Original Article

Reading Approaches with English-Japanese Dictionary: A Way to Improve Japanese High School Students' L2 Proficiency

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Interface processors within working memory (WM) determine high school students' second language (L2) of English proficiency. Within WM, complex second language structures of English are parsed efficiently and correctly by the interfacing of English homogenous lexical items. Improving learners' English proficiency requires restructuring the features of linguistic cues to English-oriented interface processors by connecting existing Japanese-oriented interface processors. This interfacing promotion demands English linguistic cues (the word order and morphological agreement cues) as a means of stimulating the most effective and efficient linguistic cues in WM that initiate the adaptation of Japanese-oriented cues' (case markings and animacy) processing into English-oriented cue awareness. In facing complex English sentences, not a few high school students cannot help consulting English-Japanese dictionary in order to supplement some shortage of L2 English linguistic cues by adapting L1 Japanese-oriented cues for L2 English linguistic processing.

Because interface processors within WM control the degree to which homogenous lexical items can interface and integrate the pragmatic, semantic, and syntax knowledge that L2 learners have, the most effective and efficient way to acquire L2 proficiency is to activate these three components together through reading. Reading approaches with English-Japanese dictionary is a way to access huge amounts of information that activates these three components.

For not a few Japanese high school students, reading approaches with consulting English-Japanese dictionary within the functional approaches is one of the most effective and efficient ways of producing an integrated relationship between semantics, syntax, and pragmatics by means of interfacing homogeneous lexical items within WM. As a result, they can catch up with their English class' progressing stages without lagging far behind.

Key Words: the L2 linguistic proficiency, high school students, English linguistic cues, interface processors, English-Japanese dictionary

Introduction

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Even though human beings use different languages, they have essentially the same cognitive architecture and mental processes (Saeed, 1997). The differences of languages are the differences of semantic and grammatical structures in mental lexicon. These structures are com-

posed of the notion of grammar and use of grammar within the context of language in social interaction, where the effects of that interaction shape the form of language used (Hashiuchi & Oku, 2003).

Casting eyes to Japanese high school students, not a few students are now suffering from how to improve English ability, and some of them do not understand even basic English expressions. The factors that determine English learners' L2 ability, as with any language, consist of three basic elements: pragmatics, semantics, and syntax (Klein & Perdue, 1997; Hashiuchi & Oku, 2003). With regard to the acquisition of L2 linguistic knowledge, the ability to process the L2 effectively and efficiently essentially relies on cognitive (declarable) and nonlinguistic (procedural) skills that are centered within working memory (WM).

Working memory (WM) in the mental lexicon allows an individual L2 learner to utilize both declarable knowledge such as vocabulary and grammar and procedural knowledge about language construction in order to interface and to integrate both prior knowledge and incoming information as language construction takes place. WM restrains L2 proficiency (Nakano, Oku & Hashiuchi, 2002). To ignite WM functioning is to give birth to interface processors within mental lexicon, though none of interface processors produces if neither incoming information nor the stored information in the mental lexicon is the same. The L2 adult learners have to depend to great extent on learning mechanisms and principles (Oku, 2002a), which means that the role of WM operations in performing linguistic tasks may be stronger in the L2 than in L1.

This paper suggests a proposal for developing an awareness of L2 English linguistic cues and a stronger L2 English interface processor in Japanese high school students' WM through reading approaches with consulting English-Japanese dictionary within the functional approaches' frameworks. This paper is divided into five sections. Section I represents interface processors within working memory restrains L2 English proficiency, its architecture and functions in linguistic processing. Section II describes language differences are linguistic interface processors' differences through surface structures' differences, referring to the frameworks of linguistic theory and linguistic acquisition targeted to high school students. Section III depicts how Japanese L2 English novice learners acquire English language ability though there are various differences between Japanese and English languages. Section IV shows the relationship between Japanese high school students and English-Japanese dictionary, and Section V offers conclusions.

I. Interface Processors within Working Memory Restrain L2 Proficiency

When linguistic information comes into mind/brain, pre-existing information tries to be connected to this incoming information in order to construct meaning in there/mental lexicon.

An individual's mental lexicon can be treated as a set of "mental organs" or "processing modules," (Hashiuchi & Oku, 2003) and these modules correspond to identifiable neural structures in the brain (see Harley, 2001). However, each of those modules or lexical items exist in mental lexicon as a domain-specific and informational encapsulated (Foder, 1983). Within there, lexical items are stored as heterogeneous sizes from affixes to idioms and more abstract structures (Jackendoff, 2002). In order to promote language processing, each of them must break its husk to be penetrated and be linked each other by both interfacing and integrating homogeneous counterparts of incoming information (Hashiuchi & Oku, 2003). The starting point of this function is acted by an interfacing processor, which never occurs unless incoming information has a homogeneous counterpart within the mental lexicon. This functioning part of interfacing and integrating processors is called working memory (WM). Working memory can be thought of as a computational area (Miyake & Friedman, 1998) or a blackboard (Jackendoff, 2002) in the brain/the mental lexicon.

This functioning part (WM) is regarded as a primary brain organ that enables information flow, where a part of the mental lexicon and the incoming information are joined, via the recognition of homogeneous lexical items (Hashiuchi & Oku, 2003). Simply, it allows access between the characteristics of an input structure and forms the characteristics of the output structure, but the processor probably does not have access to detailed analogue shape information about objects (e.g., Landou and Jackendoff, 1993). An integrative module is a processor that takes into account all input and output interface processors, parses particular structures, and then constructs a maximally coherent structure in order to enable comprehension (Hashiuchi & Oku, 2003).

Thence working memory in mental lexicon provides a processing route where the lexicon is part of the interface

components, joining knowledge of sound and meaning and mediating syntax and lexicon, then, integrating them into mental lexicon. Working memory plays an important role in determining the proficiency of L2 acquisition (e.g., Baddely, 1986; Ellis, 1994; Grass & Selinker, 1994; Crutcher, 1998; Gathercole & Thorn, 1998; King & Just, 1991; Miyake & Friedman, 1998; Oku, 2001b; Oku, 2002a, Jackendoff, 2002, Sparks, Ganschow & Patton, 1995). Within WM, a processor operates incrementally as it rapidly constructs a syntactical analysis from a sentence fragment, assigns it a semantic interpretation, and relates this interpretation to world knowledge (Pickering, 1999; Harley; 2001). WM capacity is dependent on the interface processors working within WM (Hashiuchi & Oku, 2003). Thence, to develop interface processors within WM is to improve L2 English proficiency of Japanese learners.

II. Language Differences Are Interface Processors' Differences

Though there are quite different lineality between Japanese and English languages, Japanese and English native speakers have the same cognitive structure and mental processes. Within linguistic theory, languages differ in their semantics because of the way semantic distinctions are grammaticalized and because of their patterns of lexicalization (Jackendoff, 2002). Each language must have its own language-specific semantics, which may or may not be separate from a language user's general patterns of knowledge and belief (Jackendoff, 2002). Language-specific differences can be characterized as specific differences in the interface rules, either in the mapping associated with particular cultural vocabulary, in the general patterns of mapping encoded by classes of lexical items (which, recall, are interface rules), or in the phrasal interface rules associated with grammatical and morphological features. These differences are produced by how the vocabulary and grammar of different languages map onto the mental lexicon, thereby creating different natural groupings of meanings for users of different languages. In other words, linguistic semantics is considered to be continuous with human conceptualization as a whole.

Casting one's eyes to Japanese and English languages, there are many differences between them. While Japanese language is composed of characters, English is letters. In addition, the canonical word order in Japanese follows a pattern of noun-noun-verb (NNV) strings as subject-object-verb (SOV), but in English, the standard pattern is subject-verb-object (SVO). L2 Japanese learners interpret Japanese NNV strings as SOV, and their interpretations do not transfer directly to the L1 English SVO pattern (Kilbron & Ito, 1989). Unlike English, word order in Japanese does not indicate the grammatical usage of nouns in sentences, nor are nouns inflected for certain grammar cases. Grammatical usage is indicated by particles that follow the noun, the important ones which are *ga*, *wa*, *o*, and *no* (Hashiuchi & Oku, 2003). In other words, the L1-oriented interface processors within English native speakers' WM depend more highly on two global cues, namely the word order and the morphological agreement cue but the counterparts in English-Japanese learners are case markings (indicated by particles like *ga*, and *o*) and animacy cues (refers to an animate object). Since language differences are initially caused by interface-specific differences, the differences of Japanese and English languages result from those of processors within WM; L1/Japanese-oriented processors and L2/English-oriented processors.

The next section describes how to obtain L2 English proficiency of English novice learners of Japanese in spite of various distinctions between both English and Japanese languages.

III. English Learning Strategy of Japanese L2 English Novice Learners

Fundamentally, language processing requires an interface between incoming information of language and other aspects of cognition, for example, general knowledge, contextual information, etc. In addition, not only declarable knowledge such as vocabulary and grammar but also procedural knowledge about language construction are very important elements to interface and to integrate both prior knowledge and incoming information as language processing takes place. Being able to interpret English incoming information requires the L2 learner to make certain lexical decisions regarding the meaning of ambiguous words, a process that must link words to syntax-semantic structures in order for context comprehension to occur. In this way, the mental lexicon is involved in the whole processing of linguistic information. However, when lexical items connect with and excite corresponding nodes within the mental lexicon, this point can be referred to specifically as WM (Singleton, 1999).

In order to improve L2 proficiency, Japanese L2 learners create the same L2 linguistic cues as native speakers of English: word order and morphological agreements in mental lexicon. However, it is important to reiterate that Japanese has an orthographic system of two different scripts, kana and kanji (Sasanuma, 1980). While kana is a syllabic script, kanji is a logographic or ideographic script in which a one-to-one correspondence between a graphic representation and a meaning exists. Native Japanese speakers are familiar with this type of language structure and as a consequence, the Japanese logographic reader is used to recognizing as many different signs as words and morphemes in the language (Koda, 1997). The way the Japanese language is structured influences the way it is studied and learned, particularly with respect to reading and writing. Japanese L2 English learners are much more familiar with L1 linguistic cues and can readily use those cues to access WM. In addition, L1 linguistic-oriented processors act within WM to control both L2 acquisition (Flynn, 1996) and the cognitive procedures used in L2 processing (Koda, 1997).

In case of Japanese L2 English novice learners, even the most effective English language cues (e.g., the word order cues and the morphological cues) are not easily accessible to L1 Japanese lexical interface processors within their WM, because of without L2 English-oriented lexical interface processors in there. To break the husks of English sentence structures, they recall L2 linguistic cues, or if not any, consult English-Japanese dictionary. Through English-Japanese dictionary, they are assumed to bridge these L2 English heterogeneous interface processors with L1 Japanese-oriented homogeneous interface processors such as the case markings and animacy cues in order to interpret the English target sentences. There is one example following; they try to exchange the English word-order; He gave me a notebook (S + V + IO + DO), into the Japanese word-order (彼は私にノートをくれた) in order to withdraw the meaning form this sentence.

| He gave me a notebook. |
| ↓ |
| He は me に notebook を gave する |
| ↓ |
| 彼は私にノートをくれた |

The more frequently they use these procedures, the more fluently they understand English sentences. As a result, L1 Japanese-oriented processors has been adapting L2 English-oriented processors and developing L2-oriented interface processors within WM. Thence, the declared knowledge of L2 English-oriented processors in mental lexicon has improved and developed, leads to cultivate and empower the L2 procedural knowledge of L2-oriented interface processors within WM. In other word, to enlarge and develop L2 English-oriented processors in Japanese L2 English learners' WM is to come close to English-native speakers' WM capability in mental lexicon.

The next section represents the way Japanese high school students learn English and introduces three major English-Japanese dictionaries.

IV. The Relationship between High School Students and English-Japanese Dictionary

The determiners of L2 English learners' abilities to acquire English depend on pragmatic, semantic, and syntactic constraints (Hashiuchi & Oku, 2003). An individual's L2 capability is assumed to depend on the scale of pragmatic, semantic, and syntactic interface processors within WM.

Casting eyes to Japanese high school students, not a few students are now suffering from how to improve English ability. Their facing difficulties have been caused by their educational circumstances and their own problems. The former factors are commonly presumed to produce the latter problems. Since most of their subjects have been taught by means of their native language, they do not have enough comprehensible exposure to English sentences. That educational system has affirmatively resulted in acquiring various knowledge including both declared and procedural, but negatively resulted in acquiring L2 English language. In other words, their mental lexicons store plenty of pragmatics to interrupt English sentences, but not to acquire enough English lexicalizations and grammaticalizations. Their limitation of lexicalizations and grammaticalizations are the restraint of L2-orientd processors within WM. The most important task for them is to husk the WM' restraint in order L1 Japanese-oriented WM to implant much more L2 English cues into their mental lexicons so as to develop L2 English-oriented WM. However, both Japanese learning way of their native language and L1 Japanese-oriented WM control L2 English processing in their mental lexicon. Their learning tendency of recognizing surface lin-

guistic structures preciously and accurately and acquiring L2 linguistic cues though L1 Japanese cues (namely, the case markings and animacy cues) are two fundamental bottlenecks of breaking the WM' restraint.

To enlarge these bottlenecks requires enhancing comprehensible exposure of English sentences. To comprehend English sentences necessitates L2 learners to develop L2-oriented linguistic cues. In order L2 English learners of Japanese to do so, there are assumed to be two main approaches. The one is a L2 learner's order-made approach, which is extensive reading approaches that L2 learner individual is given his/her reading texts organized for self-improving in accordance with his/her own progressing stage. The other is the ready-made approach; mainly grammatical structure and English-Japanese translation. Within Japanese educational system, as the former approach is difficult to perform in everyday English classes, the latter approach is very popular among English classes. Naturally, in order him/her to catch up with the progressing stages of English classes, each high school student has no way to fill in the lacks of his/her L2 linguistic cues in mental lexicon with his/her own self-help effort. As a result, he/she is forced to recognize effective and efficient L2 linguistic cues through L1-oriented processors for promoting L2 linguistic processing. In other words, they cannot help consulting English-Japanese dictionary in order to construct online meaning from English sentences. That is the reason English-Japanese dictionary is a very convenient tool for Japanese high school students.

Today, there are issued various English-Japanese dictionaries in Japan. The following table represents part of one verb, 'make' descriptions in three major dictionaries. Each dictionary has its own characteristic so peculiar that each high school student should select the most suitable English-Japanese dictionary by him/herself.

V. Conclusion

The purpose of this paper is to suggest how Japanese and English linguistic cues can work as effective and efficient bridges to improve interface modules in WM to influence L2 high school students' ability to learn how to analyze and comprehend complex L2 sentence structures. Combing reading approaches and consulting English-Japanese dictionary effectively is one way of developing

Table: Some examples of the description about a verb 'make' in three major dictionaries

	Wisdom	Genius	Lighthouse
index	【作る】 ・・・を製作する	[SVO] ○ 1a 作る	基本的には「作る」,「～させる」の意を表す ①作る, 作り出す
Details	○【作る】 1a ＜人が＞＜物＞を＜材料＞で作る 制作（製作）する "With, in"（! With に爬材料の一部であることを, in は材質を特徴的に述べるのに用いる）；＜作品など＞を創造「創作」する；＜文書など＞を作成する；＜法律・条文など＞を定める；(しばしば誤って)(凹み・傷など＞を作る make sauce with red wine ➡赤ワインを使ってソースを作る/make[build] a doghouse I 犬小屋を作る（! 大きな建物の場合は, 通例 build が好まれる/make a Hollywood movie ハリウッド映画を製作する/make a list of customers 顧客リストを作成する/make a will 遺言状を書く/make laws [guidelines] 法律を制定{ガイドラインを制定} する/make a hole on the wail 壁に穴をあける。 b [make A B/B for A] A (人) に B (物) を作ってあげる➡My mother made me a cake [a cake for [to] me. お母さんは私にケーキを作ってくれた。(! 両者とも基本的には道義であるが, 前者は[ケーキを], 後者は[私に]に意味上の焦点がある/Ann made her a doll ≒A doll was made (for her) by Ann. アンは彼女に人形を作ってやった（! She was made a doll by Ann.；受身は通例Aを主語にしない；Bを主語にする場合はAを省略するか for A とするのが一般的)	○ 1 [作る] 1a Ⅾ [SVO] ＜人が＞＜物＞を [材料で] 作る. 製作 [製造] する (in, with)； (◆in は材料の特質を示して他の製品との区別を表し with は材料の1つである事を表す)：＜作品など＞を創作する：＜文書・遺書など＞を作成する：＜法律など＞を制定する ‖ ~ [build] a road in concrete コンクリートで道路を建設する/~a poem 詩を作る//~plans 計画をたてる/~a will 遺言書を作成する/~laws 法律を制定する/~[dig] a hole in the ground 地面に穴を掘る/~his character 彼の人格を作り上げる b Ⅾ/SVO₁O₂/SVO₂for O₁ ＜人が＞O₁＜人＞に O₂＜物＞を作ってやる (◆O₁が代名詞の場合は SVO₁O₂ が好まれる) ‖ She made him a new suit [a cup of coffee].≒ She made a new suit [a cup of coffee] for [× to] him. 彼女は彼に背広を新調してやった [コーヒーを入れてあげた] (◆前者は「何を」, 後者は「誰に」作ったかに焦点を当てた表現) 語法(1)受身は O₁ を主語にしたものは一般的に不可： × He was made a new suit (by her). ただし (英) では可能とする人が多い。(2)O₂ を主語にした場合 for が必要：A new suit was made for him (by her). c [be made to do/be made for O]＜人・物が＞・・・するように [のために] できている ‖ He is made to be a writer. 彼は作家になるように生まれてきたようなものだ。/They were made for each other. 2 人は似合いのカップルだった。	1 Ⅾ (・・・) を作る, 製作する, 作り出す； (・・・) を (・・・) に作ってやる；建設する；＜文書など＞を作成する； ＜法律など＞を制定する： Kate made a pretty doll. ケートはかわいい人形/My sister makes all her own clothes. 姉は服はすべて自分で作る/Many birds make their nests in trees. 多くの鳥は木に巣を作る。 言い換え My father made a chair for me./＜V＋O＋for＋名・代＞＝My father Made me a chair.＜V＋O＋O＞父は私に椅子を作ってくれた[巻末文法授与動詞, 間接目的語(2), for 前 A1 語法]/Salad is often made with lettuce and tomato., ＜V＋O＋for＋things out of paper.＜out of＋名・代＞サラダはしばしばレタスとトマトで作る。/We made a great many things out of paper.＜V＋O＋out of＋名・代＞私たちは紙からいろいろな物を作る。

L2 English linguistic cues to acquire L2 proficiency was also discussed.

Both Japanese and native English speakers have the same cognitive structures and mental process, but differences are found within the semantics of grammatical structures used to produce language. Cognitive processing in the mental lexicon requires both declared grammar and procedural grammar skills. However acquiring English proficiency depends mainly on procedural grammar knowledge which includes pragmatic, semantic, and syntax knowledge. Processing oral and written language input necessitates the interaction of these three elements within WM to stimulate connections between existing L2 knowledge and newly acquired knowledge of English grammatical structures to develop the English semantics section within the mental lexicon, in order to understand linguistic messages (Hashiuchi & Oku, 2003). Syntax, semantics and pragmatics function within a grammatical system, and this leads to comprehension. The interaction of these three elements is closely related to a functional approach that considers grammatical comprehension as a key factor in acquiring L2 English proficiency. Reading approaches of Functional approaches (Hashiuchi & Oku, 2003) are seen as the teaching methods that develop a lot of L2-oriented linguistic interface processors within WM to produce L2 grammatical structures and comprehension. This means that these interface processors must be adapted and altered to recognize English linguistic clues. This can only occur through increased exposure to such structures and the accompanying semantic and pragmatic meanings.

The way the Japanese language is structured influences the way it is studied and learned, particularly with respect to reading and writing. Japanese are familiar with their learning language by recognizing a graphic description; the reality is that the Japanese logographic reader is used to recognizing as many signs, as words and morphemes, in the language (Koda, 1997). Learning the linguistic cues of English is controlled by Japanese learning way of their native language.

In order to acquire a second language, learners need to understand how language is used in a variety of social interactions and contexts. When face-to-face interaction with native English-speakers and an order-made teaching approach for L2 English learners of high school students are limited, reading English texts with consulting English-Japanese dictionary offers another means of their increasing exposure to the grammar, syntax, semantics, and pragmatics of English. Even by traditional teaching methods, each student can catch up with his/her progressing English class stages by means of consulting English-Japanese dictionary effectively and efficiently. Consulting the dictionary supplements the shortage of L2 linguistic cues by adapting Japanese-oriented linguistic cues. A greater awareness of these adapting cues strengthens English linguistic cues and interface processors acting within WM. Experiencing a variety of different grammatical structures with English-Japanese dictionary available in L2 texts provides many opportunities for the interface processors within WM to develop and strengthen, which in turn, positively influences the effective execution of the reading process. Knowledge of a language demands mastery of its vocabulary as well as much of its grammar and the best way to master the lexical system is the same as that recommended for mastering the syntactic system: the learner must experience considerable exposure to the language (Wilkins, 1974).

For this reason, it is recommended that reading approaches with English-Japanese dictionary develop a greater awareness of grammar, and within it, specifically English linguistic cue usages. These approaches are surely to overall improved comprehension in the L2 with the ultimate goal of achieving a level of proficiency similar to that of native English speakers.

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