

## Reading as a Functional Approach: A Way to Improve Japanese Adult L2 Learners' Proficiency

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Interface processors within working memory (WM) determine Japanese adult learners' L2 language proficiency. Within WM, complex L2 linguistic structures are parsed efficiently and correctly by the interfacing of homogenous lexical items. These items are a conceptual part of mental lexicon extracted from L2 learners' knowledge of pragmatics,<sup>1</sup> semantics, and syntax in order to construct context comprehension. Improving learners' English proficiency requires restructuring the features of these interface processors by strengthening existing Japanese-oriented interface processors so that they can handle English lexical items correctly. In order to promote the interfacing capability of L2 learners, English linguistic cues can act as a means to stimulate the most effective and efficient mediators in WM that initiate the adaptation of Japanese-oriented cue processing into English-oriented cue awareness.

Since interface processors within WM restrain the degree to which homogenous lexical items can interface and integrate the pragmatic, semantic, and syntax knowledge which L2 learners have, the most effective and efficient way to acquire L2 proficiency is to activate these three components together. This can be accomplished through reading. Reading functions as a way to access huge amounts of information that activates these three components. This functional approach 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.

**Key Words:** L2 adult learner's proficiency, English linguistic cues, Interface processor, Functional approach

### Introduction

Human language has two major tasks: mental representation of experience and its communication to others (Givon, 1993). From this perspective, grammar is seen

as a 'set of strategies that one employs in order to produce coherent communication' (Bradili, 1999). A functional view of grammar thus unites the notion of grammar and the use of grammar within the context of language in social interaction and where the effects of that interaction shape the form of the language used.

For many adult Japanese EFL learners, understanding English means being able to extract meaning from what they hear and read. Since English has different delineation patterns than their first language, there are various obstacles to acquiring English competence. Some

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adult L2 learners are able to achieve a high level of L2 proficiency with apparent ease, whereas others have a hard time mastering even the basics of English. The factors that determine English learners' L2 ability, as with any language, consist of three basic components: pragmatics, semantics, and syntax (Klein & Perdue, 1997).<sup>2</sup> With regards to the acquisition of L2 linguistic knowledge, the ability to process the L2 effectively and efficiently depends to great extent on cognitive, non-linguistic skills that are centered within working memory (Nakano, Oku, & Hashiuchi, 2002). These non-linguistic skills have already been acquired and developed to varying degrees by learning the first language, and are therefore available to the L2 learner to use while reading in the L2.

Working memory allows an individual L2 learner to utilize both declarable knowledge such as vocabulary and grammar and procedural knowledge about language construction in order to integrate both prior knowledge and incoming information as language processing takes place. As a result, WM, as a part of long-term language memory in the mental lexicon, is a key element in achieving L2 proficiency. Owing to a biological critical period (e.g., Long, 1990), the L2 adult learner has to depend to a greater extent on general learning mechanisms and principles (e.g., Oku, 2002a), which means that the role of WM operations in performing linguistic tasks may be stronger in the L2 than in the L1.

This paper suggests a proposal for developing an awareness of English linguistic cues and a stronger interface module component in WM through the functional approach of reading. This paper is divided into four sections. Section I provides a brief summary of working memory and Fodor's concept of modularity, its architecture and the role it plays in language processing. Section II describes WM components in terms of language aptitudes and outlines how English linguistic cues can work as mediators in WM, and how they can correspond with stages of L2 acquisition by means of semantics-syntax connections within WM. Section III describes reading as a functional approach. Finally, section IV offers conclusions regarding the validity of this strategy.

## I. Working Memory and Fodor's Modularity

Even though human beings use different languages, they have essentially the same cognitive architecture and mental processes (Saeed, 1997). However, language is a

guide to "social reality." The words for experiences and environments are rooted in societies, and as a result, an individual's mental lexicon is determined by his/her own social and linguistic backgrounds. Every text is interpreted through his/her own prior knowledge.

Fodor's modularity (1983) is the idea that the mind/brain can be treated as a set of "mental organs" or "processing modules," and these modules correspond to identifiable neural structures in the brain (see Harley, 2001). Each language module is characterized as distinct, specialized, and structurally idiosyncratic, that is, as a domain-specific and informational encapsulated module. In order for communication to occur between modules, each encapsulated module of knowledge and experience utilizes an interface to access and integrate with others and undergoes lexical processing via limited semantic, syntactic, and pragmatic connections within a person's mental lexicon. For language processing to occur, modules require an active place to interpret and construct incoming information. These places serve as an interface point between incoming information and the information stored in the modules of long-term memory. In this context, an interface module (or processor) is regarded as an organ that enables information flow where a part of mental lexicon and the incoming information are joined through the recognition of homogeneous lexical items. 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., Landau and Jackedoff, 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.

Fundamentally, language processing requires an interface between incoming information of language and other aspects of cognition, for example, general knowledge, contextual information, etc. Being able to interpret text 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, 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 working memory (Shingulton, 1999).

Working memory can be thought of as a computational area (Miyake, & Friedman, 1998) or a blackboard (Jackendoff, 2002) where a processor operates incrementally but where 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). In other words, working memory offers an interaction space for independent modules where any single level of a structure can be accessed simultaneously by multiple interface processors, all of whose outputs are taken into account by the integrative processor in constructing a maximally coherent structure (Jackendoff, 2002). Because this organ provides a processing route where the lexicon is part of the interface components, joining knowledge of sound and meaning and mediating syntax and lexicon, WM plays an important role in determining the acquisition of L2 proficiency (e.g., Baddely, 1986; Ellis, 1994; Grass & Selinker, 1994; Crutcher, 1998; Gathercole & Thron, 1998; King & Just, 1991; Miyake, & Friedman, 1998; Oku, 2001b; Jackendoff, 2002, Sparks, Ganschew & Patton, 1995).

Though language processing means that incoming domain-specific information and informational encapsulated modules must be penetrated and linked together in order to generate comprehension, each interface processor cannot function to produce comprehension unless there is a lexically homogeneous counterpart within working memory. For L2 adult intermediate learners, interface processors must allow the two modules to connect by creating a narrow "information bottleneck" between modules. In this way, interface processors are a key factor in working memory, and allow input and output of information to occur (Jackendoff, 2002). The homological degree to which modules are able to interface between modules limits the integrative information processing capacity for language, affecting both computational and storage components. Hence, the degree to which interface processors can connect and extract information from various modules determines the degree of WM constraints.

WM constraints as a component of an individual's WM capacity is measured by the Reading Span Test (RST) (Daneman & Carpenter, 1980; Osaka & Osaka, 1994).<sup>3</sup> WM capacity as indexed by RST scores has been shown to have a significant relationship with various text integration skills, as well as the scores attained on the TOEFL Reading Test (Harrington & Sawyer, 1992).

These results show that WM capacity is dependent on the interface processors working within WM. A lack of interface modules in WM can lead to inefficient processing and faster memory decay. Individuals with less developed WM capacities are often in a more disadvantaged position than those with larger capacities, particularly when language task demands exceed capacity limits (e.g., Oku, 2003b; Miyake, & Friedman, 1998). Among various factors such as motivation to learn, the kind of material being studied, or affective factors and the kind of class environment, the most powerful determinant of English proficiency of Japanese learners who have achieved higher levels of proficiency is considered to be the capability of their interface modules. This capability is indispensable to producing a linear comprehension of English. In coping with a new language system that operates differently than the L1, it is necessary for some linguistic modules to be penetrated by and interfaced with homogeneous lexical items related to semantics, syntax, and pragmatics. This allows a transfer of information between L2 learners' L1-oriented mental lexicon and the incoming information of the L2.

Since there is a direct relationship between language interface modules' capability and working memory, Japanese English learners must strengthen language interfacing modules to improve L2 proficiency. Access to stronger, richer language interface modules offers an explanation as to how some learners are able to attain native-level proficiency even if their studies are relatively short-term. Having larger interface modules enables some learners to access relevant information quickly and efficiently (e.g., Jackendoff, 2002). Specifically, these learners have been able to develop language interface module capability, and can either instinctively or experimentally intuitively recognize each word in a sentence and comprehend the whole meaning of the sentence. Developing the capability of language interface modules influences the efficiency with which adult learners can learn and use an L2.

The next section outlines how language interface module capability influences L2 comprehension and suggests four mediators that can act within WM to promote L2 language processing.

## II. Developing Mediators within Working Memory

In general, people with less working memory con-

straints are better able to maintain multiple syntactic representations and therefore will be more effective at processing ambiguous sentences (Pearlmutter & MacDonald, 1995). In the case of an EFL learner's WM, there are four essential linguistic resources that operate as effective mediators in order to produce a linearity of linguistic comprehension when complex linguistic sentences are read: L1 WM, L2 WM, appropriate linguistic cues, and syntactic comprehension (Miyake, & Friedman, 1998). The first two mediators are defined as follows, where span is understood as a measure of the individual's operational linguistic capacity up until WM constraints are met: L1 WM refers to the span of Japanese-oriented processors; L2 WM refers to the span of English-oriented processors. The Japanese-oriented processors' capacity, that is, the capacity to process and understand a certain amount of complex linguistic information, is larger than the English-oriented processors' (e.g., Oku, 2003a). Increasing the span of L2 interface processors is a way to improve L2 comprehension.

However, universal grammar (UG) is no longer available to adult L2 learners at the time of L2 acquisition (e.g., Flynn, 1996). Instead of access to UG, L2 learners must utilize language transfer resources to learn their target language (White, 1988). Language transfer<sup>4</sup> exists within various linguistic aspects, including both oral and written forms of L2 production and comprehension (Robinett & Schachter, 1996). Examples of language transfer can be seen in morphosyntactic systems (e.g. Hakuta, 1976; Yanco, 1985), communicative strategies (e.g. Cohen, Olshtain & Rosenstein, 1986), and pragmatics (e.g. Irujo, 1986). L1 linguistic-oriented processors' act within WM to control both L2 acquisition (e.g. Flynn, 1996) and the cognitive procedures used in L2 processing (e.g. Koda, 1997). Among language transfer processes, some functions in an affirmative way and others are negative. In addition, language transfer can never occur without any incoming information entering into WM.

The most basic premise of L2 language acquisition requires that L2 learners use all of the same type of cues as native speakers (Bradili, 1999). The canonical word order Japanese follows a pattern of 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 which is the canonical word order of Japanese, an interpretation that does not transfer directly to the L1 English SVO

pattern (Kilbon & Ito, 1989). In addition, while English is an isolated language, Japanese is an agglutinative language. 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*.

Whereas the L1-oriented processors of Japanese English learners depends more highly on case markings (indicated by particles like *ga*, and *o*) than on animacy and word order, the L2-oriented interface must be highly dependent on two global cues, namely the word order cue and the morphological agreement cue (Miyake, & Friedman, 1998) in the process of acquiring the L2. When L2 learning takes place, learners initially depend on familiar L1 linguistic cues, but in the case of Japanese English learners, linguistic cues are not homogenous. The result is that linguistic information embedded within lexical items cannot be accessed in WM causing a negative learning impact as L2-oriented processors cannot properly interface. The incoming English linguistic cues try to match with an interface point within the L1-oriented WM but if there are too few linguistic counterparts, the interface is indirect and comprehension cannot occur. As a result L2 learning is slowed and learners may experience difficulty and frustration. These linguistic cue differences are shown in the following examples of five basic sentence patterns shown in Table 1: The Use of Word Order, Particles, and Animacy in English and Japanese Sentences.

It is apparent that there are different linguistic cues for each language. For Japanese English learners, the important linguistic cues are word order, animacy (both nouns, first noun and second noun animate), and agreement (verb agrees with nouns). The ability to decode these L2 cues relates to WM constraints. Failure to decode these cues can restrain or limit the interface processors working within WM. This capability is crucial because it allows learners to determine the linearity of meaning from linguistic forms within complex English sentences (i.e., who did what to whom) (e.g., Oku, 2003b). The effective use of these global cues requires that the learner temporarily maintain previously read words in the correct order while continuing to process input. In other words, enriching and strengthening interface processors in WM enables learners to lessen WM constraints by being able to maintain knowledge of previous input while continuing to access input to enable steady comprehension.

**Table 1** The Use of Word Order, Particles, and Animacy in English and Japanese Sentences

English 5 basic patterns	English	Japanese patterns	Japanese
SV	It rains.	SV	雨が降る。
SVO	He studied his homework.	SOV	彼は宿題をした。
SVC	Mary seems happy.	SCV CSV	メアリーは幸せそうだ。 幸せにメアリーは思える。
SV IO DO	You gave her your pen.	S IO DO V S DO IO V DO IO SV IO DO SV	貴方は彼女に自分のペンを与えた。 貴方は自分のペンを彼女に与えた。 自分のペンを彼女に貴方は与えた。 彼女に自分のペンを与えた。
S V O C	They had named their son Tom.	S O C V S C O V O C S V O S C V	彼らは息子をトムと名づけた。 彼らはトムと息子を名づけた。 息子をトムと彼らは名づけた。 トムと息子を彼らは名づけた。

Increasing the awareness of English linguistic cues can have a direct and positive influence on English language acquisition skills by developing an awareness of the procedural rules of language. The frequent recognition and utilization of L2 linguistic cues promotes grammatical associations between words and phrases and accelerates the production of lexical interfaces integrated within WM. This facilitates easier access to and faster retrieval of "treelets" of common phrase structures stored in long-term memory, gradually solidifying grammatical knowledge. Frequent access to English linguistic cues reinforces awareness of procedural grammar rules (Jackendoff, 2002), the knowledge of which is essential for parsing complex sentences in WM along with syntax, semantic, and pragmatic knowledge.

Building grammar knowledge by way of L2 cue mediators improves language procedural skills, an idea closely linked to the functional approach ideology (Bradili, 1999; Dittman, 1992; Givon, 1993; Halliday, 1994). Within this perspective, the functional view of grammar unites the notions of grammar and the use of grammar within certain contexts. The grammatical structures of a language are related to both the semantic (meaning) and pragmatic (use) functions that they perform (Bradili, 1999). Acquiring grammatical structures requires an understanding of both the use of language in social interactions and the reasons underlying certain grammar uses in particular interactions. To a great extent, the acquisition of an L2 is related to developing L2 semantic awareness stored in mental lexicon. The most effective way to do this is by acquiring semantic knowledge in conjunction

with syntax and pragmatics. Reading is perhaps the best way for this to occur. Reading materials contain a large variety of information that involves syntactic, semantic, and pragmatic knowledge. In the act of reading English books, L2 learners must use all of these aspects of knowledge, including grammatical structures, in order to comprehend the text message. The following section describes how reading can be an effective and efficient way to improve L2 comprehension.

### III. Reading as a Functional Approach

There are linguistically implicit agreements that monolinguals, bilinguals and L2 language learners process the same kinds of lexical representations and employ the same kinds of processes in the activation of words in the mental lexicon. In other words, monolingual, bilingual, and L2 language lexical knowledge can be represented in a single lexical architecture in which the lexicon is characterized by organizational homogeneity (e.g., Nakano, Oku, Hashiuchi, 2001) and there is no need to postulate an individual lexicon for individual languages. In this sense, both Japanese L2 learners and English native speakers are operating with essentially the same cognitive organization and mental processes.

Referring to this framework of linguistic theory, languages differ in their semantics because of the way semantic distinctions are grammaticalized and because of their patterns of lexicalization<sup>5</sup> (Jackendoff, 2002). An individual L2 learner's semantic awareness is an indicator of that individual's L2 learning potential. The difference

between English native speakers and L2 Japanese learners is largely related to how they are able to produce and understand semantics. The determiners of adult L2 learners' abilities to acquire English depend on pragmatic, semantic, and syntactic constraints (Perdue & Klein, 1992a). An individual's L2 language capability is assumed to be related to the scale of pragmatic, semantic, and syntactic interface processors within WM.

Developing these interface processors leads to increasing L2 ability. Functional approaches offer a means for improving these processors. Functional approaches focus on the speaker's use of language in a social context (the discourse), the functions that the language fulfills, and the grammatical structures that encode those functions (Bradili, 1999). Functional approaches to grammar are much broader in scope than purely syntactic approaches. The assumption underlying functional approaches to grammar is that the grammatical structures in a language are closely related to the semantic and pragmatic functions that they perform (Givon, 1993; Bradili, 1999). While we may already have a sense of what a grammatical structure or a grammatical rule is, it is important at this point to specify what is included in the semantic and pragmatic functions of language and how both are related to the use of grammatical structures.

An effective way to develop the ability to comprehend syntactically complicated sentences is reading. Reading is a high level cognitive activity comprising various processes that interact simultaneously, including letter identification, lexical access to interface processors and integrative processors, and the activation and retrieval of relevant background knowledge to generate contextual meaning. Through the interface with the visual system, a conceptual structure within mental lexicon can be checked against a belief, an inference, or a verbal claim. In this way, the conceptual structure fulfills its central function of being a "blackboard" within WM as it is accessed by interfaces linked to many different areas of knowledge (Jackendoff, 2002) including syntactic semantic and pragmatic knowledge. While most L2 knowledge needs to be consciously acquired, non-linguistic cognitive skills have already been acquired to varying degrees in the first language (e.g. Oku, 2003a), and so are available to the L2 learner and can be accessed through WM resources (Harley, 2001).

Recalling the functional capacity of WM, there is a close relationship between WM capacity and interface modules (Jackendoff, 2002). As an interface module in

WM becomes larger and more affluent, WM capacity improves. In addition, WM capacity has been shown to be significant in terms of various text integration skills (e.g. Oku, 2003a; Ikeno, 2002) and in terms of the interface module scale. Although the direct transfer of L1 reading skills can occur only when a certain amount of L2 knowledge has already been acquired (Bossers, 1991), L2 reading ability transfer has been noted and referred to as cross-linguistic reading transfer (e.g., Bossers, 1991; Brisbois, 1995; Carrel, 1991; Grass & Selinker, 1994; Schoonen, et al., 1998; Taillefer, 1996). However, information flow of reading transfer is interrupted by WM constraints. Therefore, reading transfer is assumed to increase to the degree that an interface processor within WM increases.

While Japanese adult L2 learners read they use L2 language cues within grammatical structures to decode meaning and understand text material. By reading L2 materials frequently, L1-oriented processors within WM are constantly influenced by English lexical items, being modified from L1 specific features within larger and more numerous processors in order to deal with L2-language cues. In other words, L2 language cues enable the L2 reader to produce syntactic integrative processors not only by stimulating syntax-semantics interface connections, but also by using pragmatics (contextual interpretation) to produce conceptual integrative processors that help construct the message. Through continued exposure to English linguistic cues, these increasingly significant interface processors eventually produce integrative processors that are stored in mental lexicon. Frequent reading of L2 materials promotes the input of grammatical structures and allows the cognitive processes that associate L1 and L2 knowledge structures with one another to deepen by widening the interface processors between L2 vocabulary and existing L1 knowledge. As the L2 learner increases access to English linguistic cues, or mediators, the L2 learner creates richer interface processors within WM leading to greater English proficiency.

As a final point, 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 as signs as there are

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 learners of English are much more familiar with Japanese linguistic cues and can readily use those cues to access WM. However, the process of learning English involves learning a whole new set of linguistic cues. In order to compensate for the language distance between Japanese and English, the L2 learner must increase exposure to the new language in order to widen interface modules in WM. It has been shown that L2 reading spans and L2 reading comprehension are correlated (e.g., Oku, 2003a), and L2 reading skills as a functional approach are highly correlated with larger L2 WM spans, at least among relatively advanced adult L2 readers (Miyake, & Freidman, 1998).

A functional approach to L2 reading assumes to promote recognition of linguistic grammatical features and lexicalization in order to generate English specific semantics in mental lexicon. The functional approach of grammar sees an integral relationship between syntax, semantics, and pragmatics. Within syntactic forms, the semantic and pragmatic functions that they encode and the rules that specify how the semantic and pragmatic functions are mapped into syntactic forms (Tomlin 1990) are related closely to grammatical forms. Exposure to various English texts enables the adult L2 learner to concentrate his/her attention on English linguistic cues which can help to cultivate and modify structures within WM and thus promote language processing in mental lexicon. L2 reading is one way that a functional approach can be used as a strategy to develop a greater awareness of English linguistic cue usages, and through enriching interface modules, can lead to improved comprehension in the L2.

#### IV. Conclusion

The purpose of this paper is to suggest how English linguistic cues can work as effective and efficient mediators to improve interface modules in WM to influence L2 adult learners' ability to learn how to analyze and comprehend complex L2 sentence structures. Functional approaches to develop these mediators as a way to acquire L2 proficiency is also discussed.

Both Japanese and native English speakers have the same lexical processing mechanisms in mental lexicon but differ with respect to semantics because of the differences within grammatical structures used to produce language.

A deeper knowledge of procedural grammar skills is essential for L2 learners to acquire proficiency in English. Procedural grammar knowledge encompasses pragmatic, semantic, and syntax knowledge. Processing oral and written language input necessitates the interaction of these three components within WM to stimulate connections between existing L2 knowledge and newly acquired knowledge of English grammatical structures to develop the English semantics section within mental lexicon in order to understand messages. The function of language in terms of context, syntax, semantics and pragmatics within a grammatical system underlies comprehension. The interaction of these three components is closely related to a functional approach that sees grammatical comprehension as a key factor in acquiring L2 proficiency. Functional approaches to grammar assume that the grammatical structures in a language are intrinsic to semantic and pragmatic understanding. Thus interface processors within WM need to be attuned to L2 grammatical structures. This means that interface processors must be adapted and changed so that they are able to recognize English linguistic clues; this can only occur through increased exposure to such structures and the accompanying semantic and pragmatic meanings.

However, 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 learning language by recognizing a graphic description; the reality is that the Japanese logographic reader is used to recognizing as many signs as there are words and morphemes in the language (Koda, 1997). Learning the linguistic cues of English involves a completely different approach.

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 is limited, reading English texts offers another means to increase exposure to the grammar, syntax, semantics, and pragmatics of English. Using written materials, Japanese students can be taught to recognize English linguistic cues. A greater awareness of these cues strengthens the mediators and processors acting within WM. Experiencing a variety of different grammatical structures 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 vocabu-

lary 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 a reading strategy be used as a functional approach to develop a greater awareness of grammar, and within it, specifically English linguistic cue usages. It is believed that this will lead to overall improved comprehension in the L2 with the ultimate goal of achieving a level of proficiency similar to that of native English speakers.

### Notes

1. Pragmatics indicates the aspects of meaning that do not affect the literal truth of what is being said; these concern things such as choice from words with the same meaning, implications in conversation, and maintaining coherence in conversation.
2. An important piece of evidence comes from Wolfgang Klein and Clive Perdue's (1997) massive longitudinal study of adult second-language learners with various native language and target languages. The subjects, immigrant workers who "picked up" the target language without explicit instruction, uniformly achieved a stage of linguistic competence that Klein and Perdue call "The Basic Variety" (BV). Some, but not all, went beyond this stage in their competence in the new language.
3. Reading Span Test (RST) requires participants to read aloud increasingly longer sets of sentences and recall the final words after each set (Daneman & Carpenter, 1980).
4. Language transfer is the use of native language (or other languages) knowledge (in some as yet unclear way) in the acquisition of second language. (Gass, et al., 1994).
5. Lexicalization is the process in speech production whereby we turn thoughts underlying words into sounds. We translate a semantic representation (the meaning) of a content word into its phonological representation of form (its sound) (Hardely, 2001).

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