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Key Word Approach for Reading Comprehension in EFL Novice Adult Learners

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How do adult learners of English as a Foreign Language (EFL) acquire and retain enough vocabulary to achieve proficiency in reading? All learners draw upon language knowledge, otherwise known as mental lexicon. Mental lexicon can be conceived as hierarchically organized networks of associations among cognitive and linguistic structures derived from the learner's interaction with the new language environment and his/her existing language knowledge. When integrated in a meaningful way, these structures form a dynamic system wherein new information is constantly being encoded and old information is continually being added to and expanded. The more related new information is with existing information, the more effective the encoding process. However, for learners whose second language (L2) has little in common with their first language (L1), the encoding process is likely to be less effective. In response to this problem, the keyword method offers a mnemonic learning strategy by which L2 learners can mediate between both L1 and L2 knowledge structures. Creating an imaged-based association relating L2 vocabulary to L1 knowledge provides the reader with a means to acquire and retain enough vocabulary to achieve proficiency in reading comprehension.

Key Words: Reading comprehension, Mental lexicon, Lexical entry, Keyword method

Introduction

Most Japanese have studied a second language for more than six years during junior and senior high school; however the overall ability for reading comprehension has not developed as well as has been expected. There are several reasons for why this is the case.

As individual elements capable of recombination, words are the building blocks of language. Knowledge of words, or lexical items, is central to language acquisition. Comprehending written words is a constructive process, related to lexical acquisition and processing, and involving the integration of both prior-knowledge (stored in long-term language memory) and incoming information entering via the cognitive system (Oku, 2001). Working memory, as a part of long-term language memory in the mental lexicon, is a key factor in comprehension. If the learner is unable to relate incoming information with his/her existing knowledge, the constructive process will result in short term memorization. All too often, this tends to be the strategy adopted among L2 learners whose first and second language are relatively unrelated (Oku, 2001). Many Japanese EFL learners, however,

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have found ways to overcome obstacles inherent in learning a second language, the architecture of which differs significantly from their L1.

In terms of reading comprehension, a learner integrates L2 vocabulary by way of an association with his/her prior language knowledge, thereby generating a new lexicon and achieving understanding. In order to develop reading comprehension, he/she must cross L2 word-learning barriers. The key to acquiring proficiency in reading comprehension is through establishing word associations in the mental lexicon.

The topic of this paper deals with a mnemonic learning technique called the keyword method (Ellis & Beaton, 1995, Crutcher, 1998; Gathercole & Thron, 1998), which offers learners a cognitive means, known as a mediator, to associate both L1 and L2 knowledge structures by creating an imaged-based association which relates L2 vocabulary with existing L1 knowledge. This provides the reader with an effective cognitive means to acquire and retain enough vocabulary to achieve proficiency in reading. This paper is divided into five sections: Section I provides a brief summary on the interactive processing system in the mental lexicon, its architecture and the role it plays in the reading process. Section II outlines two models dealing with the first stage of L2 acquisition and the role mental lexicon plays in mediating the acquisition and retention of foreign vocabulary. Section III describes the keyword method. Section IV suggests how the keyword method can be used by Japanese EFL learners. Section V offers conclusions regarding the validity of this method.

I. Mental lexicon and the L2 reading process

L2 learners access vast amounts of information (their existing language knowledge) to perform language-related activities cognitively. This long-term language memory is organized hierarchically and includes scripts (Schank, 1976), schemata (Rumelhart, D.E., 1975; Norman & Bobrow, 1976), and frames (Minskey, 1975). All of this prior knowledge constructs the mental lexicon, which contains a wide variety of word characteristics, such as orthography, phonological structure, pronunciation, morphological structure, syntactic characteristics, as well as various sorts of semantic information including literal, idiomatic, pragmatic and other meanings (Hulistijn, 1997: 211).

Mental lexicon is a dynamic system including various processes. Mental lexicon refers to a single lexical architecture whether a person is a monolingual, a bilingual, or a second language learner. In mental lexicon, lexical representations contain internal or external language tags, and can be viewed as multi-layers of networks (Libben, G. 2000). A word in an individual language may be linked to conceptual representations and to a word in another language. For example, the EFL learners possess a single lexical representation, "store" even though the present discussion will likely have little to do with "shopping". The appropriate reading of "store" is the one that is integrated into memory, suggesting that processing in the mental lexicon has the following general sequence (1) activation of a form activates all its constituent representations (2) all associates of all representations are activated, and (3) contextually inappropriate representations decay or are deselected subsequent to lexical access (Libben, 2000). Language selectivity is affected by particular task schemata, and can be modeled through a mechanism of inhibitory control that functions at two levels (Green, 1998). Language selectivity can be achieved by suppressing the output of activated items with particular language tags, and can also be activated by suppressing the activation of items with particular language tags. In other word, activation of one element in the mental lexicon results in the activation of other lexical elements that are related semantically, morhologically and formally (Napps and Fowler, 1987; Napps, 1989; Drew and Zwitserlood, 1995). The reader locates the relevant mental paths needed for both reading and understanding. To do this, readers have to be able to identify words by looking them up in memory to check for comprehension and/or retrieving the appropriate form of a word which conveys specific meanings, depending on how the word is used.

Because the resources stored in working language memory play an integral part of adult language processing (e.g., Baddeley, 1986; Lighbown & Spada, 1993; Ellis, 1994; Grass & Selinker, 1994; Crutcher, 1998; Gathercole & Thron, 1998), being able to interact with the excitable neurons in the mental lexicon also plays a central role in understanding how L2 learners acquire proficiency in reading a foreign language. If the mental lexicon is activated, information from both bottom-up sources (the words), as well as information from top-down sources (the image and meaninged words) contribute to the development of reading ability and comprehension. This interaction activity allows a lexical entry into the mental

lexicon and serves as an interface point between incoming information and prior lexical knowledge. At this interface point, incoming information and lexical-knowledge are drawn into activating links, processed, and then transferred back to the mental lexicon for storage and later retrieval (Oku, 2002a). If the reader lacks lexical-knowledge relating to the incoming information, the interaction will not happen, no item will be transferred back to the mental lexicon and comprehension will not occur.

In Baddeley's (1986) influential model, the phonological loop linking working memory and speaking memory plays a crucial role in vocabulary acquisition for both native and foreign languages (Oku, 2002a). The main problem in acquiring foreign vocabulary is in being able to utilize the phonological loop as a lexical entry, as this loop is oriented toward the native language rather than the foreign language. In other words, representations within the loop itself benefit from L1 mental lexicon, which means that the learning system operates more effectively on native language acquisition than on foreign language learning.

Lexical acquisition and processing is the basis of mental awareness, and therefore might compensate for linguistic shortcomings (Urguhart, & Weir, 1998). In constract, bottom-up processing is the extraction of visual information from the printed words.[2] With regards to L2 acquisition, a meaning-based comprehension strategy takes precedence over a grammar-based one (Grass, S. 1996). The reason being that more than L1 acquisition, L2 learning tends to rely to a great extent on general learning mechanisms and principles. This occurs because the strategies used for processing foreign-language discourse are influenced by those learned earlier in native-language discourse (Tao, & Healy, 1998). With regards to the role L1 plays in L2 acquisition, neither the principles nor parameters of Universal Grammer (UG) are available to adults[3]; in this way, L1 replaces L2 (Blery-Vroman, 1990).

II. Lexical entry: Acquiring and Retaining Foreign Vocabulary

Lexicon[4] is central in language, and central to the acquisition of language. For L2 learners the question remains as to what extent their L1 lexicon influences or contributes to how they acquire their L2 vocabulary. Lexicon contains word-formation or lexical redundancy rules (see, e.g., Radford, 1981, Cruse, 1986), which make possible the generation of a potentially infinite number of new lexical forms (Singleton, 1999). The way a learner develops the L2 lexicon is in the linking of a L2 word to a L1 word, that is, how the 'lexical entry' is created.[5] Lexical entry in mental lexicon influences the way learners encode new information. For each lexical item, both its lemma and its form together contribute to lexical entry into mental lexicon. However, knowledge of the phonological code facilitates visual as well as semantic processing of orthographically unfamiliar words (Koda, 1999: 40, refereing to e.g., Doctor & Coltheart, 1980; Forster & Chambers, 1973). Simply stated, a key factor of lexical entry is through phonological encoding with
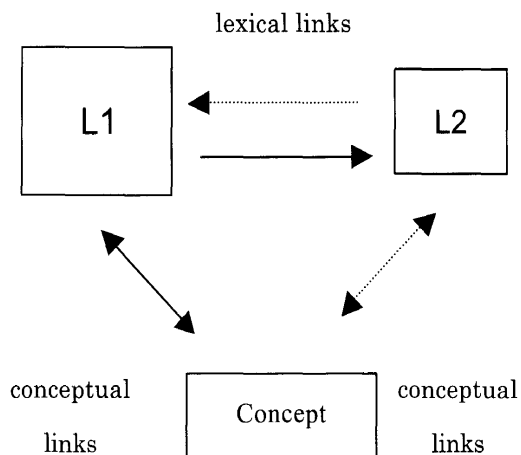

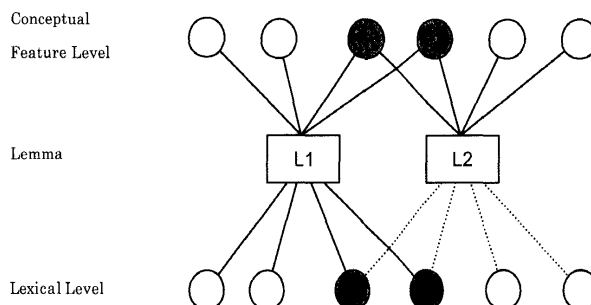Fig. I　　The revised hierarchical model

Fig. 2　　The distributed lexical/conceptual feature model

morphological information following.

With regard to the lexical lemma, Kroll and Stewart (1994: 370) propose a revised hierarchical model, provided as Fig. 1, which represents this translation asymmetry. The model adopts both the word association model's lexical links (Chen & Leung, 1989) and the concept mediation model's conceptual links (Potter et al, 1984). A solid line indicates a stronger link, whereas a dashed lined indicates a weaker link. Lexical-level links are stronger from L1 to L2 than from L2 to L1, and conceptual links are weaker for L2 than for L1.

During the initial stages of learning, lexical connections from L2 to L1 are used to retrieve the associated translation at the lexical level (Kroll, & Stewart, 1994). Since the L1 is more likely to engage in conceptual processing, translation from L1 to L2 tends to be conceptually mediated.

For EFL learners, increasing L2 proficiency is consistent with both the unitization of common English words and structural/contextual processing. Despite differences in L1 achievement, the L1- > L2 transfer of lexical links still has an effect because L1-conceptual links formed early in childhood remain stronger than newer L2 links.

An important factor influencing the L1- > L2 transfer is the similarity between the two languages. Less transfer is expected if two languages have dissimilar features. However, Fox (1996) noted that cross-language semantic priming effects were found for L1 primes on L2 targets.

The distributed lexical/conceptual feature model proposed by Kroll and de Groot (1997: 234), provided as Fig. 2, assumes the beginning of a homogeneous lexical architecture wherein all words, that is, all words known to a given individual, are attached to a common level of conceptual and lexical features. However, this model does maintain the notion of separate lexicons by positing language-specific stores at the level of the lemma. The model consists of independent lemma associated with lexical patterns and concepts of feature bundles for each language. Both pools of lexical and conceptual features themselves are assumed to be shared across languages (Kroll, & de Groot, 1997). Feature overlap at the conceptual level, as demonstrated in Fig. 2, represents translation equivalents, whereas feature overlap at the lemma level express distinct representations. The lexical level is presented in a distributed fashion allowing for the partial overlap of characteristics of words that share lexical features (Libben, 2000).

Theorising the process of interlingual activation in terms of feature overlap, both at the conceptual and lexeme level, offers an interpretive framework for studies reporting that concrete words tend to share a high level of feature overlap across languages owing to referents with similar meanings. Abstract words, on the other hand, tend to be more culturally bound than concrete words. Although an abstract word and its translation are likely to share some aspects of meaning, the claim of the distributed feature model is that fewer features overlap for abstract translations than for concrete translations.

III. The keyword method

A L2 novice adult learner acquires L2 lexicon through a word-by-word basis approach rather than a language-by-language basis (Singleton, 1999: 40, referring to e.g., Cook, 1996; De Bot & Bongaerts, 1996; N. Ellis & Schmidht, 1996; Meara, 1996b). Clearly, novice language learners are constrained by the orthographic and phonological aspects of vocabulary. While native speakers' lexical entries are clustered semantically (as evidenced by free associations of the type top-snow — hill — valley, etc), novice learners often make associations due to orthographic or phonological confusion (Harley, 1995).

Numerous studies have confirmed the effectiveness of the keyword method in both foreign language and native language vocabulary learning (Atkinson & Raugh, 1975; Paivio & Desrochers, 1981; Pressley, Levin, & Delaney, 1982; Pressley & Levin, 1985; Cohen, 1987; Desrochers & Begg, 1987; Sternberg, 1987; Tulving, 1991; Ellis & Beaton, 1995; Crutcher, 1998).

The keyword method is a two-step vocabulary learning technique that first requires the learner to relate the foreign word to a keyword by drawing on L1 phonological knowledge, such as acoustic similarity and/or orthographic similarity, and utilizing the relationship between phonological memory and vocabulary acquisition (Baddeley, Papagno, & Vallar, 1998; Gathercole & Baddeley, 1990). The second step in the keyword method requires the learner to relate the keyword and the foreign word by forming an interactive image based on each word's referent. A successful keyword or mediator requires the following factors:

(i) The keyword must "sound as much as possible" like the foreign word. The keyword has to cue the foreign word's pronunciation so that it sounds as close as
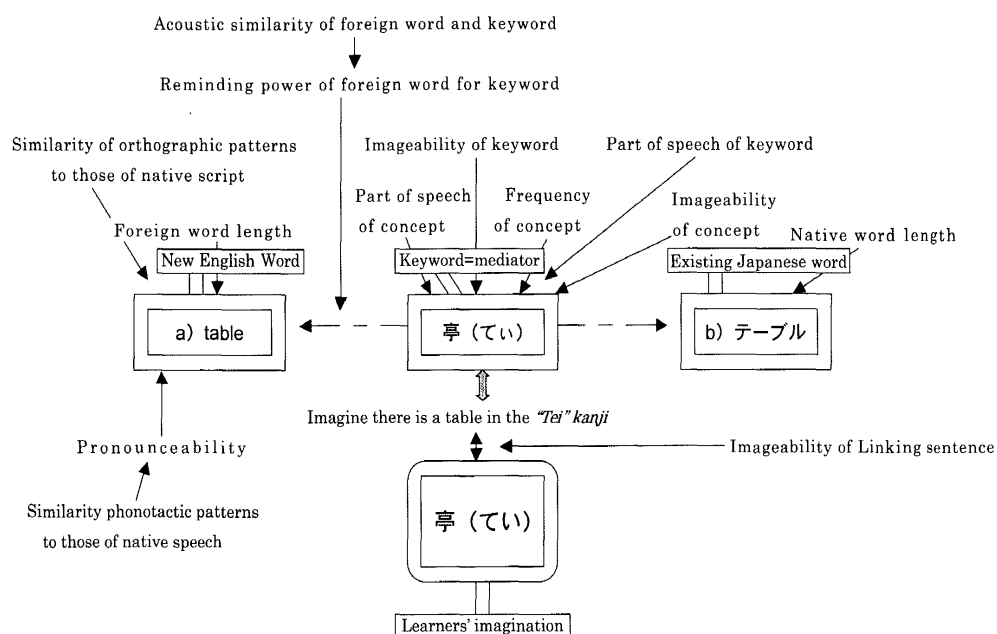
Acoustic similarity of foreign word and keyword

Reminding power of foreign word for keyword

Similarity of orthographic patterns   Imageability of keyword   Part of speech of keyword
to those of native script
                                   Part of speech   Frequency   Imageability
Foreign word length   of concept   of concept   of concept   Native word length
           New English Word   Keyword=mediator   Existing Japanese word

      a) table   ◄ - -   亭 (てい)   - - ►   b) テーブル

                              Imagine there is a table in the "Tei" kanji

Pronounceability   Imageability of Linking sentence

Similarity phonotactic patterns   亭 (てい)
to those of native speech

                                        Learners' imagination

Fig. 3   A revised model of potential determinants of learnability of foreign language vocabulary with keyword mediation

possible to the foreign word. Word recall is likely to be best if the keyword or part of it overlaps with the initial part or cluster of the foreign word recalled (Horovyitz, Chilian, & Dunnigan, 1969; Desrochers & Begg, 1987).

(ii) The keyword's image must offer a memorable image connecting the keyword with the English translation. Concrete nouns, because they are generally easier to form a mental image of, are good keywords. If symbolic imagery comes readily to mind, abstract nouns may also be effective keywords (de Groot, 1992).

(iii) The probability of remembering the image-based link between the keyword and the native word is also important. In deciding on a keyword image, the learner has to determine whether s/he will be able to remember the native word to which the keyword refers (Desrochers, & Begg, 1987).

Furthermore, in Raugh & Atkinson (1975) a useful keyword must be (1) highly imageable, and (2) an effective reminder of the foreign word. The image should readily trigger an association to the foreign word, and the foreign word should readily trigger an association to the image. One form should remind the reader of the other

form, and vice versa.

In sum, potential determinants of foreign language vocabulary learnability for the keyword are as follows: acoustic similarity between the foreign word and the keyword, reminding power between the foreign word and the keyword, imageability of the keyword, imageability of the concept, frequency of the concept, and the part of speech of both the concept and the keyword. Potential determinants for the foreign word are: similarity of orthographic patterns to those of the native script, foreign word length, pronouceability, and similarity of phonotactic patterns to those of the native speech.

A visual summary of the potential determinants is provided in Ellis and Beaton (1995) and adopted here as Figure 3, with English/Japanese data replacing their German/English data. Explanatory comments will follow in section IV.

IV. A keyword approach for Japanese EFL learners

Before discussing the potential determinants outlined in Figure 3 for Japanese EFL learners, a brief overview of the Japanese orthographic scripts and phonological system is necessary.

Japanese has four writing systems: 1) Kanji (Chinese

characters), 2) Hiragana (A syllabary based on the Japanese phonetic system), 3) Katakana (A syllabary based on the Japanese phonetic system for non-Japanese words or borrowings), and 4) Rōmaji (Roman letters). Having only five standard vowels: /a/, /i/, /u/, /e/, /o/, the Japanese language is phonetically simple. In terms of its syllable structure, Japanese is a CV language (Allott, 2002), in which syllables are formed by a single vowel (V) or a consonant-vowel (CV) combination.

Japanese has been borrowing English words since the nineteenth century, so many, in fact, that the number of borrowings today would be difficult to assess (Arakawa, 1978). English borrowings, moreover, are pronounced using the Japanese phonetic system, and are written in Katakana more so than in Romaji, which is used infrequently.

Focusing on the potential determinants outlined in Figure 3, the reader will note a) the foreign word ＜table＞, representing the incoming information, that is, the English vocabulary the Japanese learner must acquire and retain, b) the native word ＜テーブル＞, representing the learner's mental lexicon, or the semantic concept he/she associates with [te: 'bu'ru], and c) the keyword ＜亭＞ [tei], representing the mediator linking the learner's mental lexicon with incoming information.

The keyword is written orthographically using the kanji character ＜亭＞ [tei]. The foreign word ＜table＞ and the keyword ＜亭＞ are not orthographically similar, so the learner cannot rely on orthographic similarity as a potential determinant. However, both the foreign word [teibl] and the keyword [tei] are acoustically similar in that they share the word-initial sounds [tei]. Moreover, /tei'bl/ and Japanese /tei/ share CV.CV syllable structure, as well as /e:/ and /ei/ vowel length on the first syllable. Given these phonotactic similarities, the assumption is that when the learner hears or reads the word ＜table＞ he/she will be reminded of the word ＜亭＞ [tei] and its associated meaning "table", and vice versa.

Lastly, with regards to the concept's frequency, ＜亭＞ [tei] is a nominal suffix commonly found in names of popular traditional Japanese restaurants, such as in the restaurant name ＜料亭＞ [ryou'tei]. The restaurant image brings to one's mind the concept of "table".

Another example consists of a) the foreign word ＜enjoy＞, b) the native word ＜エンジョイ＞ [en' joui'], and c) the keyword ＜宴＞ [en] as representing

the mediator. The keyword is the kanji character ＜宴＞ [en]. The foreign word ＜enjoy＞ and the keyword ＜宴＞ are not orthographically similar, however, both the word-initial sounds [en] of the foreign word ＜enjoy＞ and the keyword [en] share an acoustic similarity. Moreover, /en'd i/ and Japanese /en/ have a V.CV syllable structure. These phonotactic similarities are pointed out so that encountering the word ＜enjoy＞, the learner will recall the word ＜宴＞ [en] and its associated meaning which is "enjoy", and vice versa. With regards to the concept's frequency, ＜宴＞ [en] is a nominal affix commonly found in the names of typical Japanese dinner parties, such as in the party name 宴会 [enkai]. The image of an enjoyable dinner party brings to one's mind the concept of "enjoy".

The keyword method offers L2 learners whose first and second language differ orthographically a mnemonic strategy by which he/she is able to create a mental lexicon that relates incoming information. By creating an imageability association that relates foreign vocabulary to his/her existing knowledge structure, the reader can integrate new information with old, thereby generating a revised mental lexicon resulting in greater comprehension.

As to how L2 learners should go about determining which factors best suit the most successful mediator or keyword, there are different strategies. One method is by grouping words according to whether they are 'abstract' or 'concrete' (de Groot, 1992; Hulstijn, 1997). In the case of lexical entry, concrete words are usually more effectively associated with mental lexicon than abstract words. Grouping words according to 'abstract' or 'concrete' concepts allows the L2 learner to utilize a more efficient means of determining the factors suited to the most successful mediator or keyword.

As readers become more knowledgeable and fluent, they gradually require less time to identify individual words and become more proficient in identifying a word without having to identify all of its component features. Furthermore, given the potential determinants of learnability shown in Fig. 3, the more learners use this method, the more successful they will be in acquiring foreign vocabularies.

For adult L2 learners who have already achieved mastery of their native language, the conceptual learning load involved in acquiring a second language is less due to the presence of many direct translations between words in the two languages. When lexical items have direct translation equivalents, the language learner has only to associ-

ate the novel phonological form of the foreign word and then link it with the conceptual specification on the mental lexicon that has already been established for native language.

V. Conclusion

The goal of L2 learning is to acquire the conceptual connections that will allow new information to enter into language processing as rapidly and as effectively as L1 processing so that learners can generate effective cues and accurate phonological memory. For L2 learners, an effective means for acquiring conceptual connections is the keyword method (Atkinson, & Rough, 1975; Ellis & Beaton, 1995). The phonological loop not only mediates learning novel phonological forms, but also it creates a direct relationship between phonological memory skills and the acquisition of foreign vocabulary (Service, 1992).

However, it should be stressed that key word method mediators do not permanently stand in the way of the formation of direct links between a target word's form and its meaning (Hulstijn, 1997). An analogy can be drawn with certain L1 situations in which totally unfamiliar lexical items are encountered, situations that tend to lead to wild guesses based on any connections with known words which sound or look familiar. This happens because the mental lexicon is dynamic and flexible, wherein many types of connections coexist (formal and semantic, within and across languages, with increasing and decreasing strengths) which allows for a temporary beneficial role of mediators. In other words, mediators function only to help establish one of the necessary links in the initial phases of lexical entry processing.

The keyword method requires the learner to draw on various orthographic and phonological factors best suited to finding the most successful mediator or keyword. This may pose a problem for learners in terms of efficiency given the number of factors involved. As a possible solution, it has been suggested that grouping words according to specific categories may help reduce the time it takes the learner to determine the best mediator.

In closing, from an EFL teacher's point of view, the keyword method tends to be more effective with students who share the same first language. Implementing the keyword method in a classroom situation tends not to be as effective or efficient if students have various L1 backgrounds. Given the evidence of earlier work (Hall, Wilson, & Patterson, 1981) that suggests language

learners do spontaneously use vocabulary learning strategies quite similar to the keyword method, further study on the keyword method and its relation to universal language learning strategies is warranted.

Notes

1) A lexical item is defined as a word or phase that operates as a "socially sanctioned independent unit", and that is used as a minimal unit for certain syntactic purposes (Lewis, 1993).

2) Nuttall (1996) argues the case that the reader must pay close attention to difficult text in order to interpret it. Nuttall claims that the learner first utilizes top-down strategies to establish meaning and if this does not prove effective, he/she will resort to additional information through examining the syntax and matching this with top-down understanding in order to consider differing interpretations.

3) A theory of Universal Grammar (UG (Chomsky, 1986)) makes no claims about L2 acquisition. Eckman (1988) and Flynn (1996) propose that UG would suggest something about the role of UG itself as a biologically determined component of cognition, related to a critical period. If this scenario held, adult L2 acquisition, in contrast to child L1 acquisition, would involve a large inductive component for language learning. In reality, L1 and L2 acquisition are fundamentally different processes so that is no way to know if UG is involved in the L2 learning process.

4) The lexicon constitutes that component of language or knowledge of a language which has to do with 'local' phenomena, that is, the meaning of particular elements of given language, such as the phonological and orthographic forms of these elements and the specific ways in which they collocate and colligate (Singleton, 1999:15). A word's lemma is that which specifies its basic meanings, its syntactic category, its conceptual argument structure, its grammatical profile (e.g., in the case of a verb, whether or not it takes a dependent clause (relations to COMP), and its 'diacritic parameters' of variation (tense aspects, mood, etc)). The lemma also includes a 'lexical pointer' to the precise place in the lexicon where morphological and phonological information about the word in question is located (Singleton, 1999). Lexical forms are composed of both morphological information and phonological information (Clark, 1995: Levelt, 1989).

5) A lexical entry is characterized broadly as the conceptual information that is tagged or pointed to by the lexical item in question (Clark, 1995:3).

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