Original Paper

The Composite Abstract Lexical Structure of Interlanguage and Its Implications for Second Language Acquisition

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Abstract

This paper explores the nature of interlanguage with a focus on its lexical structure in relation to second language acquisition. The lexical structure of any language is assumed to be 'abstract' in that the mental lexicon contains 'lemmas', which are pieces of information about individual lexemes at three abstract levels: lexical-conceptual structure, predicate-argument structure, and morphological realization patterns. The abstract lexical structure of IL is assumed to be 'composite' in that during the process of second language acquisition several linguistic systems are in contact, each of which contributes different amounts to interlanguage (i.e., the developing linguistic system). This study claims that lemmas are language-specific and the bilingual mental lexicon contains cross-linguistic lemmas at each of these abstract levels. It further claims that bilingual lemmas are in contact in interlanguage production, and it is cross-lemma variations in the composite abstract lexical structure of interlanguage which induce learner errors. Naturally occurring interlanguage production data for the study include several first and second language pairs. Based on the research findings, this study concludes that interlanguage variations are driven by an incompletely acquired abstract lexical structure of a target language and offers some implications for second language acquisition.

Keywords

composite, abstract, lexical structure, lemma, lexical-conceptual, predicate-argument

1. Introduction

In studies of second language acquisition (SLA), four theories or models have been recognized to account for sources of learner errors. The first theory is the that second language (L2) learners tend to employ their first language (L1) knowledge and other languages known to them in their production of the target language (TL) items (Lado, 1957). This theory regards L1 influence as a major source of learner

errors. The second theory is that L2 learners always test their hypotheses formed on the basis of the L2 data available to them (Dulay, Burt, & Krashen, 1982). This theory claims that L2 learners always rely on whatever L2 knowledge as acquired at any moment of learning in their L2 production. It puts no or much less emphasis on L1 influence. The third theory is that several linguistic systems are involved in L2 learning, such as learners' native language (NL) (i.e., L1), their TL (i.e., L2), and their interlanguage (IL) (i.e., developing linguistic system), each of which plays its role in SLA (Selinker, 1972; Eubank, Selinker, & Sharwood Smith, 1995; Wei, 2015). This theory claims it is the interaction of these linguistic systems which contributes to learner errors. The fourth theory is that the nature and activity of the bilingual mental lexicon determine the process of IL development and learner errors are the outcome of bilingual lemmas in contact (Jake, 1998; Myers-Scotton & Jake, 2000; Wei, 2000a, 2000b). Wei (2002, 2003) proposes the Bilingual Lemma Activation (BLA) model of SLA in terms of the composite abstract lexical structure of IL. This model relates sources of learner errors to the nature and activity of the bilingual mental lexicon at an abstract level.

Adopting the BLA model, this study makes three assumptions about IL as a developing linguistic system. The first assumption is that the mental lexicon contains 'lemmas', which are pieces of information about individual lexemes (Levelt, 1989). Lemmas of the mental lexicon are language-specific (Myers-Scotton & Jake, 2000; Wei, 2002). The second assumption is that lexical structure is 'abstract' because of the abstractness of lemmas in three discrete but interacting subsystems: lexical-conceptual structure, predicate-argument structure, and morphological realization patterns. The third assumption is that the abstract lexical structure of IL is 'composite' because it has sources from the learner's L1 and/or TL. Parts of the lexical structure from the learner's L1 may influence the lexical structure of incompletely acquired TL lexical entries in constructing IL utterances.

Several NL-TL pairs are included for the study: Japanese-English, Chinese-English, and English-Japanese. Some typical instances of L1 lemma transfer involving other NL-TL pairs are also cited in support of the claim that the composite and abstract nature of the lexical structure underlying IL is one of the major sources of learning difficulty and learner errors.

2. Lexical Structure and Its Abstractness

Lexical structure is abstract in that lexemes contain more abstract elements than surface lexical items. Such abstract elements are called 'lemmas' of the mental lexicon. For example, the lemmas for *she* require this pronoun to be used of a female and any main verb in the present tense to be inflected with *-s* for the subject-verb agreement; the lemmas for *kill* require a subject noun to express the thematic role of AGENT and an object noun to express the thematic role of THEME, and these lexical items to be arranged in a particular order; the lemmas for give require a subject noun to express the thematic role of AGENT, a direct object noun to express the thematic role of THEME, and an indirect object noun to express the thematic role of RECIPIENT, and these lexical items to be arranged in two possible orders: Subject—Indirect Object—Direct Object (John gave Mary a gift) or Subject—Direct Object—Indirect

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Object introduced by a preposition (John gave a gift to Mary). Lemmas also contain information about a verb's subcategorization frame (i.e., each verb is subcategorized for the number of argument nouns and their respective thematic roles), and information about a lexical item's phonological segments and composition, its syllable structure and its accent structure. Lemmas may also contain information about a lexical item's register, the kind of discourse it enters into, its pragmatics, stylistics, and affect.

Lexical structure is abstract because lexemes have more abstract elements than surface lexical items and such abstract elements make lexical structure complex and abstract (Kempen & Huijbers, 1983; Talmy, 1985; Rappaport & Levin, 1988; Jackendoff, 1990; Roelofs, 1992; Levelt, 1989, 1995; Bock & Levelt, 1994; Kroll & de Groot, 1997). To be more specific, abstract lexical structure contains three subsystems as indicated in Figure 1.
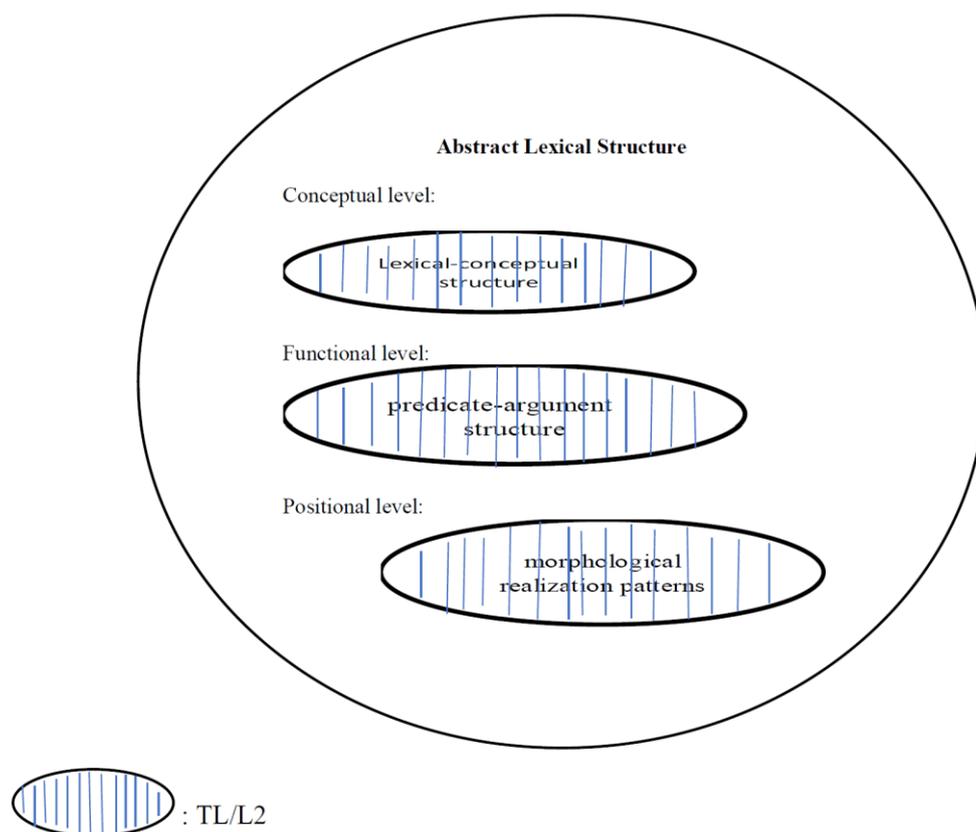

Figure 1. Abstract Lexical Structure

'Lexical-conceptual structure' conflates universally available conceptual information about lexical entries as prelexical feature bundles; 'predicate-argument structure' specifies the properties of verbs in terms of their subcategorization frames, the number of arguments they may take and the thematic role each argument receives; 'morphological realization patterns' spell out surface devices for word order, agreement, tense/aspect/voice/mood marking, etc. These subsystems play their respective and interactive roles in language production (Myers-Scotton & Jake, 1995, 2000; Jake, 1998; Fuller, 1999; Wei, 2001,

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2002, 2003). The lexical-conceptual structure of a particular lexeme contains its semantic and pragmatic feature bundles and pointers to other lexemes with which it occurs. Lexical-conceptual structure maps onto predicate-argument structure because the theta criterion (i.e., each required argument must be assigned a particular thematic role) requires the mapping of lexical-conceptual structure onto predicate-argument structure. Predicate-argument structure ensures each thematic role assignment and then maps onto morphological realization patterns which encode the realization of a particular morpheme or word order for surface speech production. For example, the English morphological realization patterns encode the realization of the thematic role of THEME as an object of a verb: *John gave a gift to Mary*, as an object introduced by a verb-satellite: *The kind man gave up his seat/gave his seat up to the old woman*, as an object introduced by a verb + preposition: *Mary listened to John's story*, as an object introduced by a noun + preposition: *The reporter interviewed the students of linguistics*, or as object introduced by an adjective + preposition: *The students of linguistics are proud of their achievements*.

It becomes clear that lexical structure in the mental lexicon becomes abstract because it cannot be clearly observed at any surface level but at a deep level of the mental lexicon. This deep level is abstract because the mental lexicon does not simply contain lexemes and their semantic content but lemmas, which are defined as abstract entries in the mental lexicon that support the surface realization of actual lexemes. Furthermore, what makes lexical structure complex and abstract is that it contains three subsystems, which are sequentially related to each other in speech production.

3. Abstract Lexical Structure of Interlanguage and Its Composition

Like every linguistic system, the developing linguistic system of IL also has its abstract lexical structure, which also contains three discrete and interacting subsystems. One of the most important assumptions underlying the BLA model is that lemmas are language-specific in the bilingual mental lexicon, and language specific-specific lemmas are in contact in IL production. This is because IL is always the learner language which shows the surface forms of the intended TL, but it also contains abstract lexical structures from both the L1 and the TL (Myers-Scotton, 1994; Jake, 1998; Wei, 2000a, 2000b, 2002). It is in this sense that the abstract lexical structure of IL is composite. The composite nature of the abstract lexical structure of IL is illustrated in Figure 2.

Abstract lexical structure is modular and can be split and recombined in novel, yet constrained ways in constructing the IL system (Jake, 1998). IL abstract lexical structure has various sources. This is because at various stages of SLA, parts of the abstract lexical structure of learners' L1 may influence the abstract lexical structure of incompletely acquired TL. In other words, learners' L1 may contribute different amounts of its abstract lexical structure to the TL abstract lexical structure along the IL continuum (Selinker, 1972). Consequently, each of the three subsystems of the IL abstract lexical structure may contain elements (i.e., lemmas underlying lexical entries) from learners' L1 and/or TL. It is different sources or a mixture of different sources which make the IL abstract lexical structure composite.
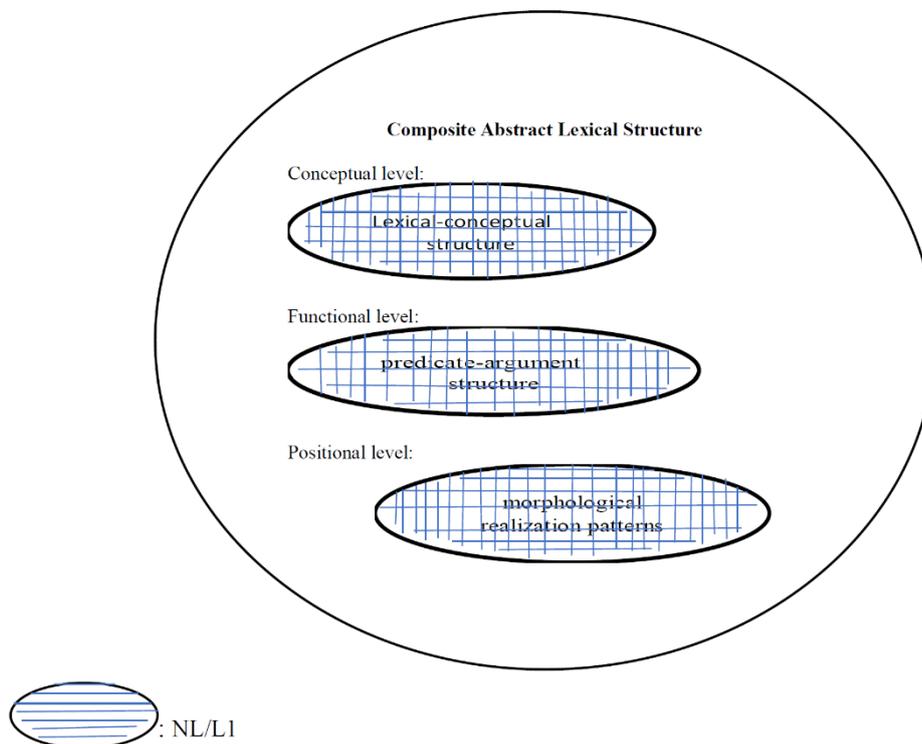
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Figure 2. Composite Abstract Lexical Structure of IL

IL is an incremental and transitional linguistic system and must be governed by some underlying principles. Jake (1998) proposes two such principles:

"*The target-language principle*: To the extent possible, construct the IL from the TL lexical structure" (Jake, 1998, p. 341). This is because starting in early stages of L2 learning, learners attempt to construct the developing IL from the TL abstract lexical structure. "All IL surface structures are projected by TL-based lexical items in the grammatical system underlying IL" (Jake, 1998, p. 342). Due to the composite nature of the abstract lexical structure of IL, language transfer or influence of L1 abstract lexical structure is unavoidable but must be sufficiently target-like so as to contribute to the developing system of IL. As predicted, all language transfer or L1 influence is TL-orientated (Kellerman, 1986; Giacobbe, 1992; Wei, 2000a, 2000b).

"*The complete-projection principle*: To the extent possible, satisfy the requirements of the grammar of the matrix language through the specification of all requisite grammatical features of the entries in the mental lexicon (i.e., lemmas)" (Jake, 1998, p. 342). This principle stipulates that L2 learners attempt to fill all levels of the abstract lexical structure (i.e., each of the three subsystems) of IL based on their current knowledge of the abstract lexical structure of the TL. That is, the TL abstract entries in the mental lexicon (i.e., lemmas) must be as completely specified as possible in order to project lexical properties onto syntax (Levelt, 1989). This is because in various stages of learning learners may not have full access or have only partial access to the grammatical system whose phrase structures are projected by the TL lexical entries in the mental lexicon (Wei, 2002). Thus, when the TL lexical entries in the bilingual

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mental lexicon are insufficiently acquired or incompletely specified, certain features of the L1 abstract lexical structure may be involved in learners' L2 production to meet their immediate communicative needs, resulting in an incomplete projection of the TL lexical entries. Abstract lexical entries in the bilingual mental lexicon are assumed to be language-specific and are in contact in IL production. The complete projection of the TL abstract lexical structure "through the specification of all requisite grammatical features of the entries in the mental lexicon (i.e., lemmas)" (Jake, 1998, p. 342) can be achieved only incompletely by L2 learners. As commonly observed in SLA, IL abstract lexical structure in various stages of learning reflects learners' incomplete projection of TL abstract lexical structure and may contain certain linguistic features of learners' both L1 and TL, resulting in the composite abstract lexical structure of IL.
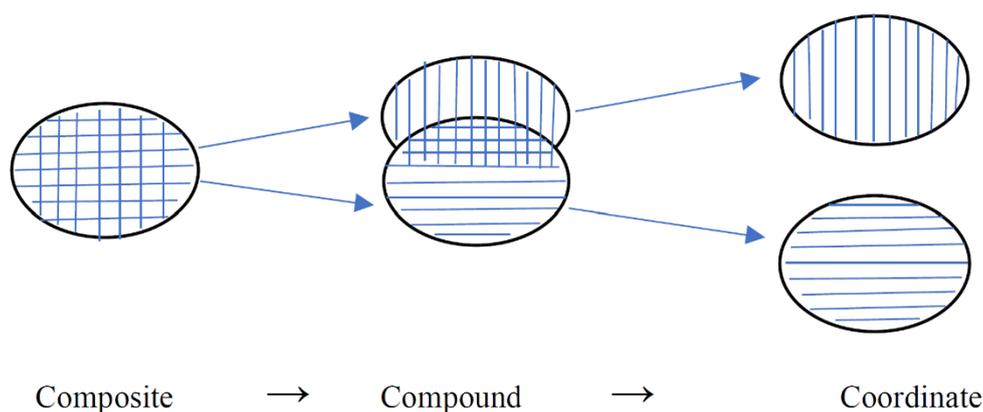

Composite   →   Compound   →   Coordinate

Figure 3. Bilingual Abstract Lexical Structure Continuum

Figure 3 illustrates that in the early stage of L2 learning, the bilingual abstract lexical structure is a composite due to the lack of learners' full access to the TL abstract lexical structure. According Jake's *target-language principle* (1998), L2 learners always try to use the TL lexical items even though their selection of those items may be caused by their incomplete knowledge of each level of the TL abstract lexical structure (i.e., lexical-conceptual structure, predicate-argument structure, and morphological realization patterns). As L2 learning progresses, learners will gradually separate TL/L2 and NL/L1 abstract lexical structures along the bilingual abstract lexical structure continuum, from 'composite' to 'compound', and then from 'compound' to 'coordinate'. According to Jake's *complete-projection principle* (1998), as learners acquire more and more knowledge of the lemmas for particular TL lexical items, their bilingual abstract lexical structure will expand to make the TL lexicalization patterns possible. Figure 3 predicts that when bilingual abstract lexical structure becomes 'compound', there will be less NL/L1 influence, and that when bilingual abstract lexical structure become 'coordinate', learners will be able to separate their NL/L1 abstract from their TL/L2 abstract lexical structure and have full access to the latter.

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4. Interlanguage Construction Projected by Bilingual Lemmas in Contact

The BLA model (Wei, 2002, 2003) assumes that the abstract lexical structure of IL is a composite and lemmas in the bilingual mental lexicon are in contact in IL production. The BLA model offers several implications for IL construction. First is the implication that, as evidenced in other language-contact situations, IL construction is a linguistic outcome from learners' L1 and TL in contact at abstract levels. To be more specific, lemmas in the bilingual mental lexicon are in contact in IL production. Second is the implication that IL construction is necessarily projected by its composite abstract lexical structure, which lacks certain aspects of the abstract lexical structure of the TL. Learners may turn back on their L1 abstract lexical structure and/or their partially acquired TL abstract lexical structure in order to frame IL constituents. Third is the implication that language transfer or L1 influence should be understood as lemma transfer of L1 lexical structure at several abstract levels: lexical-conceptual structure, predicate-argument structure, and morphological realization patterns. Such a transfer becomes necessary and unavoidable for learners to fill particular gaps in the incompletely acquired TL abstract lexical structure. However, the contributions of L1 abstract lexical structure at various abstract levels are more constrained than those of the TL to the composite abstract lexical structure of IL.

Under the assumption that IL construction is projected by bilingual lemmas in contact, the BLA model regards learner errors as incomplete projection of TL abstract lexical structure at each of the three abstract levels.

4.1 Incomplete Projection of TL Lexical-Conceptual Structure

Lexical-conceptual structure is the first subsystem of abstract lexical structure. As claimed by Levelt (1989) and Bierwisch and Schreuder (1992), the conceptual structure may not be language-specific, but, as proposed by Talmy (1985), Jackendoff (1991) and Levin and Pinker (1991), languages may differ in lexicalizing the components of a particular conceptual structure. There is abundant evidence that IL lexical-conceptual structure of certain lexemes may be influenced by semantic/pragmatic features from L1 counterparts. One often cited example is from Talmy (1985, p. 69) for the notion of language-specific lexicalization patterns:

The bottle floated into the cave.

La botolla entró flotando en la cueva.

the bottle entered floating into the cave

The above example shows that the lexicalization pattern differs across the two languages. In English motion with manner or condition of movement can be conflated into a single lexical item: *float*, but in Spanish the notion of FLOATING is expressed periphrastically by using the gerund: *flotando*. "Lemmas in the mental lexicon are argued to form a connection between the lexical features and conceptual features, which map to and from syntax" (cf. Kroll & de Groot, 1997; Wei, 2020, p. 58). "Conceptual equivalence facilitates L2 vocabulary learning through positive transfer …, partial (non)equivalence facilitates learning through partial overlap (positive transfer), yet also complicates it when learners assume complete equivalence and display negative transfer …; non-equivalence simultaneously

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complicates learning, as learners have to develop new categories …" (Pavlenko, 2009, p. 152). Similarly, the BLA model relates incomplete projection of TL lexical-conceptual structure to the nature of the bilingual mental lexicon. It claims that because some of the L2 lexical items are not yet fully specified in terms of their semantic, pragmatic, syntactic and/or morphological information, learners' L2 lexicon may be partial or incomplete (Wei, 2002, 2020). That is why learners' L2 lexicon is recognized as their IL lexicon. As commonly practiced in SLA, when the incompletely acquired L2 lexical items are insufficient for learners to convey their communicative intentions or intended meanings, they may turn to the similar or seemingly equivalent lexical items in their L1, resulting in incomplete projection of TL lexical-conceptual structure (Wei, 1995, 2015; Dewaele, 1998; Jake, 1998). In other words, learners' L1 lexicalization patterns may come into play in IL production (Talmy, 1985; Choi & Bowerman, 1991; Wei, 2020). Such a phenomenon has been commonly observed in SLA research. As shown in Figure 2, lexical-conceptual structure as the first level of L1 abstract lexical structure in the composite abstract lexical structure of IL may instigate inappropriate lexical choices in IL production. For example, (the expected L2 lexical items are indicated in the brackets), *There are many works (jobs) in the city* (Zughoul, 1991). … *they thought it's a good possibility (chance) to catch him* … (Lennon, 1991). *To count (take) someone's pulse* (Biskup, 1992). *I go to the oven (bakery) in the morning to buy bread. My father is a long (tall) thin man* (Jiang, 2000). *You close (turn off) the light* (Wei, 1995).

The BLA model assumes that lemmas as abstract entries in the bilingual mental lexicon are language-specific, and such language-specific lemmas can be activated in IL production before the acquisition of TL abstract lexical structure. If this happens, in this case, TL lexical-conceptual structure becomes incompletely projected. In other words, L1 lexical-conceptual structure can be transferred in IL production. It is the transfer of L1 lexical-conceptual structure which causes inappropriate lexical choices.

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

[2] You **close** light.

   (Chinese L1; Wei, 1995)

[3] There **have** English class, free. You go?

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

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

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

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

[6] When I've cold I **eat** medicine, cold medicine.

[7] In Japan students **do** many tests and exams in class.

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

[8] watashi wa mai nichi juuni ji 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.'

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

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

'(My) mother do the dishes after the mean.'

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

he PART/TOP test PART/OBJ take

'He will take the test.'

[11] yoru anata ni denwa o **ageru**.

evening you to phone PART/OBJ give

'(I) will give you a call in the evening.'

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

I PART/TOP tennis PART/OBJ play

'I play tennis.'

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

Chinese L1 – English L2

In [1], 'do' means 'cook'. It also means 'play, work, play' in Chinese. In [2], 'close' means 'turn off'. It also means 'stop, shut' in Chinese. In [3], 'have' means 'exist'. It also means 'possess' in Chinese.

Japanese L1 – English L2

In [4], 'look' means 'read'. It also means 'see, look at, visit, observe' in Japanese. In [5], 'wash' means 'do' in Japanese.   It seems that the learner does not know the collocation of 'do the dishes' in English. In [6], 'eat' means 'take' in Japanese. In [7], 'do' means 'take' in Japanese.

English L1—Japanese L2

In [8], the learner uses the English concept 'aru' (have) for 'have lunch' rather than the L2 'taberu' (eat) for the equivalent concept. In [9], the learner translates the English collocation 'do the dishes' into Japanese by using 'suru' (do) rather than 'arau' (wash). In [10], the learner uses 'toru' (take) rather than 'ukeru' (receive) for the equivalent English expression 'take the test'. In [11], the leaner translates the English concept into Japanese by using the verb 'ageru' (give) rather than 'shimas' (do) as required in Japanese. In [12], the learner uses the verb 'asobu' (play) based on the English expression rather than 'suru' (do) as used in combination with other relevant nouns.

The above typical instances of L1 lexical-conceptual structure in IL production provide the evidence that in early-stage L2 learning the TL lexical-conceptual structure is not available to learners. Of course, learners always try to use the TL lexical items available to them, but their selection of those lexical items may be caused by their incomplete knowledge of the TL lexical-conceptual structure of particular lexemes or may be influenced by their L1 lexical-conceptual structure. As claimed by Talmy (1985), Pinker (1989a, 1989b), Jake (1994), and Wei (1994, 1996a, 1996b), learners acquire certain TL content morphemes first which match up possible L1 conflation categories of semantic notions (i.e., several semantic notions are conflated in a single lexical item).

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4.2 Incomplete Projection of TL Predicate-Argument Structure

Predicate-argument structure is the second subsystem of abstract lexical structure. In addition to the incomplete projection of TL lexical-conceptual structure, because of their incomplete knowledge of certain TL lexical items, although they may choose the right TL verbs, they may not know the predicate-argument structure as projected by the lemmas underlying those verbs, resulting in inappropriate or incomplete projection of TL predicate-argument structure. Consequently, any incompletely acquired TL verbs (i.e., IL verbs) may project the number of arguments (i.e., the number of lexical nouns) as required and the thematic roles (i.e., the semantic/pragmatic functions) assigned to individual arguments as their counterparts in the L1, resulting in incomplete projection of TL predicate-argument structure. In other words, transfer of L1 predicate-argument structure may occur in IL production.

[13] Please help me **look** my child.

[14] You're **listening** music?

    (Chinese L1; Wei, 1995)

[15] Today he **help** dinner.

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

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

[17] His words in class **laugh** me.

[18] I can **wait** you here.

[19] Why you **ask** many questions for me?

    (Japanese L1; Wei, 1995)

[20] I first **fill** water in glass.

[21] He not **help** my homework.

[22] Parent **provide** money to me.

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

[23] My brother also **graduated** New York University.

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

[24] densha o **totte** gakkoo e iku.

    train PART/OBJ take school go

    '(I) take the train to go to school.'

[25] haha wa shopping **iku**.

    mother PART/TOP shopping go

    '(My) mother goes shopping.'

[26] gozen chuu kare o **yonda**.

    in the morning him PART/OBJ called

    '(I) called him in the morning.'

[27] kereno uchi made moseru o **ageta**.

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his home to ride PART/OBJ gave

'(I) gave him a ride home.'

(English L1; Wei, 2003, pp. 67-68)

Chinese L1—English L2

In [13], the preposition 'after' does not appear to introduce the THEME *my child* since the Chinese counterpart verb 'zhaoliao' (look) does not need a preposition to introduce the THEME. In [14], the THEME *music* is introduced without the preposition 'to' since the Chinese counterpart verb 'ting' (listen) can take the THEME as its internal object. In [15], 'help' assigns the THEME directly to the object without the preposition 'with' as required in English since in Chinese, the counterpart verb 'bang' (help) can assign the thematic role directly to the object. In [16], 'cost' assigns the AGENT, rather than the THEME (the thing on which the money is spent) to the subject (the person who spends the money), but such a predicate-argument structure for the equivalent verb is very normal in Chinese.

Japanese L1—English L2

In [17], the Japanese causative lexical-conceptual structure affects the predicate-argument structure and its morphological realization patterns. In this example, 'me' is the PATIENT, which should be 'I', the AGENT, as required in English, and 'his words' is the causer, which should be a prepositional stimulus 'at this words' (e.g., I laugh at his words in class). In [18], 'you', the THEME, is introduced by 'wait' without the preposition 'for' as required in English since the Japanese counterpart verb 'matsu' (wait) can take its internal object. In [19], 'me', the GOAL, is introduced in a prepositional phrase, structurally subordinate to the verb internal object 'many questions', the THEME, since the Japanese counterpart verb 'suru' (ask) projects the GOAL as the object introduced by the postposition 'ni', rather than the indirect object introduced by the verb itself as required in English (e.g., Why do you ask me many questions?). In [20], 'fill' assigns the THEME to 'water', rather than the PATIENT to 'glass' and introducing the THEME by the preposition 'with', and 'glass' is assigned the LOCATION by the preposition 'in', rather than the PATIENT as required in English. In [21], the preposition 'with' to introduce the THEME does not appear, since in Japanese the verb 'tetsudau' (help) itself can assign the thematic role directly to the object. In [22], 'provide' assigns the THEME, rather than the RECIPIENT, to the object, violating the English predicate-argument structure where the THEME must be introduced by the preposition 'with'. In [23], the Japanese predicate-argument structure is used, and the SOURCE 'New York University' is introduced without the preposition 'from'.

English L1—Japanese L2

In [24], the English predicate-argument structure is used for the verb 'toru/totte' (take) where the means of transportation 'densha' (train) is introduced as the THEME, violating the Japanese predicate-argument structure where 'densha' must be introduced as the LOCATIVE by the verb 'noru/note' (take) in a prepositional phrase headed by 'ni' (e.g., dansha ni note gakkoo e iku). In [25], the English expression 'go shopping' is translated into Japanese, violating the Japanese predicate-argument structure of the verb 'iku' (go). In English 'shopping; is introduced as the GOAL by the verb 'go', but in Japanese 'shopping'

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is introduced as the GOAL by the preposition 'ni' (e.g., haha wa shopping ni iku). In [26], the English predicate-argument structure for the verb 'call' (yoru/yonda) is used, where the semantic features of 'communicate with by phone' are conflated in the verb 'call'. In English, the object of 'call' is assigned the RECIPIENT, but in Japanese the RECIPIENT must be introduced by a preposition, and the phone-call itself must be introduced as the THEME (i.e., the object) by a specific verb such as 'suru' or 'kakeru' (e.g., gozen chuu kare ni denwa o shita (or: denwa o kaketa)). In [27], the English expression 'give a ride' is translated into Japanese, violating the Japanese predicate-argument structure. In English 'ride' (noseru) is introduced as the THEME (i.e., the object) by the verb 'give' (ageru), but in Japanese the means of transportation must be introduced by a preposition as the INSTRUMENT (e.g., kereno uchi made kuruma de okutte ageta).

The above typical instances of L1 predicate-argument structure in IL production provide the evidence that in early-stage of L2 learning L1 predicate-argument structure, like L1 lexical-conceptual structure, also contributes to composite abstract lexical structure of IL, resulting in incomplete projection of TL predicate-argument structure. As commonly observed, L1 predicate-argument structure may play a role in constructing TL sentences during IL development.

4.3 Incomplete Projection of TL Morphological Realization Patterns

Morphological realization pattern is the third subsystem of abstract lexical structure. At the positional level, this subsystem of abstract lexical structure deals with surface devices for word order, agreement, case assignment, tense/aspect/voice/mood marking, etc. Like the other two subsystems, learners' lack of knowledge of TL morphological realization patterns may cause transfer of L1 morphological realization patterns or incomplete projection of TL morphological realization patterns in IL production. Such a phenomenon has been commonly observed in learners' early-stage IL production.

[28] I English not speak.

[29] Because I study English, just more study English.

[30] My husband in USC study.

    (Chinese L1; Wei, 1995)

[31] Hello … she not in home. She at outside at playground playing. You come? You not come?

[32] Go swim? No. Parent no go, you no go swim.

[33] You go too? We have three ticket.

[34] You not go library? I go.

[35] Tomorrow I no go work.

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

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

[37] I in Japan my city like.

    (Japanese L1; Wei, 1995)

[38] I English … speak not well.

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

[40] I go to party with friend tomorrow. We together cook, interesting.

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

[41] Tomorrow to New York we'll go with some friends.

[42] Sorry. Only little English I know.

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

[43] watashitachi wa shigoto ni iku mainichi.

  we PART/TOP work to go every day

  'We go to work every day.'

[44] watashi wa moou kakoowatta watashino repooto.

  I PART/TOP already finished my paper

  'I already finished my paper.'

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

<u>Chinese L1—English L2</u>

In [28], 'English' is the direct object, but it is placed before the verb. In [29], 'more' appears before the verb phrase 'study English'. In [30], the prepositional phrase of location 'in USC' is placed between the subject and the verb. Such word orders are non-English-like, but in Chinese they are very normal. In addition to Chinese word orders, in [31], the copula 'be' does not appear in '… she (is) not in home', the auxiliary 'be' does not appear in 'She (is) at outside at playground playing', there is no auxiliary verb for formulating a question in '(Will/Can) you come?', and there is no auxiliary verb for negating a verb in 'You (will/can) not come?'. The missing auxiliary verbs as required in English for such grammatical functions are also observed in [32], [33], [34], and [35]. One possible reason for early-stage learners not to produce these auxiliary verbs is that Chinese does not possess and does not need such auxiliary verbs for the same grammatical functions. In addition to Chinese word orders and missing auxiliary verbs, in [33], 'ticket' is not inflected with '-s' for plural marking, in [34], the preposition 'to' does not appear to introduce the goal (go (to) library), in [35], the preposition 'to' does not appear (go (to) work), in [32], the possessive adjective does not appear to modify the noun ((Your) parent), and in [34], the definite article 'the' does not appear to modify the noun ((the) library). In Chinese no such grammatical devices are available for the same grammatical or morphological purposes.

<u>Japanese L1—English L2</u>

In [36], [37], [38], [39], [40], [41] and [42], the Japanese basic word order Subject-Object-Verb (SOV) is used, where, in addition to the object, any other constituent can be placed before the verb. In [38] and [39], the verb is not negated by an auxiliary verb because in Japanese verbs can be negated directly by a negative particle. In [40], no auxiliary verb appears before 'go' for tense marking. In [40], the article 'the' does not appear before 'party', and no article or possessive adjective appears before 'friend'. All such grammatical or morphological devices are not available or required in Japanese.

<u>English L1—Japanese L2</u>

In [43], the sentence basically follows the Japanese verb final word order, but the adverbial of time 'mainichi' (every day) is placed in the sentence final position. Such a word order is allowed in English, but not in Japanese. In [44], the sentence elements are arranged in the typical English word order where the object is placed right after the predicate verb.

The above typical instances of L1 morphological realization patterns provide the evidence that, in addition to L1 lexical-conceptual structure and predicate-argument structure, early-stage leaners may turn back on their L1 morphological realization patterns before they completely acquire their TL morphological realization patterns.

5. Implications for Second Language Acquisition

The particular instances of incomplete projection of TL lexical-conceptual structure, predicate-argument structure, and morphological realization patterns offer several implications for SLA.

The lexical-conceptual structure of the TL abstract lexical structure is not available to early-stage learners. In SLA, although learners always try to use the TL lexical items (cf. *the target-language principle* (Jake, 1998)), their selection of those items may be caused by their incomplete knowledge of the TL lexical-conceptual structure of particular lexemes. As claimed in the BLA model, lemmas as abstract entries in the mental lexicon are language-specific, and language-specific lemmas in the bilingual mental lexicon are in contact in SLA. Consequently, learners' L1 lemmas for the universal concepts may activate or retrieve the TL lexical items in an inappropriate manner, resulting in L1 lexical-conceptual structure in IL production. As predicted, as learners acquire more and more knowledge of the lemmas underlying particular TL lexical items, their bilingual mental lexicon will expand to include the TL lexical-conceptual structure of particular lexemes, which will make the TL lexicalization patterns possible (cf. *the complete-projection principle* (Jake, 1998).

In early-stage of SLA, L1 predicate-argument structure also contributes to the composite abstract lexical structure of IL. In SLA, although learners' 'target' is always and should be the L2 predicate-argument structure, their incomplete knowledge of this subsystem of the TL abstract lexical structure may also affect their production of the TL predicate-argument structure, resulting in the ungrammaticality of the TL syntax. That is, learners' production of the predicate-argument structure does not match the syntactic requirements in the TL. Thus, Like L1 lexical-conceptual structure, L1 predicate-argument structure makes the abstract lexical structure of IL composite. In SLA, learners' acquisition of TL lexical items must include complete knowledge of lemmas underlying particular verbs in order to produce the TL syntactic frame.

Early-stage learners may produce appropriate TL lexical items, but they may fail to follow the TL morphological realization patterns. At the sentence positional level, learners may miss surface devices for abstract grammatical concepts as required in the TL. They may also turn back on their L1 morphological realization patterns in IL sentence production, resulting in complete projection of the TL morphological realization patterns. L1 morphological realization patterns may also contribute to the

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composite abstract lexical structure of IL. The complete acquisition of TL morphological realization patterns turns out to be more difficult that the complete acquisition of TL lexical-conceptual structure and predicate-argument structure for early-stage learners because of the abstractness of the TL surface grammatical devices. Thus, complete acquisition of TL abstract lexical structure must also include complete acquisition of TL morphological realization patterns in IL production.

6. Conclusion

This study relates learner errors to the nature and activity of the bilingual mental lexicon. Adopting the BLA model, it makes three claims. The first is the claim that the mental lexicon contains lemmas, which are abstract entries about particular lexemes, and thus lexical structure is abstract in that it contains three abstract subsystems: lexical-conceptual structure, predicate-argument structure, and morphological realization patterns. The second is the claim that lemmas in the bilingual mental lexicon are language-specific, and IL abstract lexical structure is composite. Language-specific lemmas are contained in each of the subsystems of composite abstract lexical structure of IL. The third is the claim that learners' incomplete knowledge of TL abstract lexical structure (i.e., TL lemma specifications) instigates incomplete projection of TL lexical-conceptual structure, TL predicate-argument structure, and TL morphological realization patterns. Thus, sources of learner errors or language transfer are explored in terms of L1 lemmas transfer. The particular instances of incomplete projection of TL abstract lexical structure as discussed in this study support such claims.

This study proposes that in early stages of L2 learning, learners may employ their L1 abstract lexical structure in IL production. TL is always learners' target, and successful SLA requires learners to acquire complete knowledge of each of the subsystems of TL abstract lexical structure so as to make their IL speech production more target-like.

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