this particular verb also contains information about its inflectional morphology for tense, aspect, voice and mood, information about the word's composition in terms of phonological segments and its syllable and accent structure, information about the word's register, the kind of discourse it typically enters into, and information about its pragmatics, stylistics, and affect. In other words, lemmas are abstract entries in the mental lexicon in the sense that they provide prelexical feature bundles that contain information about the three subsystems of lexical structure: "lexical-conceptual structure conflating universally available semantic and pragmatic information, "predicate-argument structure" specifying the properties of verbs in terms of their subcategorization frames (i.e., how many arguments they may take and which thematic role each argument receives), and "morphological realization patterns" spelling out surface devices for word order, agreement, tense/aspect/voice/mood marking, etc.

Some researchers have tried to answer several specific questions about the conceptual nature and representation of the bilingual mental lexicon: whether bilinguals have a single storage for the meanings of L1 and L2 words or have two separate storages (Keatley, 1992; Kroll & Stewart, 1994; Costa, 2005), if there is a shared storage, whether bilingual access the meanings of L2 words in the same way as L1 words

(de Groot, 2002; Kroll & Tokowicz, 2005). Thus, several models of the conceptual nature of the bilingual mental lexicon have been proposed, such as the Concept-Mediation Model (Potter, So, von Eckardt, & Feldman, 1984), the Word-Association Model (Potter, So, von Eckardt, & Feldman, 1984), and the Revised Hierarchical Model (Kroll & Stewart, 1994). All these models assume that there is a shared storage for the meanings of L1 and L2 words, and they only differ in how bilinguals access the meanings of L2 words and the relation between L1 and L2. Relevant to the assumption underlying this study of the nature and activity of the bilingual mental lexicon in SLA are the Separate Storage Model, the Distributed Model (de Groot, Dannenburg, & van Hell, 1994; de Groot, 1995; de Groot & Hoeks, 1995; de Groot & Comijs, 1995), the Shared (Distributed) Asymmetrical Model (Dong, Gui, & MacWhinney, 2005), and the Modified Hierarchical Model (Pavlenko, 2009).

The Separate Storage Model proposes two separate language-specific representational systems for the bilingual mental lexicon based on the assumption that each of the words of L1 and L2 in a translation pair expresses its own language-specific concept. The Distributed Model accounts for word-type effects, that is, some word types have relatively separate storage, but other have relatively shared storage, and some conceptual components are shared and some are not (i.e., a distributed representation).

The Shared (Distributed) Asymmetrical Model provides a developmental and dynamic view of language-specific differences in bilingual memory. Dong et al. (2005) provide some evidence for the shared storage for the conceptual representations of the bilingual's two vocabularies and asymmetrical links between concepts and lexical names in the two languages. They claim that bilinguals may integrate conceptual differences between translation equivalents but may also maintain the L1 conceptual system in the representation of L1 words and adopt the L2 conceptual system in the representation of L2 words (i.e., two conceptual systems are separated). They further claim that L2 learning is a process that involves conceptual convergence between L1 and L2 and maintenance of conceptual differences between L1 and L2. Thus, such an L2 learning process is evidenced by the phenomena that early L2 learners tend to transfer L1 meanings wholesale to L2 forms (e.g., Kroll & Tokowicz, 2001) by ignoring L2 specific meanings (e.g., Ijaz, 1986) and there are the reciprocal effects of L2 on L1 (e.g., Bullock & Toribio, 2004). One of the important implications of this model is that early L2 learning is a process of "convergence" that involves the collapsing of differences in areas of the linguistic systems where L1 and L2 have similar features, and successful L2 learners should be able to notice and maintain language-specific differences between two superficially similar items across the two languages (Dong et al., 2005, p. 234).

The Modified Hierarchical Model assumes that "conceptual representations may be fully shared, partially overlapping or fully language-specific" (Pavlenko, 2009, p. 146). The important implications of this assumption for activation models of bilingual processing and speech production (e.g., Costa, 2005; Green, 1998; Levelt, 1989, 1995) is that there exist conceptual nonequivalents and language-specific aspects of partial equivalents. It is the existence of language-specific categories that makes us assume

that if only one language may have the word forms necessary for certain particular concepts, any activation of lexical concepts in the other language would cause breakdowns in fluency or even errors in speech production (Pavlenko, 1997, 2003). In addition, this model recognizes the phenomenon of conceptual transfer in SLA by differentiating between semantic and conceptual levels of representation. Semantic representation involves links between words and concepts and connections between words and other words (e.g., collocation, word association, synonymy and antonymy), and conceptual transfer involves transfer of conceptual categories. Thus, learner errors can be studied at the level of semantic linking and at the level of conceptual restructuring (for the discussions of sources of learner errors, see Javis & Pavlenko, 2008; Pavlenko, 2009, p. 148-149). Furthermore, this model views the main goal of L2 learning as conceptual restructuring and development of new linguistic categories. This view allows us to explore a much more complex conceptual organization of the bilingual mental lexicon and the role as played by learners' L1 in semantically and conceptually restructuring L2 linguistic categories during the development of the L2 linguistic system.

Along the above lines of thinking about the nature and activity of the bilingual mental lexicon in L2 learning, this study uses the Bilingual Lemma Activation (BLA) Model in codeswitching (Wei, 2002, 2006a, 2006b, 2015) to provide some plausible explanations of transfer in SLA.

4. The Bilingual Lemma Activation Model

As introduced in the above section, the mental lexicon does not simply contain lexemes but lemmas as abstract entries about them. As assumed, though there is a single mental lexicon for bilinguals (and multilinguals), the bilingual mental lexicon contains lemmas from the languages known, and each lemma in the bilingual mental lexicon is tagged for a specific language and supports the realization of an actual lexeme in speech production. That is, lemmas in the bilingual mental lexicon are language-specific, and language-specific lemmas are in contact in L2 learning. Figure 1 below represents a model of bilingual lemma activation in L2 learning.

As Figure 1 illustrates, speech production involves four sequential levels. At the conceptual level, the first processing component, the conceptualizer, generates preverbal messages. As assumed, preverbal messages generated at the conceptual level are not language-specific. This is because there are sets of universal concepts available to all speakers of different languages (cf. Schönpflug, 2003). However, at the conceptual level, the speaker selects the semantic/pragmatic feature bundles to be desired (Myers-Scotton & Jake, 2000; Wei, 2002). The speaker's mental activity at this level involves "selecting the information whose expression may realize the communicative goals" (Levelt, 1989, p. 5). The verbalizer then maps the selected information to the bilingual mental lexicon at the lemma level, where language-specific lemmas are activated. The activated lemmas in the bilingual mental lexicon then send directions to the second processing component at the function level, the speech production formulator,

for syntactic and phonological encoding, which in turn sends information to the third processing component at the positional level, the articulator, for transforming phonetic plan into overt speech.

If Level's model (1989) of monolingual speech production is applied to L2 production process, an incomplete L2 knowledge base can be accounted for by assuming that some of the L2 lexical items are not yet fully specified for their semantic, syntactic, and phonological information they contain, and the lack of automaticity can be accounted for by assuming serial, step-by-step processing rather than parallel processing at the morphophonological and articulatory levels. However, this model will be problematic to deal with language transfer in second or further language learning. This study assumes that an incomplete L2 knowledge base also contains language-specific lemmas for the lexical items in the languages known to the learner. In other words, the bilingual (or multilingual) mental lexicon is not the same as the monolingual mental lexicon because of the composite nature of the former. Thus, it becomes necessary to explore the nature and activity of the bilingual mental lexicon with special reference to language-specific lemma activation and its consequences in L2 production. The BLA Model assumes that language transfer in L2 learning is a consequence of bilingual lemmas in contact and accounts for it at three levels of speech production: lexical-conceptual structure, predicate-argument structure, and morphological realization patterns.

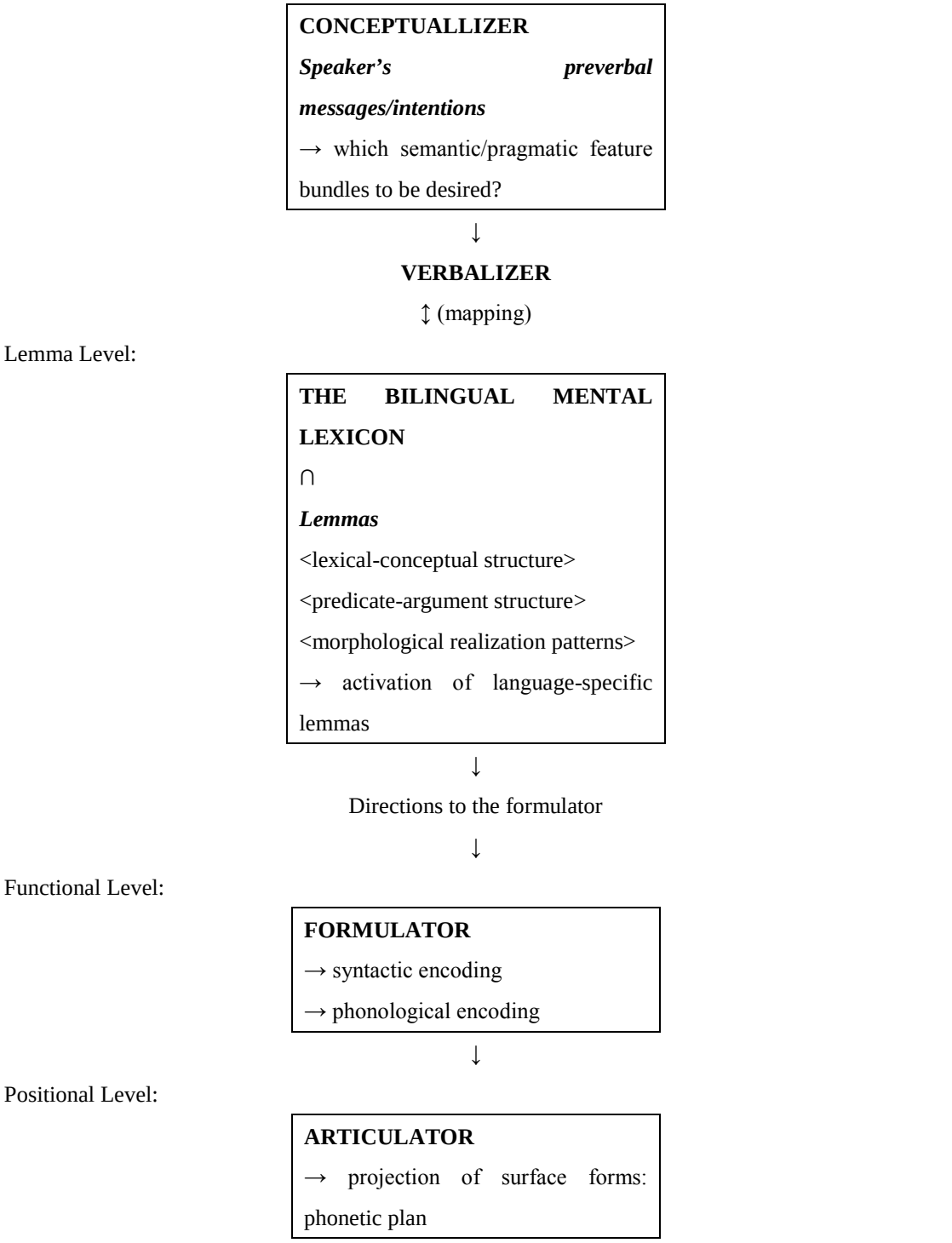

Figure 1. The Bilingual Lemma Activation Model

Adapted from Level (1989); Myers-Scotton & Jake (2000); Wei (2003).

5. Bilingual Lemmas and Lemma Transfer in Second Language Learning

As introduced earlier, lemmas are abstract entries in the speaker's mental lexicon which support the surface realization of actual lexemes. This is because lemmas contain phonological, morphological, semantic, syntactic, and pragmatic information about lexemes stored in the mental lexicon. Thus, lemmas in the mental lexicon are defined as the speaker's internal representation of knowledge about surface forms. The BLA Model assumes that lemmas in the bilingual mental lexicon are language-specific, and such lemmas are in contact in L2 learning. It further assumes that lexicalization patterns across language reflect the fact that there are different configurations of semantic and pragmatic features across related lemmas in different languages (Myers-Scotton & Jake, 1995; Wei, 2001a, 2001b). As proposed in the BLA Model, sources of language transfer in L2 learning should be understood beyond the surface configurations of bilingual speech but at a rather abstract level of the nature and activity of the bilingual mental lexicon during IL development. It is the learner's incomplete knowledge of the lemma information about particular lexical items in the L2 which causes negative language transfer at each of the three levels of speech production. To be more specific, this study regards language transfer as "lemma transfer".

5.1 Lemma Transfer in Lexical-Conceptual Structure

As assumed, the conceptual structure is not language-specific (Levelt, 1989; Bierwisch & Schreuder, 1992), but, as shown in Figure 1, it is at the conceptual level of speech production that the speaker's preverbal messages select and activate semantic/pragmatic feature bundles. In other words, it is the speaker's communicative intentions that motivate the activation of language-specific lemmas in the bilingual mental lexicon. This is because languages may lexicalize a given conceptual structure in different ways (Talmy, 1985; Jackendoff, 1991; Levin & Pinker, 1991; Wei, 2015). This study assumes that though the L2 lexicon contains only L2 lexical items that the speaker has already learned, some of these lexical items are not yet fully specified in terms of their phonological, morphological, semantic, syntactic, and pragmatic information. Thus, if the speaker's knowledge of the lemmas underlying certain L2 lexical items is incomplete or his/her L2 lexical items are insufficient to express his/her intended meanings, he/she may turn to "similar" lexical items in his/her L1 at a certain point in L2 production (Dewaele, 1998; Wei, 2003). The BLA Model assumes that if this happens, the Verbalizer mapping has to enforce a different lexicalization pattern available to the speaker (Talmy, 1985; Choi & Bowerman, 1991; Wei, 2003). Consequently, lemma transfer occurs when language-specific lemmas underlying particular lexical items in the bilingual mental lexicon are selected and activated. Lemma transfer in lexical-conceptual structure results in inappropriate lexical choices.

[1] My husband doesn't **wash** … never **wash** the dishes.

[2] When I'm sick, when I've cold I **eat** medicine, cold medicine.

[3] In Japan all students **do** English **study** in school.

[4] In Japan students **do** may tests and exams in class.

(Japanese L1; Wei, 2003, p. 65)

[5] My parent want **do** me teacher … teach English in Japan.

[6] Yesterday in library I **look** Japanese magazine.

(Japanese L1; Wei, 1996, p. 423)

In [1], the speaker uses “wash” rather than “do” based on the Japanese lemma for the verb in question. In [2], the speaker produces “eat medicine” instead of “take medicine” based on the Japanese lemma for the same concept. In [3], the speaker uses the Japanese lemma for the lexical-conceptual structure of “study” introduced by the verb “do” and the noun expressing the activity itself. In [4], the speaker produces “do many tests and exams” rather than “take many tests and exams” based on the Japanese lemma for the verb in question. In [5], “do” in Japanese means “make” in this sentence. In [6], “look” in Japanese may also mean “read” as well as “see, look at, visit, observe”.

[7] She now **do** meal.

[8] **Open** air condition.

[9] You **close** light.

[10] You come my **house**?

(Chinese L1; Wei, 1995)

[11] There **have** English class, free. You do?

(Chinese L1; Wei, 1996, p. 423)

In [7], “do” in Chinese means “cook”, and it also means “play, work, and write”. In [8], “open” in Chinese means “turn on, start”. In [9], “close” in Chinese means “turn off, stop and shut”. In [10], “house” in Chinese also means “apartment, building, home”, and the preposition “to” is missing because MOTION and GROUND are conflated in the verb “come” itself. In [11], “have” in Chinse means both “possess” and “exist”.

[12] watashi wa mai nich juuni ji ni hirugohan ga **aru**.

I PART/TOP every day 12 o’clock at lunch PART/NOM have

“I have lunch at 12 o’clock every day.”

[13] haha wa shokuji no atode shokki o **suru**.

Mother PART/TOP meal PART/POSS after dish PART/OBJ do

“(My) mother does the dishes after the meal.”

[14] kare wa shaken o **toru**.

he PART/TOP test PART/OBJ take

“He will take the test.”

[15] watashi wa tenisu o **asobu**.

I PART/TOP tennis PART/OBJ play

“I play tennis.”

(English L1; Wei, 2003, p. 65)

(PART: particle, TOP: topic, NOM: nominative, POSS: possessive, OBJ: object)

In [12], the speaker uses the English concept of "have (aru)" for "have lunch" rather than the Japanese equivalent "taberu (eat)" for the same concept. In [13], the speaker translates the English expression "do the dishes" into Japanese by using "suru (do)" rather than "arau (wash)". In [14], the speaker uses the verb "toru (take)" rather than "ukeru (receive)" for the equivalent English expression "take the test". In [15], the speaker uses the verb "asobu (play)" based on the English expression rather than "suru (do)" as used in combination with other nouns to express a particular activity.

These instances of inappropriate lexical choices show that the activation of language-specific lemmas sends directions to the formulator to produce the items. These instances of lemma transfer in lexical-conceptual structure across languages provide the evidence that in L2 production, although speakers use the L2 (i.e., target) lexical items, the selection of those items may be based on the activation of language-specific lemmas in the bilingual mental lexicon. In other words, the activated language-specific lemmas for the universal concepts based on the speaker's L1 may activate or retrieve the L2 lexical items in an inappropriate manner. Thus, "transfer" in lexical-conceptual structure should be understood as cross-linguistic transfer at the lemma level.

5.2 Lemma Transfer in Predicate-Argument Structure

"Predicate-argument structure" is defined as the number of arguments (i.e., lexical nouns) required by the verb, and each argument is assigned a particular thematic role by the verb. In addition to lemma transfer in lexical-conceptual structure, L2 learners may draw on the predicate-argument structure of their L1. For example, the verb "give" minimally requires three arguments, and it assigns the thematic role of AGENT to the noun which must be able to perform the act of giving, the thematic role of THEME to the noun which is what is given, and the thematic role of RECIPIENT to the noun who receives what is given. Because of their incomplete knowledge of certain L2 lexical items, although learners may choose the right verbs, they may not know the predicate-argument structures required by those verbs and use them in an inappropriate manner (Wei, 2000a, 2000b). Thus, learners may draw on the predicate-argument structure of a similar verb in their L1 to express their intended meaning. If the target predicate-argument structure is violated or unsatisfied, the ungrammatical or nonnative-like construction results as a learner error. The BLA Model claims that such a type of ungrammaticality is most probably caused by the activation of language-specific lemmas in learners' L1 mental lexicon, which sends the directions to the formulator at the functional level for syntactic encoding in L2 production.

[16] Please help me look my child.

[17] You're listening music?

[18] He is funny. His words in class laugh me.

(Chinese L1; Wei, 1995)

In [16], the preposition "after" does not appear to introduce the THEME "my child", since the Chinese

equivalent verb “zhaoliao (look after)” does not need a preposition to introduce the THEME. In [17], the THEME “music” is the internal object of the verb “listen” without the preposition “to” as required in English, since the Chinese equivalent verb “ting (listen)” can introduced the THEME. In [18], the incorrect extension of the semantic feature of “cause” results in the causative lexical-conceptual structure which affects the predicate-argument structure and its morphological realization pattern. In this sentence, “me” is the causee, the PATIENT, which should be “I”, the AGENT, in English, and “his words” is the causer, which should be a stimulus introduced by a preposition (laugh at his words) in English.

[19] Today he helps dinner.

[20] She cost me hundred dollar, … bad tooth.

(Chinese L1; Wei, 1996, p. 422)

In [19], the equivalent verb “help” in Chinese assigns the THEME directly to the object, but in English it is the preposition “with” which assigns the THEME to the object. In [20], the Chinese equivalent verb “cost” takes the AGENT (the person who spends the money) as the subject, but in English it is the THEME (the thing on which the money is spent) which is the subject.

[21] Wait. I first fill water in glass. Wait.

[22] Parent provides money to me.

(Japanese L1; Wei, 1996, p. 422)

In [21], the verb “fill” assigns the THEME to “water”, rather than assigning the PATIENT to “glass” and introducing the THEME by the preposition “with” as required in English. In [22], the verb “provide” assigns the THEME, rather than the RECEIPIENT, to the object, violating the English predicate-argument structure where the THEME is introduced by the preposition “with”.

[23] I can wait you here.

[24] Why you ask many questions for me?

(Japanese L1; Wei, 1995)

In [23], “you” is assigned the THEME directly by the verb “wait” without the preposition “for” as required in English, since the Japanese counterpart verb “matsu (wait)” can take its internal object. In [24], “me” is assigned the GOAL by the preposition “for”, structurally subordinate to the object “many questions” assigned the THEME by the verb “ask”. This reflects the Japanese predicate-argument structure where the verb “suru (ask)” projects the GOAL as a postpositional object with the postposition “ni”.

[25] My English is not good, so I can’t help my daughter’s homework.

[26] Will you give your phone number?

(Japanese L1; Wei, 2003, p. 66)

In [25], the PATIENT (or THEME) “my daughter’s homework” is introduced without the preposition “with” or a specific verb like “do” as required in English. The speaker employs the Japanese

predicate-argument structure for the English verb “help” where the PATIENT is directly introduced by the verb itself. Also, in English the BENEFACTIVE is introduced by the verb “help and the PATIENT must be introduced by “with” or “do”, as in “I can’t help my daughter (BENEFACTIVE) with her homework (PATIENT), but in Japanese the BENEFACTIVE may appear in the possessive with the PATIENT. In [26], the speaker employs the Japanese predicate-argument structure for the verb “give” rather than the English indirect object dative or double object dative construction. While in Japanese the counterpart verb “give” does not require an explicit RECIPIENT (or GOAL), in English both the THEME and the RECIPIENT/GOAL must appear either in the indirect object dative construction (e.g., Will you give your phone number (THEME) to me (RECIPIENT/GOAL)?) or in the double object dative construction (e.g., Will you give me (RECIPIENT/GOAL) your phone number (THEME)?).

[27] densha o totte gakkoo e iku.

train in PART/OBJ take school to go

“(I) take the train to go to school.”

[28] haha wa shopping iku.

Mother PART/TOP shopping go

“(My) mother goes shopping.”

[29] gozenchuu kare o yonda.

in the morning him PART/OBJ called

“(I) called him in the morning.”

(English L1; Wei, 2003, p. 69)

In [27], the speaker employs the English predicate-argument structure for the Japanese verb “toru/totte (take)” where the means of transportation “densha (train)” is introduced as the THEME (the direct object). In Japanese, however, “densha” must be introduced as the LOCATIVE in a prepositional phrase, rather than introduced as the THEME, by the verb “noru/notte”. To follow the Japanese predicate-argument structure, the same concept should be realized as below.

densha ni note gakkoo e iku.

train in take school to go

“(I) take the train to go to school.”

In [28], the speaker translates the English expression “go shopping” into Japanese, violating the Japanese predicate-argument structure for the verb “iku (go)”. In English “shopping” is introduced as the GOAL by the verb “go”, but in Japanese “shoppinggu (shopping) is introduced as the GOAL by the preposition “ni”.

haha wa shoppinggu ni iku.

Mother PART/TOP shopping for go

“(My) mother goes shopping.”

In [29], the speaker employs the English predicate-argument structure for the verb “call (yoru/yonda)”

where the semantic features of “communicate with by telephone” are conflated in the verb “call”. Thus, in English the object of “call” is actually the RECIPIENT. Unlike in English, in Japanese the RECIPIENT must be introduced by a preposition and the phone-call itself must be introduced as the object, the THEME, by a specific verb such as “kakeru” or “suru”.

gozenchuu kare ni denwa o kaketa (or: denwa o shita).

in the morning him in phone PART/OBJ called (or: phone PART/OBJ did)

“(I) called him in the morning.”

The above instances of lemma transfer show how L1 predicate-argument structures affect learners” L2 production and contribute to the developing IL. Though learners” “target” is always and should be the L2 abstract lexical structure, in this case, the L2 predicate-argument structure, the developing IL system is predictably a composite of structures from multiple sources. These sources may include not only L1 lexical-conceptual structures or the intended ones in the L2 but also L1 predicate-argument structures and incompletely acquired ones in the L2.

5.3 Lemma Transfer in Morphological Realization Patterns

A lemma also contains information about a lexical item’s morphological realization patterns, which are defined as surface devices for word order, agreement, tense/aspect/voice/mood marking, etc., at the positional level. Again, if learners’ knowledge of certain L2 morphological realization patterns is incomplete, they may activate lemmas underlying their L1 morphological realization patterns before the Formulator is put into action for syntactic and phonological encoding. That is, lemma transfer in morphological realization patterns is another type of learner error. The consequence is that the Articulator produces ungrammatical surface forms in L2 production.

[30] I English not speak.

[31] My husband in USC study.

(Chinese L1; Wei, 1995)

In [30], the direct object “English” is placed before the verb. In [31], the prepositional phrase of location “in USC’ is placed between the subject and the verb. Though the Chinese basic word order is SVO (Subject-Verb-Object), any constituent can be moved to the sentence initial position or before the verb for topicalization or emphasis. Such instances show that though Chinese learners of English use L2 content morphemes to express their intended meanings, they may employ their L1 morpheme order (cf. Givón, 1984; Talmy, 1985; Jake, 1998; Fuller, 1999).

[32] She at outside at playground playing. You come? You not come?

[33] You not go library, I go.

(Chinese L1; Wei, 1996, p. 421)

In [32], in addition to the non-English word order, the auxiliary verb “be” for the progressive aspect of the verb “playing” is missing; the auxiliary verb for asking the question is missing in “you come?”, and the auxiliary verb for negation is missing in “you not come?”. In [33], the auxiliary verb for negating

the verb is missing in “you not go library”; the auxiliary verb for the future tense of the verb is missing in “I go”. Such instances reflect the Chinese morphological realization patterns. In Chinese grammatical concepts, such as tense and aspect are not morphologically realized but implicitly expressed. Also, in Chinese negation is realized by placing the negative particle “not/no” immediately before the verb (no auxiliary available in Chinese for tense/aspect marking or negation).

[34] In Japan student English junior high school start.

[35] I everyday by bus go to school.

[36] Tomorrow to New York we’ll go with some friends.

[37] Sorry. Only little English I know.

(Japanese L1, Wei, 1995)

In [34]-[37], the speakers employ the Japanese basic SOV word order, where any constituent, whether it is the object of the verb as in [34] and [37] or a preposition phrase as in [35] and [36], is placed before the verb.

[38] I English … speak not well.

[39] I everyday use bike. Taxi? No. I live not far.

[40] EPI teacher help me English speak.

[41] I go to party with friend tomorrow.

(Japanese L1; Wei, 1996, p. 421)

In [38] and [39], the speakers do not use the auxiliary verb for negation, which reflects the Japanese morphological realization patterns, where the particle “not” for negation can be placed with other items, such as adverbs and adjectives, rather than verbs.

[42] watashitachi wa shigoto ni iku mainichi.

we PART/TOP work to go everyday

“We go to work everyday.”

[43] watashi wa moou kakiowatta watashino repooto.

I PART/TOP already finished my paper

“I already finished my paper.”

(English L1; Wei, 2003, p. 69)

In [42], although the sentence basically keeps the Japanese verb final order, the adverbial of time everyday’ appears in the sentence final position, which is allowed in English, but not in Japanese. In [43], the sentence is produced in the typical English word order where the object follows the predicate verb. Although such a violation of the target language surface word order does not frequently occur, such instances of transfer in morphological realization patterns from learners’ L1 may still exist, especially in the early state of L2 learning.

The above instances of lemma transfer indicate that like lexical-conceptual structure and predicate-argument structure, L1 abstract lexical structure at the level of morphological realization

patterns may be employed by learners to fill the "gaps" in the incompletely acquired L2 abstract lexical structure. Thus, language transfer at any level of abstract lexical structure in IL development is assumed to be language-specific lemma transfer.

6. Conclusion

Unlike most studies of L2 learner errors or language transfer in L2 learning, this study applies the BLA Model to the exploration of sources of learner errors at a rather abstract level of the speech production process, that is, the lemma level. The BLA Model assumes that lemmas in the bilingual mental lexicon are language-specific, and such language-specific lemmas are in contact in L2 learning. That is, the abstract lexical structure in L2 learning contains language-specific lemmas underlying particular lexemes. Thus, the phenomena of language transfer are discussed and explained in terms of lemma transfer in different levels of abstract lexical structure: lexical-conceptual structure, predicate-argument structure, and morphological realization patterns. This study offers several implications for understanding the nature and activity of the bilingual mental lexicon in L2 learning.

1) The central assumption underlying the BLA Model is that learners' L1 may play a role in influencing the developing IL. This is because the bilingual mental lexicon contains language-specific lemmas in contact. Thus, it becomes necessary to investigate the role of language transfer in terms of its synchronic procedure in speech production and its diachronic procedure in IL development. "Language transfer" can be viewed as learners' problem-solving procedure or learning strategy by activating certain L1 lemmas for L2 lexical-conceptual structure, predicate-argument structure or morphological realization patterns.

2) Language transfer can be viewed as the activation of L1 knowledge at different levels of the abstract lexical structure in L2 production. This is because learners' incomplete knowledge of particular L2 lexical items can be understood as their incomplete knowledge of lemma specifications for the abstract lexical structure in the L2. Thus, any successful SLA can be defined as the full acquisition of language-specific lemma specifications for particular L2 lexical items.

3) The term "language transfer" can be retained as a description of the interrelatedness between old knowledge and new knowledge. Sufficient acquisition of language-specific lemma specifications for the L2 abstract lexical structure will replace the partially learned L2 abstract lexical structure for particular lexemes. That is, language-specific lemmas in the bilingual mental lexicon need to be clearly separated in successful L2 learning. In other words, language-specific lexicalization and grammaticalization patterns must be learned as they are.

4) The role of L1 in filling gaps in the abstract lexical structure underlying the developing IL system is rather restricted because the "target" in L2 learning is always the intended L2 system. L2 learning is a progressive process and is driven by the acquisition of the L2 abstract lexical structure. It can be predicted that as more and more knowledge of the L2 abstract lexical structure becomes available to

learners, the intended L2 system will gradually replace the developing or transitional IL system.

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