

# Shared Identities: Our Interweaving Threads



## The bidirectional role of lexis in extensive reading

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Extensive reading (ER) has emerged in recent years as a popular means of foreign language learning, but is it really effective? This article explores theoretical issues and recent research regarding reading and lexis in order to identify the underlying cognitive processes that occur when learners engage in extensive reading. The importance of automatization of sight vocabulary and the need for minimum text coverage is discussed as not only a prerequisite for reading comprehension but also for learning new vocabulary. Recent research suggests, however, that incidental vocabulary acquisition through reading alone may not be an effective means of language learning. Understanding the bidirectional influence between reading and lexis, nonetheless, enables language teachers to establish a more effective ER program in the foreign language classroom.

多読 (ER) は近年良く用いられる外国語学習方法になったが、本当に効果的であろうか。本稿では、ERをする時に起こる根本的な認知過程を特定するために、読書力や語彙について理論的な問題や最近の研究を探る。サイトボキャブラリーの自動化の重要性や文章の最低読解量は、読解のみならず、新しい語彙を学ぶための必要条件として挙げられる。しかし最近の研究では、読書だけによる付随的語彙習得は有効な外国語学習方法ではないと示唆されている。がしかし、読書力と語彙の双方向の影響を理解することは外国語学習に有効なERプログラムを作ることに関与と思われる。

It has been suggested that aside from living in a foreign country, extensive reading (ER) is the best way to acquire a second language (Nuttal, 1982). In the past several decades, ER has emerged as an important means of increasing second language (L2) exposure, particularly in foreign language contexts where opportunities for input and practice are limited. Among its many benefits, ER through the use of graded readers can aid in the development of reading fluency, an increase in automaticity of word recognition, and the acquisition of new vocabulary (Day & Bamford, 1998; Nation & Ming-tzu, 1999).

The role of lexical knowledge in text comprehension and its subsequent potential for growth, however, is little understood in L2 research. This paper explores theoretical issues and recent research concerning the

role of lexis in ER. Based on a distinction drawn by Hsueh-chao and Nation (2000, p. 403), “two major directions of effect” in regard to vocabulary knowledge and reading comprehension will be discussed: the influence of lexis on reading and the influence of reading on lexis. Following a cognitive model of reading, connections between these directions of influence will be explored in order to find ways to implement an ER program in the foreign language classroom for the maximum benefit of learners.

### The influence of lexis on reading

#### *Lexis and reading fluency*

Reading fluency is a complex procedure involving the coordination of various lower- and higher-level cognitive processes, the most fundamental of which is lexical access, or the ability to call up the meaning of a word upon recognition (Grabe & Stoller, 2002). Lexical access depends on speed and the automatic recognition of words, or sight vocabulary, and for L1 readers this is gained through hours of exposure to text.

Lexical access is a key prerequisite for reading comprehension (Day & Bamford, 1998; Grabe & Stoller, 2002). According to cognitive skill theory, automatization of language plans (such as vocabulary recognition) through repeated exposure and performance frees up the limited capacity of the working memory (WM) to deal with other tasks requiring attention (Mitchell & Myles, 2004). Therefore, efficient L1 readers can recognize a word in a tenth of a second, enabling time to be spent on other processes such as word comprehension and integration of

meaning within different components of the text (Grabe & Stoller, 2002).

The nature of fast and automatic word recognition in L2 reading, however, is less studied (Grabe & Stoller, 2002). Muljani, Koda, and Moates (1998) found a correlation between word frequency and L2 word-recognition abilities, suggesting that repeated exposure to print aids in the development of sight vocabulary in L2 reading. The benefit of reading extensively, therefore, seems quite intuitive with several studies citing gains in reading proficiency (Bell, 2001; Hafiz & Tudor, 1989; Mason & Krashen, 1997).

Studies on the process in which automatic word recognition leads to fluent L2 reading comprehension, however, are quite limited in number. While it is known that lexical access is needed for comprehension, it does not necessarily guarantee comprehension. Fukkink, Hulstijn, and Simis (2005) found that subjects who were trained to increase word recognition speed through computer-based training were unable to improve either reading speed or comprehension. The researchers did acknowledge, however, that while there may have been quantitative gains in word recognition ability (suggesting faster processing) there were limited qualitative gains (suggesting fully automatic processing).

#### *Sight vocabulary, text coverage, and the Language Threshold Hypothesis*

In addition to rapid recognition, sight vocabulary must also account for a large portion of the words in a text. Encountering too many unknown words slows down WM,

making reading laborious and time consuming. This notion of minimum necessary text coverage bears relation to the Language Threshold Hypothesis, which states that a certain level of L2 language ability must be present before L1 metacognitive knowledge can be employed. If the reader is unable to efficiently process the L2 in the text, too much cognitive capacity would be taken up before L1 reading comprehension skills can be utilized. Schoonen, Hulstijn, and Bossers (1998) found that while both L2 vocabulary and L1 reading ability were important factors in L2 reading, L2 vocabulary had a much stronger influence, particularly amongst lower-level learners.

While the Language Threshold Hypothesis covers areas of L2 knowledge such as vocabulary, grammar, and discourse, Laufer (1997) argues that the threshold is predominantly lexical, as vocabulary knowledge influences reading comprehension more than any other factor in the early stages of both L1 and L2 reading. The threshold can only be crossed when a reader knows almost all of the words encountered in the text and is able to free up WM for higher-level processing. In a 2000 study, Hsueh-chao and Nation found that learner impressions of text difficulty were directly related to the density of unknown words. Results from a survey conducted among 59 of my post-elementary university students in Japan supported this relationship between text difficulty and vocabulary. The survey was designed to measure learner perceptions of difficulty with regard to ER as well as the factors that contribute to such difficulty. At the time of administration, students had read five books in their oral communication class at a rate of one book every 1.5 weeks. While students were initially

guided in identifying their appropriate reading level, they were allowed to choose reading materials on their own from a selection of readers featuring 250 to 700 headwords. In response to a question which asked whether ER was *easy*, *just right*, or *difficult*, 5 students (8%) reported it to be easy, 34 (58%) reported it to be just right, and 20 (34%) said it was difficult. Students were then asked about the factors which contribute to difficulty in ER, given a choice of *vocabulary*, *grammar*, *interest in the topic*, *book length*, or *other* as possible answers. Of the 39 students who found ER to be easy or just right, 18 (46%) respondents cited vocabulary as the main reason. Of the 20 students who found ER to be difficult, however, 17 (85%) reported that vocabulary was the main reason. While the results only measure student perceptions with regard to factors that cause difficulty, they tend to suggest the existence of a language threshold that is lexically based.

Various studies have attempted to measure the amount of vocabulary necessary for adequate comprehension of L2 texts. Hazenbarg and Hulstijn (1996, p. 150) have noted that the recognition of 95% of the tokens in a text is essential for a “reasonable level of text comprehension” in a university setting. Hsueh-chao and Nation (2000) found that 98% coverage was necessary for adequate reading comprehension of a fiction story. Laufer (1997, p. 29) similarly notes that 95% text coverage is needed for “bare necessity” while 98% is more typical of pleasure reading.

### *The language threshold and graded readers*

The amount of known vocabulary and text coverage is directly related to text types (Hsueh-chao & Nation, 2000)

suggesting that the language threshold is not fixed but is relative to the text (Grabe & Stoller, 2002). Therefore, a learner might pass above the threshold with a relatively simple text, but find themselves below the threshold with a more difficult text. Provided they meet the basic requirements of text coverage discussed above, the use of graded readers, with their carefully controlled lexis, enables learners to read at levels which keep them above the language threshold.

Following sufficient exposure to texts at an appropriate level in a graded reading scheme, learners are often encouraged to progress to higher or more challenging levels as they develop “linguistic and reading competence” (Day & Bamford, 1998, p. 91-92; Nation & Ming-tzu, 1999; Rodrigo, Krashen, & Gribbons, 2004). The development of this “competence” has proven, however, to be distinctly hard to measure. Furthermore, with the importance of adhering to a 95-98% rate of text coverage, is it possible for learners to eventually move up to higher levels within a graded reader scheme through reading alone? With the ability to level up, learners not only need greater reading fluency, but they need to develop an entirely new set of words in order to offset the density of unknown vocabulary they will meet. While ER can aid developing sight vocabulary, how effective is it in regard to the acquisition of previously unknown vocabulary?

### The influence of reading on lexis

#### *Incidental vocabulary acquisition and reading*

Claims regarding incidental vocabulary acquisition through ER have often been shaped by Krashen’s Input

Hypothesis (Mason & Krashen, 1997; Rodrigo, Krashen, & Gribbons, 2004). Drawing on Krashen’s ideas, Day and Bamford (1998, p. 16) suggest that incidental vocabulary acquisition is possible if learners read materials that are well within their level of comfortable reading, designated as ‘*i minus 1*’, where *i* denotes the learner’s current level. Such explanations, however, provide a limited view of language acquisition and do not account for the precise mechanisms by which it occurs.

There are many factors that influence the potential acquisition of a word, including salience, morphology, learner interest, and context (Huckin & Coady, 1999), making it difficult to quantify the process of incidental vocabulary learning. To begin, learning an unknown word from reading necessitates correct inferencing. Guessing requires a high degree of sight vocabulary and proper understanding of the context (Huckin & Coady, 1999) and can only begin to be successful once 95-98% text coverage is met (Laufer, 1997). In a 2007 study, Pulido found that knowledge of sight vocabulary had a direct affect on the inferencing of unknown words. In her analysis she suggests that not only does a higher ratio of sight vocabulary enable WM to be freed up for higher-level processing, but it also presents “more available context and clues from which to interpret specific relationships among ideas, and any new vocabulary contained therein” (p. 81).

While surrounding contextual information can enable a reader to guess an unknown word, it can also cause the reader to disregard the word when context is sufficiently rich for comprehension to occur (Nation & Coady, 1988, cited in Huckin & Coady, 1999, p. 183). Furthermore, adequate

contextual cues, while they may lead to correct guessing, are not necessarily conducive to retention. Mondria and Wit-De Boer (1991) found that neither rich contextual information nor correct guessing had any positive effect on word retention. The data even suggested that in a few instances words that were guessed correctly were actually *less* likely to be remembered.

In a study on incidental vocabulary acquisition through ER, however, Horst, Cobb, and Meara found that learners with greater lexical ability displayed “larger and more consistent learning gains” (1998, p. 218), indicating a relationship between the language threshold and retention. Pulido (2007) also found positive correlations between available sight words and retention.

### *Frequency and incidental vocabulary acquisition*

Research on the relationship between frequency and the retention of lexical items has helped shed further light on the process of acquisition, though attempts to identify general rules have proven to be difficult. This is partially due to the way lexical knowledge occurs and develops as a spectrum, with shades ranging from recognizing a word as part of the L2 to being able to use it freely and productively (Laufer & Paribakht, 1998; Waring & Takaki, 2003). Drawing distinctions between receptive, controlled active (words that can be used if required) and freely-used active (words that are voluntarily chosen) vocabulary, Laufer and Paribakht found that the rates at which each of these groups developed varied greatly. Receptive vocabulary, forming the bulk of most speakers’ lexical knowledge, developed the most rapidly, while both forms of active vocabulary developed at

progressively slower paces.

Studies on incidental vocabulary acquisition (see Horst, Cobb, & Meara, 1998) do not always draw upon these distinctions between different shades of lexical knowledge. Furthermore, texts have not been adequately matched to reader levels (see also Rott, 1999), with some participants reading materials beyond their proficiency level due to lack of minimum text coverage. Two recent studies on ER and incidental acquisition in foreign language contexts have taken different types of lexical knowledge and text coverage into consideration. In a study on word frequency and acquisition which attempted to provide 96% text coverage for subjects, Waring and Takaki (2003) found rates of uptake to be much lower than earlier studies (Horst, Cobb & Meara, 1998; Rott, 1999), particularly with regard to productive knowledge. Using word-form recognition, multiple-choice meaning, and decontextualized word-list translation tests, Waring and Takaki were able to measure various stages of word acquisition and their respective rates. Word-form recognition, in which participants identified words encountered in the text from a list, proved to be the most successful, with 61% of targets recognized immediately following the treatment. Post-treatment gains in receptive (as measured by a multiple choice meaning test) and productive (as measured by a word-list translation test) knowledge were 42% and 18%, respectively. Retention dropped by half for word-form recognition and receptive knowledge after three months, but productive knowledge proved to be the most ephemeral, dropping to only 4%. While productive knowledge develops incrementally slower than receptive knowledge, it also appears to decay incrementally faster.

Concerning optimal levels of frequency, results seemed to stabilize in word-form recognition after eight repetitions. Receptive and productive knowledge were much harder to assess, though Waring and Takaki extrapolated that 20 to 30 repetitions would be needed for the latter.

In a 2006 case study on ER, Pigada and Schmitt tested the acquisition of orthography, meaning, and grammatical behavior (via the use of articles and prepositions) of French nouns and verbs in order to measure “different facets of lexical knowledge and partial degrees of that knowledge” (2006, p. 18). Gains were most common in spelling, followed by grammatical behavior. Meaning, measured through word-list translation, was the least enhanced at 17% gain, reflecting productive-gain results in the Waring and Takaki (2003) study. The researchers concluded that 20 or more repetitions were necessary for gains to become noticeable in all three lexical aspects. Though the research was done with only one subject, it suggests, much like the above studies, that the various facets of vocabulary acquisition develop at different rates which can be difficult to quantify. It appears that early stages of word acquisition, such as orthography and form recognition occur more easily and possibly at threshold frequency rates that are easier to identify. Higher-level aspects such as productive knowledge, however, appear to be far too complex and elusive to establish any clear relationship between frequency and incidental acquisition.

### Implications for the language classroom

The use of easy reading materials is a defining characteristic of ER, and a clearer understanding of the influence of lexis

on reading underscores the need to adhere to a 95-98% rate of text coverage. Deciding upon one’s level in ER, however, is ultimately done through self selection, a process which can be difficult for teachers to monitor. Though they are advised to stick to one level, in practice, I have found that learners are not always consistent in doing so. Based on data gathered from reading journal entries, in which students reflected on their reading following the completion of each book, 38 of 59 learners (64%) read books from more than one level during the ER program, with 21 learners (36%) at one point reading books from levels which were reported to be difficult for them. Much like the results of the reading surveys discussed earlier, student comments from journal entries suggest that attempting a book beyond one’s threshold vocabulary level affects the difficulty of the text. On completing a 700-headword reader following a 400-headword reader, one learner commented, “This book was more difficult than that book ‘A Little Princess’. I didn’t understand many words. And it took many times to read the book.” Similarly on trying a 400-headword reader after a 600-headword one, another learner commented, “The book is easier than the book I borrowed last time. Easy vocabulary made up a interesting story. I didn’t feel any hard when I read it, so when I was free I would take the book in my hand.”

Eliciting student feedback via reading journals and surveys can be a valuable means of monitoring difficulty levels in order to better advise learners on how they may optimize their reading experience. In order to maintain a threshold range of coverage, students should be encouraged to remain within their comfortable level. Without an adequate stock of



readers in appropriate levels, however, this can be difficult to do. After analyzing responses in student reading journals, my colleagues and I found it necessary to order hundreds of lower level readers for our institution, as the limited selection in the school language lab had caused students to attempt texts that were either uninteresting or too difficult for them.

Once students find their comfortable level, when should they move to a higher stage in a reading scheme? In offering practical advice for setting up an ER program, Hill (1997, p. 20) notes that students “should read a minimum of 10 and a maximum of 15 books before moving onto the next level.” Nation and Ming-tzu (1999) found that in order to have 95% text coverage of a graded reader, learners would have to acquire all the vocabulary of a new level *before* moving up, particularly in the earlier parts of a scheme where the coverage of words from previous levels could be as low as 88%. It appears, however, that vocabulary acquisition through reading alone is far too slow and inefficient to guarantee enough coverage should a learner choose move to a higher level. Laufer notes that the 95-98% text coverage essential to reading fluency is comprised of words that are recognized “automatically irrespective of context” (1997, p. 23). Waring and Takaki (2003) note that of the three measures of vocabulary acquisition in their study, productive knowledge most accurately represents the lexical knowledge needed for reading. The researchers conclude that any incidental vocabulary learning will surely take time:

If a learner is reading at the 96 to 99% coverage rate as suggested above, and it takes twenty or more meetings with a word to learn it as the data

here seem to show, then learners will have to read several hundred or several thousand words in order to learn one new word from their reading. (p. 151)

Through reading alone, research suggests that development of the requisite vocabulary needed to progress to higher levels of a graded-reading scheme would be greatly time consuming, far beyond the scope of term limits in many educational institutions.

ER combined with vocabulary instruction, however, can help learners make gains more rapidly than through reading alone (Huckin & Coady, 1999; Rosszell, 2006). Mondria (2003) found that verification and memorization of previously unknown words led to significantly higher retention rates than inferencing alone. In order to facilitate any intensive vocabulary study, Rosszell (2006, 2007) advocates an approach to ER in which students read a class reader which is selected by the teacher, enabling not only direct instruction of vocabulary but also support through shared use of target items among peers. ER purists like Day and Bamford (2002), however, argue that texts should be self selected by learners. In such cases, the use of vocabulary journals and student-generated vocabulary tests (Bamford & Day, 2004), can enable learners to take an active role in vocabulary learning while preserving the freedom of choice with regard to reading. Keeping a notebook handy to record any unknown words as students read causes minimal disruption to the act of reading while enabling students to choose the vocabulary words they want to learn. This can be followed up periodically with student-generated tests, giving students not only a tangible measurement of their learning but also a source of motivation.

## Conclusion

ER has seen a rise in popularity over recent years as a means of offering students a source of language learning, but skeptics may wonder “Does it really work?” The answer is perhaps a qualified *yes*. While ER may facilitate the development of reading proficiency and sight words, recent research in vocabulary acquisition suggests that ER may best be implemented as part of an array of classroom approaches, for gains through reading alone appear to be too minimal or subtle to measure over the short term. More longitudinal studies will be needed, however, to better assess the cumulative benefits of extensive reading, as the key to reaping the rewards may ultimately lie in motivating learners to continue with ER beyond the temporal limits of the typical language course.

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