

The Benefits of L1 and L2 "Big" Reading: A Practical Theory

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1. Introduction

"The benefits [of] extensive reading... are so compelling that it will be inconceivable for teachers not to make it an important feature of their teaching" (Renandya, 2007, p. 133).

"Adding an extensive reading program to a language course is the most important improvement that a teacher can make, and if this was the only improvement made, the teacher could still feel very satisfied about that" (Nation, 2013, p. 18).

"Those who read a lot will enhance their verbal intelligence; that is, reading will make them smarter" (Cunningham & Stanovich, 1998, p. 7).

When young people fail to read a lot, (and when educators fail to effectively promote reading), these young people may squander many benefits, not just the benefits of verbal intelligence. But they may also diminish their ability to learn critical thinking, to advance their careers, and to sufficiently manage their own health care (Seidenberg, 2017). Big readers, however, experience significant benefits over those who do not read big. These include cognitive, social, and linguistic benefits. In this paper, I state a theory about why this is the case, especially for the linguistic benefits of L1 and L2 big reading. Though the focus is theoretical, the results are practical. That is, when we **read big**, we acquire language because we **receptively retrieve** lexis and grammar through **spaced repetition** and **interleaving** -- as we **comprehend meaningful messages**.

2. Defining Terms

To unpack this claim, we need to define: (1) big reading BR, (2) receptive retrieval RR, (3) spaced repetition SR, (4) interleaving IL, and (5) comprehending meaningful input CMI.

(1) What is big reading? Most commonly, we use the term "extensive reading," but other terms are also used, such as "book flood" (Elley, 2000) and "free, voluntary reading," (Krashen, 2011). However, in this paper, "big reading" refers to a special class of extensive reading, which *begins* after a reader has read at least 300,000 words (Nishizawa, 2010). After reading 300,000 words, students begin to feel at ease in reading English. They

increase reading speed, understand English directly without translating back to the L1, and they attain measurable gains on the TOEIC and similar tests (Mason, 2011).

To read 300,000 words in one university term, a student needs to read about 20 minutes every day. The same goes for reading 1,000,000 words in a year. Both these scenarios require readers to read around 150 words per minute for about 20 minutes per day. Native speakers may average around 240-300 words per minute (Seidenberg, 2017), so if they read 20 minutes per day, they can read about 2,000,000 words in one year.

(2) With receptive retrieval (RR), we see or hear a word, phrase, or structure, and we recall its meaning, or we successfully parse a grammatical function.

(3) With spaced repetition (SR) or spaced practice, we retrieve or recall data after a space of time. Some forgetting sets in, so our brains must work harder to recall data. Spaced repetition works better than massed repetition (cramming) for retention.

(4) When we interleave (IL), we mix topics or data sets, so our brains work on different topics, instead of learning one topic and then moving to the next. For example, we mix the practice of a set of ukulele songs until we master them all, instead of practicing and mastering a song at a time. We mix the study of grammar points instead of studying one point at a time. Interleaving requires more effort to retrieve data, and we remember better and longer if we do it (Brown et al., 2014)

(5) When we comprehend meaningful messages, we are reading texts at the right level of difficulty. To compute our ability to comprehend, we can use the concept of vocabulary coverage. What percentage of the words in a text do we need to know to comprehend it?

Students and teachers often say to me, if they know 70% of the words in the text, then they can read it. But this is impossible. The threshold for reading a text (without a dictionary) is about 98% coverage. Even as a native speaker, I need to know about 98% of the words in a text to understand it.

This level of coverage fits with Krashen's (1985, 2001) comprehension hypothesis, which can be summarized as follows: "We acquire languages by understanding messages." But if we read big, we don't just comprehend messages, we comprehend a massive number of messages, and this is where the big benefits are. That is, we need access to "big data" (Seidenberg, 2017) for our brains to do the necessary computation to get the benefits of big reading.

3. The Claim and Its Implications

With these definitions in mind, let's revisit our claim. When we do **big reading**, we acquire language because we **receptively retrieve** lexis and grammar through **spaced repetition** and **interleaving** -- as we **comprehend meaningful messages**.

Abstractly, we can represent this theory as follows:

$$\text{BR} \times \text{CMI} \times (\text{RR}) (\text{SR}) (\text{IL}) = \text{Language Acquisition}$$

First, regarding *receptive retrieval (RR)*, when we comprehend big linguistic data, we receptively retrieve a broad array of lexical and grammatical elements as we read.

There are many factors related to retrieval, including the distinction between receptive and productive retrieval. For example, it's probably better to learn vocabulary "receptively first and then productively later" (Nation, 2012, p. 479). First, receptive retrieval is easier than productive retrieval, and second, if we don't know the general structure of language, we cannot easily use productive word knowledge.

But the point is this. Big reading satisfies a key factor for acquiring grammar and lexis because through big reading our brains process massive amounts of grammar and lexis -- *through receptive retrieval*.

Second, big readers do receptive retrieval with *spaced repetition (SR)* of high frequency grammar and lexis. We can contrast spaced repetition (spaced practice) with massed repetition (massed practice), which we call cramming.

Massed practice may work for cheap, short-term gains, like passing a test, but learners generally soon forget what they study during massed practice. Massed practice is common in grammar drilling if the drills are not recycled and spaced. Spaced repetition is better for long term retention. And here's the key point about big reading: big readers naturally experience spaced repetition of grammar and lexis as they read. That is, as they read, they meet grammar rules and word forms that are naturally repeated and spaced out in many texts and contexts.

We need to note how big reading differs from the traditional grammatical syllabus. If a grammatical syllabus is done poorly, we teach one grammar point and move to the next -- without spaced repetition and recycling. If we teach the grammatical syllabus well, we do spaced repetition and recycling of grammar, but probably not enough for learners to *acquire* the grammatical points through our teaching. Our students will forget unless they have spaced and repeated opportunities to comprehend and use the language.

With big reading, even though we may acquire grammar and lexis through spaced repetition, we need to note that this is different than remembering the content of the texts that we read. If we want to remember the content of the texts we read, we had better do self-quizzing on the material, using productive retrieval (Brown et al., 2014).

However, we are talking about acquiring the intrinsic and underlying "linguistic content" of texts -- not the "message content." When we read millions of words, we will experience spaced repetition of a broad array of lexical and grammatical items. And our brains may be naturally inclined to statistically acquire these linguistic patterns (Seidenberg, 2017).

On average, learners will tend to incidentally acquire a word when they meet it about 10 times. According to Waring (2007), if a learner reads 42,665 words, she will likely meet each of the top 500 words about 10 times. If she reads 85,329 words, she will likely meet each of the top 1000 words 10 times, and if she reads 231,250 words, she will likely meet each of the top 2000 words 10 times. Thus, through a natural kind of spaced repetition, she can acquire the top 2000 high frequency vocabulary words.

The principles of spaced repetition may cease to apply (or work differently for) mid or low frequency words because these words are not repeated as often, and the spaces between them may be too far apart. However, Elgort and Warren (2015) found that lexically proficient learners were better at learning more vocabulary. In other words, there may be a so-called "Matthew effect" (Stanovich, 1986) where *the lexically rich get lexically richer*. Thus, the variable richness of a learner's web of vocabulary knowledge may predict how efficiently or even quickly she learns new words. That is, the more words a learner knows, the more quickly she learns new words, and therefore, with mid or lower frequency words, the reader may need to meet them fewer times because of her existing lexical proficiency.

Besides vocabulary, as we read, we meet a multitude of grammatical rules depending on their frequency statistics. With higher frequency grammatical rules, readers may acquire them partly through spaced repetition, though perhaps less so with the lower frequency rules. Nevertheless, in general we can see that big reading satisfies the criteria of *spaced repetition of lexical and grammatical items for language acquisition*.

Third, big readers also *naturally interleave (IL)* different grammatical rules and word forms as they read. Big readers don't drill on the present tense, then the present continuous tense, then the present perfect tense, and then all the other tenses and grammar rules in serial order. Rather as they read, they meet numerous tenses, rules, words and their morphological rules as these structures are mixed and interleaved.

In theory, then, big reading satisfies three basic principles of learning: spaced repetition (SR), receptive retrieval (RR), and interleaving (IL). But the fourth factor, comprehending meaningful input (CMI), allows readers to experience these principles in a most meaningful way. That is, readers experience SR + RR + IL as they comprehend meaningful and sometimes even compelling messages. With big reading, we are not doing dry and abstract language study; we are engaging with meaningful messages, which are matched to the level of our students, and this is a quintessentially communicative and purposeful activity.

4. Time on Task

Besides the theoretical fits, big reading also satisfies the principle of time on task (TOT). Recently, I heard a teacher say, "I don't expect my students to really learn English in my classes. They simply do not have enough time to make significant improvements."

This point of view may be true, but I find it to be too pessimistic, especially because of the potential of big reading. Nevertheless, it might be helpful to shed light on the issue of TOT by comparing native English speakers and EFL learners, specifically in Japan.

Mary is a typical 18-year-old native speaker of English. If we estimate that from birth she has experienced 8 hours a day of immersion in English, then at 18, she has over 50,000 hours of English immersion. Ken is a typical 18-year-old university student in Japan. From junior high school to his first year of college Ken has experienced about 850 classroom hours of English instruction. If he did his homework, we could double the number.

The point is this, when he reaches university, Ken hasn't studied English for six years. Rather he has studied for 100 real days. Realistically speaking, Ken is doing well with his 100 days of English instruction, and we shouldn't expect six years of English ability in those 100 days.

But the challenge is this. How can we increase Ken's time on task? Study or living abroad is ideal. But in an EFL setting, big reading gives students the chance to (a) maintain their English after they study abroad and to (b) enter an English-speaking world through books and stories and thus acquire and maintain English as they do big reading.

5. The Grading of Texts

Thus far, we can see that the theory for language acquisition through big reading is the same for both L1 and L2 readers. However, for L2 learners to comprehend input, they need to use graded texts. By giving our learners graded texts, we are directly applying Krashen's theory of comprehensible input.

When discussing graded texts, we often hear the objection that our students need "authentic materials." Waring's (2017) response is helpful. He asks if we would make a beginning

piano student try to learn Rachmaninoff's most difficult piano concerto or if we would ask a 4-year-old to read Harry Potter.

That is, just as native speakers read books at appropriate levels, so should second language learners. Moreover, we can also challenge the idea of "authentic texts." Though EFL learners use texts that are graded and simplified, these texts still convey authentic meaning. They tell authentic facts and stories, so in significant ways, *graded texts are also authentic texts*.

When we grade texts, we can control for vocabulary, grammar, and readability. If we are simplifying a text, we replace the low or middle frequency vocabulary words with high frequency words. Because the top 2000 words of English cover 80% of English texts, we can assume that our learners need to learn these words first. In a natural English speaking environment, we can assume that learners will generally acquire these top 2000 words first because they would meet them 80% of the time. But if we create an artificial environment where learners learn middle or low frequency words first, then they will have systematic gaps in their most basic and important vocabulary knowledge.

However, when we grade texts, we replace the words that students need to learn later with the words they need to learn first. Fortunately, for grading texts, we have excellent vocabulary profiling software, the most popular of which we can find at www.lex tutor.ca/vp/comp/. The basic steps for profiling the vocabulary of a text are as follows:

1. Paste the text into the profiling form.
2. Click the Submit Window button.
3. View the vocabulary profile of the text.
4. To remove proper nouns and names, click on the words that are red; then click RE-VP to profile the text again.

Let's compare an unsimplified and a simplified text. The story is a public domain text by James Baldwin entitled the "King and Carl." It's a children's story, so the unsimplified version is easy. Eighty-nine percent of the words are in the top 1000 words of English. These are the blue words in the text, (see the presentation slide) and around 96% of the words are in the top 2000 words of English. These are the green words. As a reference, when we look at a typical text written for adult native speakers, we will see that 80% of the words are in the top 2000, so this text is 16% "easier" than a typical text for adult native speakers.

However, in the simplified version, we see that 95% of the words are in the top 1000, and almost 100% of the words are in the top 2000. If our students know *all* the words in the simplified text, then we can use it for fluency development, such as speed reading, because we cannot practice speed reading when we must deal with many unknown words. If our

students know about 98% of the words, then they will likely be able to guess unknown words from context, and thus the text would be at the right level for extensive reading.

In short, there are three key points regarding the profiling of texts for language learners. First, when we profile a text, we get an objective measure of its lexical difficulty, and thus, we can see if the text is appropriate for the level of our students. Second, even if we do not simplify the text, the profile shows us which words might be difficult for students and which words we might pre-teach (though we don't want to get bogged down in a long and ineffective pre-teaching session). Third, the profiling software helps us simplify texts. Depending on our target level, we can exchange out mid or low frequency vocabulary with the high frequency words our students need first. Thus, profiling texts helps us apply the comprehension hypothesis when we prepare texts for our students. Profiling grammar is more difficult than profiling for vocabulary. When we profile for grammatical frequency, we must manually check each sentence for its grammatical constructions and then compare the grammar with a scale, such as the common European Framework. We can more quickly check for grammar by using a readability profiler, such as the Flesch-Kincaid, which is a part of the spell-checker in Microsoft Word. Thus, as we increase the readability, we will probably use shorter words and sentences, which will help us to naturally simplify grammar.

6. Conclusions

I teach English to Japanese undergraduate students. Today my students face an increasingly globalized job market, where knowing English can benefit them greatly. However, even if they spend a semester or year abroad, they will need to continue to maintain and grow their English ability upon returning to Japan.

Big reading provides an easily accessible English environment that learners can carry in their pockets or backpacks. And, as mentioned above, big reading brings more than linguistic benefits. It can also benefit their socio-intelligence, for we know that reading fiction benefits empathy and emotional intelligence (Mar et al., 2009), and that reading, in general, makes us smarter (Cunningham & Stanovich, 2003).

But here is the main problem. We talk about doing extensive reading (ER), but often our students really don't do it. That is, most learners in ER programs never even cross the "big reading" 300,000-word threshold. And some researchers (Carney, 2016 and Storey, et al., 2005) claim that ER doesn't help students increase scores on standardized tests like the TOEIC, but these researchers fail to emphasize that subjects in their studies *did not read extensively* (i.e., read over 300,000 words).

Therefore, I would like to propose that we change our terms and our educational culture. For example, when learners follow the principles of ER, maybe we can say that they are *attempting* extensive reading. But when they have crossed the threshold of 300,000 words, then we can say that they have "read big."

Regarding educational culture, I would like to propose that universities and university departments set big reading goals. For example, *"during the first two years of life at university, students will read at least 1,000,000 words in English."* Along with these goals, I also suggest that universities and researchers in Japan do large scale extensive reading studies that involve hundreds (or even thousands) of subjects who have read millions of words.

Reading a million words in 2 years is a challenging goal for university students in Japan, but it is also a reasonable goal. At least it is doable and realistic. Even if a reader reads at the relatively slow rate of 125 words per minute, in 2 years, she can read a million words in 11 minutes per day of reading.

However, to help our students reach this goal, we will also need to work on other goals: (1) attain consensus among educators and administrators about L1 and L2 reading goals and benefits; (2) systematically promote the holistic benefits of both L1 and L2 reading on our campuses; and (3) to help them succeed, we may need to teach students the evidence-based psychological principles such as the "growth mind-set" (Dweck, 2007) and "grit" (Duckworth, 2016).

If we teach this positive psychology as an integral part of a "one-million-word challenge," it may also benefit our students in other ways, both personally and academically. And as many students meet the challenge, in their 3rd and 4th years, they can serve as role-models and student assistants, supporting new students and recommending texts, stories, and books to them.

All in all, this proposal fits our broader needs. We need to revive reading in our universities, not just for language education -- *but for lifelong learning*. If our students do not become big readers, they risk being linguistically, intellectually, and economically devoured by the competition. But if we create an educational culture where our students read big, (at least 1 million words for English L2 readers and a bounty of great books for L1 readers), then we will better fulfill our calling to help these young people thrive in the world today.

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