Reading in a Foreign Language April 2016, Volume 28, No. 1
ISSN 1539-0578 pp. 101–117

Scaffolding in L2 reading: How repetition and an auditory model help readers

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Abstract

Reading fluency research and practice have recently undergone some changes. While past studies and interventions focused on reading speed as their main goal, now more emphasis is being placed on exploring the role prosody plays in reading, and how listening to an audio model of a text while reading may act as a form of scaffolding, or aid, to reading comprehension. This article explores how two elements unique to repeated reading (RR) practices likely provide scaffolding for L2 learners' reading comprehension: repetitions in reading a text, and having learners read along with an audio model of the text. Scaffolding is an oft-used term in L2 education, but specific examples of it are seldom given. This article addresses scaffolding and suggests future research that can impact reading fluency intervention practices.

Keywords: reading fluency, scaffolding, repeated reading, extensive reading, L2 reading

Reading fluency research and practice in first language (L1) have recently undergone some changes. While past studies and interventions focused on reading rate as their main goal, currently more emphasis is being placed on exploring the role of prosody (speech intonation contours) in reading. At the same time, the target population for fluency instruction has been extended from young monolingual readers with weak reading skills to include older students beyond the primary grades. In addition to oral reading, prescribed modes of fluency practice have shifted to include silent reading (Rasinski, Samuels, Hiebert, Petscher, & Feller, 2011). Reading fluency research continues to have great significance as an essential constituent upon

which readers build good reading skills (LaBerge & Samuels, 1974; Perfetti, 1985, 1988; Samuels, 1994).

For second language (L2) researchers and practitioners, reading fluency continues to have strong appeal as reading remains one of the best ways for L2 learners to obtain the linguistic input they need and to get experience using the L2 in personally meaningful ways (e.g., Al-Homoud & Schmitt, 2009; Bochner & Bochner, 2009; Day & Bamford, 1998; Gorsuch, Taguchi, & Umehara, 2015; Krashen, 1995; Waring, 2009). For L2 readers, the ability to read fluently and with good comprehension can take substantial time to develop (e.g., Nuttall, 1996), and a dedicated reading fluency component is now regarded as essential to L2 reading programs (Gorsuch & Taguchi, 2009). If there are research-based enhancements that can be made to reading fluency interventions, they need to be explored.

The recent shifts in reading fluency research and practice outlined above point to areas in need of further research by L2 reading specialists, in particular that of scaffolding. In this paper, we will examine how prosody has come to play a greater role in the conceptualization of reading fluency and discuss two effective types of scaffolding for fluency instruction; namely, repetition, and use of an auditory model. We will then review research findings that suggest these methodological elements are particularly beneficial in scaffolding L2 learners.

Overview of Reading Fluency

Reading fluency is considered one of the essential components of good reading (Breznitz, 2006; Kuhn, & Rasinski, 2007; Kuhn & Schwanenflugel, 2008; National Reading Panel, 2000; Rasinski, Blachowicz, & Lems, 2006, 2012; Samuels, 2006a, 2006b; Samuels & Farstrup, 2006; Sinatra, Brown, & Reynolds, 2002; Stahl & Heubach, 2005). Reading fluency has been defined as "the ability [of a learner] to read rapidly with ease and accuracy, and to read with appropriate expression and phrasing when asked to read orally" (Grabe, 2009, p. 291). It is conceived as a foundation upon which learners develop into strategic readers who are skillful and versatile in using a variety of reading skills in order to achieve their reading goals (Hudson, Pullen, Lane, & Torgesen, 2009; Kintsch, 2013; LaBerge & Samuels, 1974; Perfetti, 1985; Samuels, 1994, 2004, 2006a, 2006b).

Reading Fluency and Automaticity

Reading fluency is theoretically related to the concept of automaticity (LaBerge & Samuels, 1974; Logan, 1997; Moors & De Houwer, 2006; Segalowitz & Hulstijn, 2005). Four properties are thought to comprise automaticity: speed, effortlessness, autonomy, and lack of conscious awareness (Kuhn, Schwanenflugel, & Meisinger, 2010, pp. 231–232; Schneider, Dumais, & Shiffrin, 1984, p. 1; Segalowitz, 2003, 2010, p. 78). To perform any cognitive activity "with automaticity," an individual needs to be able to do it quickly and with a feeling of effortless ease. Once an action is initiated, it usually cannot be stopped until it finishes, or it automatically starts and finishes on its own without awareness. An example might be locking a door before leaving for work. You lock the door very quickly and easily, and once you initiate the action of locking the door, you start and complete it without being overly aware of the process. Because of the

automatic nature of such behavior, you may even be uncertain at a later time as to whether you actually locked the door, causing you to come back to the door to make sure that it is properly locked.

Automaticity is not a rigid, all-or-none concept, but develops from a nascent stage, in which one needs to expend a lot of attention to perform an act, toward the fully "automatic" stage, in which one hardly needs to expend any attention to perform it (Kuhn et al., 2010, p. 232). For reading skills development, automaticity may start to develop in word identification skills and then move to phrase– and discourse–level skills. As word identification becomes more automatic, readers can invoke higher-order comprehension processes because they have freed the attentional resources to do so. This is Automaticity Theory, which postulates that, since our attentional resources in working memory are limited, we need to be able to perform lower-identification processes of decoding words with a minimum amount of attention in order to devote most of our attention to comprehension (LaBerge & Samuels, 1974; Perfetti, 1985). Not surprisingly, as with any cognitive activity prone to attentional resource limitations, reading fluency itself varies depending on a variety of factors affecting readers. Readers may be fluent with one text but not so fluent with another—due to their familiarity with the topic, or the genre of the text, or the difficulty level of vocabulary and grammar in it (Kuhn et al., p. 240, 2010).

Good readers are not overly troubled with word identification, but rather engage in higher-level comprehension processes. These include:

(a) integrating the information in the text with their background knowledge,
(b) determining which parts of a passage are important,
(c) summarizing each relevant point in the text,
(d) checking whether the flow of their comprehension is running smoothly,
(e) checking whether they are achieving the goals they initially set for their reading.

For additional examples of these comprehension processes, please see Gorsuch and Taguchi (2010). For performing these higher-level reading tasks, readers need sufficient attentional resources. This will not be possible if they need to spend too many of their limited attentional resources on lower-level word identification processes.

An Expanded Role for Prosody

Prosody, which can be called "the music of language," has four major properties: pitch, duration, stress, and pausing (Kuhn et al., 2010, p. 234). Spoken language has a rich repertoire of prosodic features that are used to convey a speaker's intentions and emotions. Prosody supplies grammatical "parsing points" in continuous speech. Parsing is the process by which listeners and readers divide words and phrases of a sentence in order to understand the syntactic structure and meaning. Using those dividing points helps listeners parse the stream of speech into meaningful phrases and retrieve their meanings (Ramus, Hauser, Miller, Morris, & Mehler, 2000).

When readers read silently, it is likely they retrieve phonological representations from the text to access meaning. This idea gains expression in the Implicit Prosody (IP) Hypothesis (Fodor, 2002). IP suggests that a default prosodic contour is projected during silent reading and

influences readers' resolution of ambiguities in the text. IP assumes that readers access the implicit prosodic representations in the text through their inner speech, even when the speech sounds are not physically present. In other words, readers seem to mentally hear the "voice" of the text while they are reading it (Rayner, Pollatsek, Ashby, & Clifton, 2012).

Empirical evidence for Implicit Prosody Theory. Two studies, by Alexander and Nygaard (2008) and Gross, Millett, Bartek, Bredell, and Winegard (2013), provide intriguing support for the IP Hypothesis. In an attempt to replicate an earlier study by Kosslyn and Matt (1977), Alexander and Nygaard (2008) investigated auditory imagery which readers "hear" during silent reading. They asked participants to listen to a casual two-minute conversation between a fast speaker and a slow speaker. Then they were asked to silently read one of two test passages which they were told had been "written" either by the fast speaker or by the slow speaker. They found that the participants' reading rates were significantly influenced by the speech rates of the speakers they had heard before they read the test passage silently. Those reading the passage they thought had been written by the slower speaker read the passage more slowly than those who read the passage they thought had been written by the faster speaker. Their findings support the claim that the participants projected the prosodic information of the speakers into their silent reading.

Gross et al. (2013) investigated whether readers give higher helpfulness ratings when a word that represents new or important information is capitalized and in bold, which they called "cap-emphasis." They based their study on Selkirk's (1986, 1996) Focus Marking Theory for spoken English, which postulates that speakers prosodically emphasize new or important pieces of information in their speech by making them louder, longer, or higher pitched. Gross et al. hypothesized that readers would attach higher helpfulness ratings to the final sentences of a story when the new or important part was capitalized and in bold as opposed to the previously known information similarly marked. In their two-part study, participants silently read 20 short stories in which the last sentence of each story was bolded for either congruent or incongruent salience. For example, in *The canoe rocked back and forth and someone fell out.* ***SAM fell out***, the cap-emphasized word ***SAM*** is "congruent" since it introduces new information by specifying who fell out. ***Sam FELL out*****,** on the other hand, is "incongruent" because the cap-emphasized word is not new information. We already know someone fell. In this case, there is a mismatch between the stylistic prominence of the word in the text and the lack of new information.

In the first experiment, they found that the results supported Selkirk's Focus Marking Theory (1986, 1996, 2002). The participants found the stylistic emphasis more helpful when the cap-emphasized words were congruent. In the second experiment, they extended the target words from content words such as nouns, verbs, and adjectives, which typically receive prosodic stress, to function words, which do not. Function words, such as auxiliary verbs, propositions, pronouns, and conjunctions are usually considered "weak" in terms of their prosodic prominence in speech. Gross et al. similarly asked participants to make judgments about whether the cap-emphasis was helpful. For example: *The Smith family went to the beach. Everyone was in the water except Brian. Someone asked if Brian could swim.* The final sentence of this story was ***He can.*** In the congruent condition the word ***CAN*** was cap-emphasized, whereas ***HE*** was cap-emphasized in the incongruent condition. Consistent with the results in the first experiment, the participants perceived the cap-emphasis was more helpful in the congruent condition.

Summary. Alexander and Nygaard's (2008) and Gross et al.'s (2013) experiments with silent readers support the notion that readers do access the prominence of prosodically new or important information even when they read silently, and thus support the IP Hypothesis. These studies suggest that readers do construct implicit prosody in silent reading. Prosody enables learners to hold auditory input in working memory until they can carry out semantic and syntactic analyses of it to obtain its meaning (Koriat, Greenberg, & Kreiner, 2002).

Second Language Readers and Their Reading

Limited Exposure to Print

The benefits of fluency instruction have now been extended from young monolingual readers to include learners beyond the primary grades and also to second language (L2) learners. In both L1 and L2 reading, it takes a great amount of time and effort to develop reading fluency (Nuttall, 1996). Researchers point out that L2 readers often lack a sufficient amount of reading input to be able to process text efficiently (Beglar & Hunt, 2014; Grabe & Stoller, 2011; Nation, 2014). How much reading do L2 readers need to develop such fluency? To achieve a recognized level of expertise in any field, a threshold of 10,000 hours of practice has been established by researchers (Ericsson & Charness, 1994). This is sometimes called the "10,000-hour rule" and is discussed extensively in Gladwell's (2008) bestseller, *Outliers*. Most native speakers will have had that amount of language practice by age 4 or 5 (Segalowitz, 2003, p. 401). Nation (2009) estimates that L2 learners need to read 500,000 words per year in their reading to match the vocabulary level of a proficient native speaker; he says that this rate of exposure should continue for several years (as cited in Beglar & Hunt, 2014, p. 31).

Beglar and Hunt's study (2014) proposes a perhaps more reasonable and achievable yearly target of 200,000 words for L2 readers. In their study, the reading rates of the top 20% of their participants increased by 32.99 words per minute (wpm), and averaged a total of 240,000 words during one academic year. This approximates reading roughly one book per week for two 14-week academic semesters (a total of about 25 to 30 books). We must ask ourselves, if that is the amount needed, what kind of fluency instruction can help students reach that goal?

Extensive Reading and Repeated Reading for L2 Readers

Extensive reading (ER) is one robust, time-tested approach to help L2 readers develop reading fluency. In ER, learners are provided with a collection of books, written with a controlled vocabulary and grammar structure to accommodate their differing levels of reading proficiency. Such reading input is expected to facilitate L2 readers' natural acquisition of reading skills, implicit knowledge of L2 vocabulary and grammar, and content knowledge. Implementing ER usually does not require readers to answer comprehension questions, and is designed to give readers the freedom to choose books according to their interests and to stop reading books they find uninteresting (Bell, 2001; Day & Bamford, 1998; Mason & Krashen, 1997; Masuhara, Kimura, Fukuda, & Takeuchi, 1996; Robb & Susser, 1989).

An alternative approach to ER is a method called repeated reading (RR). RR was devised by

Samuels (1979) to apply Automaticity Theory (LaBerge & Samuels, 1974) to classroom methodology. In Samuels' original method, the target population was native English speaking children who were struggling readers. In this early version of RR, the children read a series of short passages written at the same difficulty level. After rereading each passage until they reached a criterion level of reading 100 words aloud per minute correctly, they moved on to read a new passage. For the first few trials, students usually had to read several times to reach the criterion rate. However, as their familiarity with the method progressed, the children decreased the number of oral readings they had to do to reach the criterion. At the same time, their oral reading errors decreased.

The progress in reading fluency from RR may be due to both the "practice effect" and the "transfer of practice effect" (Dowhower, 1987; Herman, 1985). In the "practice effect," which results from reading the same text repeatedly, the oral or silent reading time and number of errors decrease within the practiced passage. In the "transfer of practice effect," there is a similar effect on a new, unpracticed passage.

There are two types of RR treatments: assisted RR and non-assisted RR. In non-assisted RR, readers reread each passage orally or silently. In assisted RR, the audio version of the text is provided so that readers can read the text simultaneously with it. Samuels' original method called for non-assisted RR, while Chomsky (1976) and Carbo (1978, 1981) used assisted RR.

RR in L2 Settings

As in L1 English settings (for an extensive review see Chard, Vaughn, & Tyler, 2002; Kuhn & Stahl, 2003; National Reading Panel, 2000; Therrien, 2004), several studies have shown that RR is equally effective in improving reading rates and comprehension (Chang, 2010; Chang & Millett, 2013; Gorsuch & Taguchi, 2008, 2010; Taguchi, 1997; Taguchi & Gorsuch, 2002; Taguchi, Gorsuch, Takayasu-Maass, & Snipp, 2012; Taguchi, Takayasu-Maass, & Gorsuch, 2004). There has also been some encouraging work with L2 learners in target languages other than English. Gorsuch, Taguchi, and Umehara (2015), for example, found positive fluency effects for RR with American college-level learners of Japanese.

Scaffolding

We have already commented on the effects of RR established in its four decades of use in both L1 and L2 settings. Now we will view RR through the lens of "scaffolding." First, we will define scaffolding and provide commentary from RR study participants that points to specific sources of scaffolding for learners. Then we will describe and explain scaffolding in terms of the two main methodological features identified by actual users of RR: repetition and the audio model.

Defining scaffolding. The term "scaffolding" was coined by Wood, Bruner, and Ross (1976). Scaffolding in construction work is a temporary platform or structure used to help in putting together a new building. It supports the building and the workers during the construction project. In L2 education, the term refers to temporary instructional supports that teachers provide to assist learners, or learners provide to each other, such as explanations and word glosses. This assistance helps learners to accomplish tasks or comprehend concepts which they cannot

typically achieve on their own. As students become able to complete the tasks or understand the concepts on their own, the scaffolding is gradually removed (e.g., Boblett, 2012; Hammond & Gibbons, 2005; Hogan & Pressley, 1997).

When Taguchi et al. (2004) compared RR and ER among L2 English learners, they found that the repetition and auditory model are the unique features of RR, and that both aided the comprehension of L2 texts (see also Gorsuch et al., 2015). These findings were also supported in a diary study by Taguchi et al. (2012), in which the single participant, "Naomi," wrote about her reading experiences after each RR session. Naomi stated that her comprehension was improved by rereading, in that she was able to distinguish incomprehensible parts from the parts she had understood, judge the degree of importance of unfamiliar vocabulary or phrases in the text, and guess the meanings of unknown vocabulary items or grammatically ambiguous points in the text. She also noted that RR enabled her to recall and retain vocabulary items she had learned before. Writing directly about the auditory model used in the RR sessions, Naomi felt that it paced her reading and helped her understand dialogs embedded in the text (see also commentary from Vietnamese learners of English in Gorsuch et al., 2010). Finally, the auditory model also helped her to learn the pronunciation of the unfamiliar words to her by hearing them read aloud. In sum, both repetition and an auditory model seem to facilitate L2 readers with word-, phrase-, sentence-, and even passage-level comprehension.

Repetition and eye movement studies. While engaged in RR, readers practice reading and rereading portions of an entire story until it has been read in its entirety. In this section, we will examine the role repetition plays in facilitating (scaffolding) reading behaviors using evidence from eye movement studies. Few of these studies have been done with L2 readers, marking a research gap. To ease comprehension of these rather technical studies, here are some key terms (Foster, Ardoin, & Binder, 2013; Rayner et al., 2012):

- *Fixations* are when we rest our eyes to pull meaningful information from the text.
- *Saccades* occur between fixations and are comprised of the jumping of our eyes across text to a new fixation point.
- *Regressions* are when the eyes go back to previous portions of the text.
- *Gaze duration* is the sum of all of the fixations made on a word prior to movement to another word.
- *Total fixation time* is the sum of all fixations, including those following regressions, on a word.

Eye movements reflect our cognitive processing of the text while reading (Rayner, Chace, Slattery, & Ashby, 2006). For L1 English readers, fixations range from 150–500 milliseconds. With each saccade, readers' eyes move about seven to nine character spaces forward in the text. Typically, when we read a difficult text, or read an unfamiliar topic, we read with greater attention, resulting in more fixations and longer fixation durations (Rayner et al., 2006, p. 242). This sets the stage for eye movement studies focusing on different elements commonly found in texts, including: high and low frequency words, end-of-sentence text integration, and differences in information density in parts of texts.

Effects of repetition on high- and low-frequency words. Raney and Rayner (1995) had

university-level English L1 readers read passages twice and found that their reading time, number of fixations, and fixation durations significantly decreased on the second reading. Moreover, through their analysis of the high and low frequency target words embedded in the passage, they found no interactions between word frequency and repetitions. Readers reduced their reading time of both high and low frequency words equally across repetitions. In contrast, Foster et al. (2013), working with second graders, similarly analyzed five high frequency and five low frequency target words embedded in a text and found a significant interaction between word frequency and repetition effect. The readers' gaze duration and total fixation times for low frequency words decreased, but not for high-frequency words. This finding suggests that, even for second graders, the ability to read high frequency words may have already reached some kind of threshold, and there was no room for further development. These results make us wonder how word frequency and repetition interact for L2 reading. How much exposure to print do L2 readers need in order to reach a ceiling for high frequency words? Do high and low frequency words facilitate L2 reading differently, as Foster et al. (2013) suggest?

Foster et al. (2013) also suggested that rereading passages may facilitate reading behaviors differently depending on the level of fluency readers have to begin with, and that rereading text may facilitate passage-level transfer for fluent readers—such as university students (Faulkner & Levy, 1999)—but only word-level transfer for less skilled readers, like the elementary school-aged children described above. We noticed in two of our own studies (Gorsuch et al., 2010, 2015) that as the Vietnamese learners of English and American learners of Japanese progressed through multiple weeks of RR sessions, they mentioned vocabulary issues and word-level processing issues less and less often as the weeks went by. We wonder what eye-movement studies with such L2 learners would reveal in terms of level of attention paid to low- and high-frequency words as repetitions of a text are built up.

Effects of repetition on end-of-sentence text integration. Kaakinen and Hyönä (2007), working with L1 readers of Finnish, found that rereading texts affected readers' information integration at the ends of sentences. They asked readers to read two expository texts three times using an eye-tracking device. The researchers then chose for analysis the two words at the beginning (sentence-beginning), the two words at the end (sentence-end), and all the other words (sentence-middle) of the target sentences. They found that gaze durations were reduced on the words at the end of the target sentences. Through repetition, readers also used a smaller number of regressions between the sentence ends and the previous part of the target sentences. Since regressions represent extra cognitive effort to process a previous part of a text, rereading facilitated readers' integration of the information at the end of sentences. In other words, readers could integrate the text information progressively faster and more efficiently at the ends of sentences.

Fixating longer at the ends of sentences is a well-known phenomenon in L1 reading, which Just and Carpenter (1980) termed "sentence wrap-up." These researchers presumed this pattern of eye movement suggested readers were integrating information in the text and information from their previous knowledge. The fixation basically suspends readers' intake of new text information while integrating known information with unknown. Again, we wonder what effect repetitions in reading L2 text might have on this phrase- and sentence-level processing.

Effects of repetition on readers' treatment of textual characteristics. Working with L1 Finnish university students, Hyönä and Niemi (1990) found that rereading facilitation was increased where the text contained more theme changes and information density. The text structure consisted of three parts: introduction, detailed coverage, and conclusions. The detailed coverage provided details on the theme of the reading and had the most detailed information in the passage. The Finnish readers took significantly longer and fixated more while reading the detailed coverage segments. However, as the repetitions built up, readers greatly decreased their reading time, fixations, and regressions in those parts. In other words, the repetitions facilitated readers' ability to pick up details in a text.

The researchers noticed an interaction effect between repetition and information density. Repetition resulted in the greatest facilitation in the detailed coverage segments. These results suggest that with increasing familiarity with a text, readers are able to read parts of a text differentially, representing changes in passage-level processing. Some L2 learners in Gorsuch and Taguchi (2010) reported that, as their comprehension increased through the RR repetitions, they could change their rate of reading as they wished or needed. We would like to see if eye-tracking research could corroborate this self-reported reading behavior.

General effects of repetitions on L1 readers and summary. Even without the benefit of eye-tracking technology, we have been able to show that the reading rates and comprehension of the L2 learners we have worked with have increased. Similarly, but with the benefit of eye-tracking technology, L1 readers have consistently shown rereading facilitation (Hyönä & Niemi, 1990; Kaakinen & Hyönä, 2007; Raney & Rayner, 1995; Schnitzer & Kowler, 2006). Readers spent less time fixating on words, made fewer fixations per word, and revisited the previously fixated parts of the text progressively fewer times as they became more familiar with them. The L1 studies suggest multiple avenues for research with L2 learners using eye tracking. This, in turn, could provide motivation for the principled use of RR in many L2 teaching settings. Clearly, the repetitions in RR constitute an important potential source for scaffolding L2 learners' comprehension of texts.

Scaffolding and audio support in RR. A second form of scaffolding unique to RR is the use of an audio reading model (Taguchi et al., 2004, p. 89; Taguchi et al., 2012). It seems that an audio reading model helps pace L2 readers to read a little faster than they might read on their own. It is instructive to read the following comments from Naomi's diary (Taguchi et al., 2012), who wrote that the auditory model helped her to read faster:

> June 26–By reading along with the recording, I felt I could read faster because I could get auditory input of the text as well as the print. (p. 45)

The audio model also facilitated her comprehension of the story. The audio model was particularly helpful in understanding passages in which dialogs were embedded:

> July 10–In this session's passage it was difficult to understand Bob's lines because of subject omissions and grammatically incorrect usages. Reading the passage along with the recording made it easier to understand the story. It is easier to understand passages with dialogs while listening to the text on audio recording than while reading them

> silently. (p. 45)

Naomi often found it difficult to understand the parts of the passage in which multiple characters were talking to each other, a phenomenon also found with L2 learners in Gorsuch and Taguchi (2010). Naomi often missed which line of dialog was directed to whom. The audio model helped her to understand the conversation as a whole:

> September 13–When there are four characters in the story passage, it becomes too complicated to understand their relationships. I could not catch which lines were directed to whom during the initial reading, but subsequent reading along with the audio recording made it possible for me to understand the relationships. (pp. 45–46)

Apparently, the audio model provided scaffolding for learners in both studies. We argue that focusing on prosody as an additional channel of information offers a possible explanation for this. We speculate that the audio model in assisted RR gives L2 readers access to their inner speech (Rayner et al., 2012), (see Implicit Prosody Hypothesis above) and thereby helps them to develop this important aspect of reading fluency.

Phonological coding. Rayner et al. (2012) identified two forms of inner speech, "subvocalization" and "phonological coding." Subvocalization involves either muscle movement or articulatory processes in our mind, whereas phonological coding is our mental representation of the speech that gives us the impression of hearing our own voices or the voices of others (p. 188). According to Rayner et al. (2012, p. 211), phonological representations, including prosody, enable readers to hold words they have read in working memory until the words are meaningfully parsed or chunked together. In *The boat floated down the river sank*, you would most likely think that *boat* is the subject and *floated* is the verb of the sentence, until you come to the word *sank*. This initial parsing of the sentence would be found to be wrong, and the sentence would be reanalyzed. Our mental representation of the words would be held in working memory until the reanalysis was complete. In one model of reading prosody reviewed by Schwanenflugel, Hamilton, Kuhn, Wisenbacker, and Stahl (2004), the researchers noted "prosody serves to provide additional feedback to the [reader] regarding the major semantic and syntactic units in the linguistic message, resulting in better reading skill than his or her decoding speed would account for alone" (p. 124). Typically, clauses or sentences correspond with a "coherent intonation contour (prosody)" (Pawley & Syder, 2000, p. 24).

Pausing Practices

In the following L1 studies, the main concern of the researchers was to investigate readers' pausing practices, and whether assisted and non-assisted RR changed such practices. If pauses are interpreted as delimiters for phrases, clauses, and sentences which facilitate parsing, they can serve as an indication of readers' phonological coding. In a study with 20 above-average and 20 below-average 4th-grade readers, Kleiman, Winograd, and Humphrey (1979) showed that prosody in an audio model facilitated the readers' parsing ability. Through practicing marking phrase boundaries in four passages, the below-average readers learned to mark the phrase boundaries correctly more often when they read the text along with the auditory mode than when they read the text alone. Herman (1985) and Dowhower (1987) also worked with L1 elementary

school readers, engaging them in various forms of RR. Dowhower had one group of readers engage in assisted RR (with an audio model) and another group engage in non-assisted RR (no audio model). Both groups significantly reduced the number of inappropriate pauses while reading aloud, but the assisted RR group read with fewer inappropriate pauses than the non-assisted RR group. The difference between the two groups suggests that using an audio reading model works to improve readers' prosodic reading behaviors, thus enabling them to better process and parse the text into meaningful units.

Phonological coding and L2 readers. It is not surprising that audio models can help L2 learners build up comprehension by making units of meaning more salient through prosody. Working with L2 learners, Amer (1997), argued, "Reading aloud by the teacher helps EFL readers discover units of meaning that should be read as phrases" (p. 44). Amer was concerned, as many L2 teachers are, that L2 learners who have less experience with the spoken language tend to read passages word by word, and "as a result the sentences lose their integrity and consequently become meaningless" (p. 43). Similarly, Woodall (2010) found that an audio model facilitates beginning-level L2 readers' comprehension. He had an experimental group of 69 Puerto Rican university students read the children's classic *Charlotte's Web* (White, 1952) while listening to its audio model. In four of the eight comprehension tests, the experimental group significantly outperformed the control group consisting of 68 students who read the same text silently, without the audio support. He suggested that using an audio model helps L2 readers to read faster and get the experience they need for fluency development more efficiently and possibly with more pleasure (pp. 198–199). The audio model used in assisted RR is a research-supported means of scaffolding learners' reading comprehension.

Conclusion

In this article, we considered a revised definition of reading fluency which places more emphasis on the role of prosody in reading comprehension. We also noted that reading fluency research had been extended into investigations of readers beyond the elementary school level and L2 readers. Through our work over the past twenty years with repeated reading for L2 learners of English and Japanese, we have concluded that reading fluency is a significant contributor to L2 reading comprehension and that RR has become an effective and time-tested method for boosting L2 reading fluency. Two elements unique to RR, we believe, provide significant scaffolding for learners' L2 reading: the repetition itself, and use of an audio model. As with any reading fluency intervention, we need to continuously explore possible improvements to our research and practice. Thus, this report calls for future research with L2 learners using eye-movement technologies to explore repetition in reading as well as further investigation of how audio models can contribute to the development of learners' inner speech and their ability to parse syntactic and semantic units in text.

Acknowledgments

Our sincere gratitude goes to Texas Tech University, and to the Texas Tech University Library for their wonderful service and support. This research was supported by the Ministry of

Education, Science, Sports and Culture of Japan, Grant-in Aid for Scientific Research (C) to Etsuo Taguchi (Grant number 24520652) from 2012 to 2014.

References

Alexander, J. D., & Nygaard, L. C. (2008). Reading voices and hearing text: Talker-specific auditory imagery in reading. *Journal of Experimental Psychology: Human Perception and Performance*, *34*, 446–459. doi:10.1037/0096–1523.34.2.446

Al-Homoud, F., & Schmitt, N. (2009). Extensive reading in a challenging environment: A comparison of extensive and intensive reading approaches in Saudi Arabia. *Language Teaching Research*, *13*, 383–401. doi: 10.1177/1362168809341508

Amer, A. (1997). The effect of the teacher's reading aloud on the reading comprehension of EFL students. *ELT Journal*, *51*, 43–47. doi: 10.1093/elt/51.1.43

Beglar, D., & Hunt, A. (2014). Pleasure reading and reading rate gains. *Reading in a Foreign Language*, *26*, 29–48.

Bell, T. (2001). Extensive reading: Speed and comprehension. *The Reading Matrix*, *1*. Available: http://www.readingmatrix.com/archives/archives_vol1_no1.html

Boblett, N. (2012). Scaffolding: Defining the metaphor. *Teachers College, Columbia University Working Papers in TESOL & Applied Linguistics*, *12*, 1–16. Retrieved 12/5/2014: http://journals.tc-library.org/index.php/tesol/article/view/848

Bochner, J., & Bochner, A. (2009). A limitation on reading as a source of linguistic input: Evidence from deaf learners. *Reading in a foreign language*, *21*, 143–158.

Breznitz, Z. (2006). *Fluency in reading*. Mahwah, NJ: Lawrence Erlbaum and Associates.

Carbo, M. (1978). Teaching reading with talking books. *The Reading Teacher*, *32*, 267–273.

Carbo, M. (1981). Making books talk to children. *The Reading Teacher*, *35*, 186–189.

Chang, A. (2010). The effect of a timed reading activity on EFL learners: Speed, comprehension, and perceptions. *Reading in a Foreign Language*, *22*, 284–303.

Chang, A., & Millet, S. (2013). Improving reading rates and comprehension through timed repeated reading. *Reading in a Foreign Language*, *25*, 126–148.

Chard, D., Vaughn, S., & Tyler, B. (2002). A synthesis of research on effective interventions for building reading fluency with elementary students with learning disabilities. *Journal of Learning Disabilities*, *35*, 386–406. doi: 10.1177/00222194020350050101

Chomsky, C. (1976). After decoding: What? *Language Arts*, *53*, 288–296.

Day, R. R., & Bamford, J. (1998). *Extensive reading in the second language classroom*. New York, NY: Cambridge University Press.

Dowhower, S. L. (1987). Effects of repeated reading on second-grade transitional readers' fluency and comprehension. *Reading Research Quarterly*, *22*, 389–406. doi:10.2307/747699

Faulkner, H. J., & Levy, B. A. (1999). Fluent and nonfluent forms of transfer in reading: Words and their message. *Psychonomic Bulletin & Review*, *6*, 111–116. doi: 10.3758/BF03210817

Ericsson, K. A., & Charness, N. (1994). Expert performance: Its structure and acquisition. *American Psychologist*, *49*, 725–747. doi: 10.1037/ 0022-3514.72.1.218

Fodor, J. D. (2002). Prosodic disambiguation in silent reading. In M. Hirotani (Ed.), *Proceedings of the North East Linguistic Society 32*, 113–132. Amherst, MA: Graduate Students

Linguistic Association, University of Massachusetts.
Foster, T. E., Ardoin, S. P., & Binder, K. S. (2013). Underlying changes in repeated reading: An eye movement study. *School Psychology Review*, *42*, 140–156. doi.org/10.1037/spq0000027
Gladwell, M. (2008). *Outliers*. New York: Random House.
Gorsuch, G., & Taguchi, E. (2008). Repeated reading for developing reading fluency and reading comprehension: The case of EFL learners in Vietnam. *System*, *36*, 253–278.
Gorsuch, G., & Taguchi, E. (2009). Repeated reading and its role in an extensive reading program. In A. Cirocki (Ed.) *Extensive reading in English language teaching* (pp. 249–271). Munich, Germany: Lincom Europa.
Gorsuch, G., & Taguchi, E. (2010). Developing reading fluency and comprehension using repeated reading: Evidence from longitudinal student reports. *Language Teaching Research*, *14*, 27–59. doi: 10.1177/1362168809346494
Gorsuch, G., Taguchi, E., & Umehara, H. (2015). Repeated reading for Japanese language learners: Effects on reading speed, comprehension, and comprehension strategies. *The Reading Matrix*, *15*, 18–44.
Grabe, W. (2009). *Reading in a second language: Moving from theory to practice*. New York: Cambridge University Press.
Grabe, W., & Stoller, F. L. (2011). *Teaching and researching reading* (2nd ed.). Harlow, UK: Pearson Education.
Gross, J., Millett, A. L., Bartek, B., Bredell, K. H., & Winegard, B. (2013). Evidence for prosody in silent reading. *Reading Research Quarterly*, *49*, 189–208. doi: 10.1002/rrq.97
Hammond, J., & Gibbons, P. (2005). What is scaffolding? In A. Burns & H. de Silva Joyce (Eds.), *Teachers' voices 8: Explicitly supporting reading and writing in the classroom*. Sydney: National Centre for English Language Teaching and Research Macquarie University.
Herman, P. A. (1985). The effects of repeated readings on reading rate, speech pauses, and word recognition accuracy. *Reading Research Quarterly*, *20*, 553–565. doi: http://dx.doi.org/10.2307/747942
Hogan, K., & Pressley, M. (1997). *Scaffolding student learning: Instructional approaches and issues*. Cambridge, MA: Brookline Books.
Hudson, R. F., Pullen, P. C., Lane, H. B., & Torgesen, J. K. (2009). The complex nature of reading fluency: A multidimensional view. *Reading & Writing Quarterly*, *25*, 4–32. doi: 10.1080/10573560802491208
Hyönä, J., & Niemi, P. (1990). Eye movements during repeated reading of a text. *Acta Psychologica*, *73*, 259–280. doi: http://dx.doi.org/10.1016/0001-6918(90)90026-C
Just, M. A., & Carpenter, P. A. (1980). A theory of reading: From eye fixations to comprehension. *Psychological Review*, *87*, 329–354. doi:10.1037/0033-295X.87.4.329
Kaakinen, J., & Hyönä, J. (2007). Perspective effects in repeated reading: An eye movement study. *Memory & Cognition*, *35*, 1323–1336. doi: 10.3758/BF03193604
Kintsch, W. (2013). Revisiting the construction-integration model of text comprehension and its implications for instruction. In D. E. Alverman, N. J. Unrau, & R. B. Ruddell (Eds.), *Theoretical models and processes of reading* (6th ed.) (pp. 807–839). Newark, DE: International Reading Association.
Kleiman, G. M., Winograd, P. N., & Humphrey, M. M. (1979). *Prosody and children's parsing of sentences* (Tech. Rep. No. 123). Champaign, IL: Center for the Study of Reading.

Koriat, A., Greenberg, S. N., & Kreiner, H. (2002). The extraction of structure during reading: Evidence from reading prosody. *Memory & Cognition*, *30*, 270–280. doi:10.3758/BF03213976

Kosslyn, S. M., & Matt, M. C. (1977). If you speak slowly, do people read your prose slowly? Person-particular speech recoding during reading. *Bulletin of the Psychonomic Society*, *9*, 250–252. doi: 10.3758/BF03336990

Krashen, S. (1995). Free voluntary reading: Linguistic and affective arguments and some new applications. In F. Eckman, D. Highland, P. Lee, J. Mileham & R. Weber (Eds.), *Second language acquisition theory and pedagogy* (pp. 187–202). Mahwah, NJ: Lawrence Erlbaum Associates.

Kuhn, M. R., & Rasinski, T. (2007). Best practices in fluency instruction. In L. Gambrell, L. Morrow, & M. Pressley (Eds.), *Best practices in literacy instruction* (3rd ed.) (pp. 285–312). New York: Guilford Press.

Kuhn, M. R., & Schwanenflugel, P. (Eds.). (2008). *Fluency in the classroom*. New York, NY: Guilford Press.

Kuhn, M. R., Schwanenflugel, P. J., & Meisinger, E. B. (2010). Aligning theory and assessment of reading fluency: Automaticity, prosody, and definitions of fluency. *Reading Research Quarterly*, *45*, 230–251. doi: 10.1598/rrq.45.2.4.

Kuhn, M. R., & Stahl, S. A. (2003). Fluency: A review of developmental and remedial practices. *Journal of Educational Psychology*, *95*, 3–21. doi:10.1037/0022-0663.95.1.3.

LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology*, *6*, 293–323. doi:10.1016/0010-0285(74)90015-2

Logan, G. D. (1997). Automaticity and reading: Perspectives from the instance theory of automatization. *Reading & Writing Quarterly*, *13*, 123–146. doi:10.1080/1057356970130203

Mason, B., & Krashen, S. (1997). Extensive reading in English as a foreign language. *System*, *25*, 91–102. doi:10.1016/S0346-251X(96)00063-2

Masuhara, H., Kimura, T., Fukada, A., & Takeuchi, M. (1996). Strategy training or/and extensive reading? In T. Hickey & J. Williams (Eds.), *Language, education, and society in a changing world* (pp. 263–274). Clevedon, England: Multilingual Matters.

Moors, A., & De Houwer, J. (2006). Automaticity: A conceptual and theoretical analysis. *Psychological Bulletin*, *132*, 297–326. doi: http://dx.doi.org/10.1037/0033-2909.132.2.297

Nation, I. S. P. (2009). *Teaching ESL/EFL reading and writing*. New York, NY: Routledge.

Nation, I. S. P. (2014). How much input do you need to learn the most frequent 9,000 words? *Reading in a Foreign Language*, *26*, 1–16.

National Reading Panel. (2000). *Report of the subgroups: National reading panel*. Washington, DC: National Institute of Child Health and Human Development.

Nuttall, C. (1996). *Teaching reading skills in a foreign language* (2nd ed.) Oxford: Heinemann.

Pawley, A., & Syder, F. (2000). The one-clause-at-a-time hypothesis. In H. Riggenbach (Ed.), *Perspectives on fluency* (pp. 163–199). Ann Arbor, MI: The University of Michigan Press.

Perfetti, C. A. (1985). *Reading ability*. New York: Oxford University Press.

Perfetti, C. A. (1988). Verbal efficiency in reading ability. In M. Daneman, G. E. Mackinnon, & T. G. Waller (Eds.), *Reading research: Advances in theory and practice* (pp. 109–143). New York: Academic Press.

Ramus, F., Hauser, M., Miller, C., Morris, P., & Mehler, J. (2000). Language discrimination by human newborns and by cottontop tamarin monkeys. *Science*, *288*, 349–351. doi:10.1126/science.288.5464.349

Raney, G. E., &. Rayner, K. (1995). Word frequency effects and eye movements during two readings of a text. *Canadian Journal of Experimental Psychology*, *49*, 151–173. doi:10.1037/1196-1961.49.2.151

Rasinski, T., Blachowicz, C., & Lems, K. (Eds.) (2006). *Fluency instruction: Research-based best practices*. New York, NY: Guilford Press.

Rasinski, T., Blachowicz, C., & Lems, K. (Eds.) (2012). *Fluency instruction: Research-based best practices* (2nd ed.). New York, NY: Guilford Press.

Rasinski, R., Samuels, S. J., Hiebert, E., Petscher, Y., & Feller, K. (2011). The relationship between a silent reading fluency instructional protocol on students' reading comprehension and achievement in an urban school setting. *Reading Psychology*, *32*, 75–97. doi:10.1080/02702710903346873

Rayner, K., Chace, K. H., Slattery, T. J., & Ashby, J. (2006). Eye movements as reflections of comprehension processes in reading. *Scientific Studies of Reading*, *10*, 241–255. doi:10.1207/sl532799xssrl003_3

Rayner, K., Pollatsek, A., Ashby, J., & Clifton, C. E. (2012). *The psychology of reading*. London, UK: Psychology Press.

Robb, T. N., & Susser, B. (1989). Extensive reading vs. skills building in an EFL context. *Reading in a Foreign Language*, *5*, 239–251.

Samuels, S. J. (1979). The method of repeated readings. *The Reading Teacher*, *32*, 403–408.

Samuels, S. J. (1994). Toward a theory of automatic information processing in reading, revisited. In R. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.), *Theoretical models and processes of reading* (4th ed.) (pp. 816–837). Newark, DE: International Reading Association.

Samuels, S. J. (2004). Toward a theory of automatic information processing in reading, revisited. In R. B. Ruddell & N. J. Unrau (Eds.), *Theoretical models and processes of reading* (5th ed.) (pp. 1127–1148). Newark, DE: International Reading Association.

Samuels, S. J. (2006a). Toward a model of fluent reading. In S. Samuels & A. Farstrup (Eds.), *What research has to say about reading instruction* (3rd ed.) (pp. 24–46). Newark, DE: International Reading Association.

Samuels, S. J. (2006b). Reading fluency: Its past, present, and future. In T. Rasinski, C. Blachowicz, & K. Lems (Eds.), *Fluency instruction: Research-based best practices* (pp. 7–20). New York, NY: Guilford Press.

Samuels, S. J., & Farstrup, A. (Eds.) (2006). *What research has to say about fluency instruction.* Newark, DE: International Reading Association.

Schneider, W., Dumais, S. T., & Shiffrin, R. (1984). Automatic and control processing and attention. In R. S. Parasuraman & D. R. Davies (Eds.), *Varieties of attention* (pp. 1–27). New York: Academic Press.

Schnitzer, B. S., & Kowler, E. (2006). Eye movements during multiple readings of the same text. *Vision Research*, *46*, 1611–1632. doi:10.1016/j.visres. 2005.09.023

Schwanenflugel, P., Hamilton, A., Kuhn, M., Wisenbaker, J., & Stahl, S. (2004). Becoming a fluent reader: Reading skill and prosodic features in the oral reading of young readers. *Journal of Educational Psychology*, *96*, 119–139. doi: 10.1037/0022-0663.96.1.119

Segalowitz, N. (2003). Automaticity and second language. In C. Doughty and M. Long (Eds.), *The handbook of second language acquisition.* (pp. 382–408). Oxford: Blackwell

Publishers.
Segalowitz, N. (2010). *Cognitive bases of second language fluency*. New York: Routledge.
Segalowitz, N., & Hulstijn, J. (2005). Automaticity in bilingualism and second language learning. In J. F. Kroll and A. M. B. De Groot, (Eds.), *Handbook of bilingualism: Psycholinguistics approaches* (pp. 371–388). Oxford University Press.
Selkirk, E. (1986). *Phonology and syntax: The relation between sound and structure*. Cambridge, MA: MIT Press.
Selkirk, E. (1996). Sentence prosody: Intonation, stress, and phrasing. In J. A. Goldsmith (Ed.), *Handbook of phonological theory* (pp. 550–569). Cambridge, MA: Blackwell.
Selkirk, E. (2002). Contrastive focus vs. presentational focus: Prosodic evidence from right node raising in English. In B. Bel & I. Marlien (Eds.), *Speech prosody 2002: Proceedings of the first international conference on speech prosody* (pp. 643–646). Aix-en-Provence, France: Laboratoire Parole et Language, Université de Provence.
Sinatra, G., Brown, K., & Reynolds, R. (2002). Implications of cognitive resource allocation for comprehension strategies instruction. In C. Block & M. Pressley (Eds.), *Comprehension instruction: Research-based best practices* (pp. 62–76). New York. NY: Guilford Press.
Stahl, S., & Heubach, K. (2005). Fluency-oriented reading instruction. *Journal of Literacy Research*, *37*, 25–60. doi: 10.1207/s15548430jlr3701_2
Taguchi, E. (1997). The effects of repeated readings on the development of lower identification skills of FL learners. *Reading in a Foreign Language*, *11*, 97–119.
Taguchi, E., & Gorsuch, G. (2002). Transfer effects of repeated EFL reading on reading new passages: A preliminary investigation. *Reading in a Foreign Language*, *14*, 43–65.
Taguchi, E., Takayasu-Maass, M., & Gorsuch, G. (2004). Developing reading fluency in EFL: How assisted repeated reading and extensive reading affect fluency development. *Reading in a Foreign Language*, *16*, 70–96.
Taguchi, E., Gorsuch, G., Takayasu-Maass, M., & Snipp, K. (2012). Assisted repeated reading with an advanced-level Japanese EFL reader: A longitudinal diary study. *Reading in a Foreign Language*, *24*, 30–55.
Therrien, W. (2004). Fluency and comprehension gains as a result of repeated reading: A meta-analysis. *Remedial and Special Education*, *25*, 252–261. doi:10.1177/07419325040250040801
Waring, R. (2009). The inescapable case for extensive reading. In A. Cirocki (Ed.). *Extensive reading in English language teaching* (pp. 93–111). Munich: Lincom Europa.
White, E. B. (1952). *Charlotte's web.* New York: Harper Collins. (Audiobook published by Listening Library, a division of Random House).
Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry*, *17*, 89–100. doi: 10.1111/j.1469-7610.1976.tb00381.x
Woodall, B. (2010). Simultaneous listening and reading in ESL: Helping second language learners read (and enjoy reading) more efficiently. *TESOL Journal*, *1*, 186–205. doi:10.5054/tj.2010.220151.

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