



A Comparison of the Impact of Extensive and Intensive Reading Approaches on the Korean EFL Learners' Reading Rate and Reading Comprehension Development

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Abstract

Extensive Reading (ER) is a reading approach that aims to make covering large amounts of reading material enjoyable for language learners. Many experimental studies have showed the effectiveness of the ER approach on reading fluency, the ability to read words and process text rapidly and accurately. Though revealing, these findings need to be interpreted with caution due to methodological defects in the measurement of reading fluency in these ER studies. This quasi-experimental study compared the effect of the ER approach with that of the conventional Intensive Reading (IR) approach on EFL learners' reading rate and reading comprehension with regard to learners' proficiency level. Over a 12-week timespan, two intact classes of 72 Korean secondary students received either ER (N = 36) or IR (N = 36) instruction, with pre- and post- differences in performance examined with regard to proficiency level. Results of an ANCOVA revealed that students' reading rate and comprehension increased significantly more from the ER approach than from the IR approach. That is, students from the ER group significantly increased their reading rate in comparison to the IR group without impairing reading comprehension. More specifically, the ER approach had a greater positive impact on the learners' reading rate than the IR approach irrespective of participants' English proficiency level. However, in terms of reading comprehension, the advanced and intermediate level learners benefited more from the ER approach, while the low level learners benefited more from the IR approach.

Keywords: Extensive reading, Intensive reading, Reading fluency, Reading rate, Reading comprehension, Proficiency, EFL learners

1. Introduction

Over the past two decades, there has been growing interest in the ER approach as a promising teaching method with which to develop the reading rate of second language (L2) learners. The ER approach encourages learners to read large amounts of long, easy-to-understand material based on their individual interests and reading proficiency level. To date, several empirical studies have supported the positive impact of the ER approach in promoting the reading rate of L2 learners compared to the traditional intensive reading (IR) approach (Bamford & Day, 2004). The IR approach is a conventional reading approach that aims to support L2 learners in constructing detailed meaning from a reading text through close analysis and translation led by teacher in order to develop their linguistic knowledge (Carrell & Carson, 1997). However, these positive effects of the ER approach on reading rate improvement must be taken as suggestive rather than conclusive. The reason for this is that, as Beglar and Hunt (2014) point out, various methodological defects were present in previous ER studies, such as measuring reading rate by assessing only reading speed while neglecting reading comprehension or readability. Recent studies by Beglar, Hunt and Kite (2012) attempted to overcome these methodological problems by ensuring the equivalent readability of the reading texts used for the pre and post reading rate test, which proved to be effective; however, other methodological limitations relating to the measuring of reading rate are yet to be overcome. Therefore, there remains a need for ER research that surmounts prior methodological limitations by exploring the diverse range of measurement tools featured in existing studies and builds on the learning from the literature in order to measure acquired reading rate in a more precise and sensitive way.

In addition, only a small number of L2 studies have compared the ER and IR approaches in relation to learners' language proficiency, (e.g. Lee & Schallert, 1997; Rashidi & Piran, 2011; Tekmen & Daloğlu, 2006) despite the fact that proficiency is one of most fundamental factors in L2 reading pedagogy (Grabe, 2009), as explained by the linguistic threshold hypothesis. According to the linguistic threshold hypothesis, L2 learners must obtain a threshold level of L2 proficiency in order to become fluent L2 readers (Lee & Schallert, 1997). Therefore, learners' proficiency levels need to be further investigated in relation to the impact of these two L2 reading approaches, particularly in the EFL context, where mixed-proficiency level classes are common (Powell, 2005).

Considering these research gaps, the current study investigated the impact of the ER approach on reading rate

development in a more sensitive way than had been achieved by previous studies; crucially, it set out to achieve this by employing reading rate tests that would focus not only on reading speed but also on reading comprehension. In addition, it made use of different reading texts that took into consideration the comparability between pre and post tests. Furthermore, it examined how the ER and IR approaches impact on secondary EFL learners at each proficiency level (i.e. advanced, intermediate and low) in order to find out which learners stand to gain the most benefit from each approach.

2. Background

2.1 Reading Process and Reading Fluency

L2 researchers in the field of reading have suggested various versions of the interactive reading model to explain the reading process and reading fluency (e.g. McClelland and Rumelhart (1981)'s interactive-activation model, Perfetti (1985)'s verbal efficiency model, and Samuels (2006)'s automaticity interactive model). Although these versions of the interactive model differ slightly, they all share a general consensus that reading consists of two core reading processes: (a) bottom-up and (b) top-down (Brown, Waring, & Donkaewbua, 2008; Ehri, 2005).

The first component of the interactive model is the bottom-up process, which relates to the automatic decoding of a text word by word (Eskey, 1988). According to the interactive model, readers primarily approach the reading of a text by decoding it one word at a time, connecting recognized words to their existing language knowledge. This low-order aspect of reading is referred to as the "bottom-up" process. Through this process, readers attain "rapid and accurate decoding of words" (Iwahori, 2008, p. 75), which leads them to understand the overall meaning of a text (Eskey, 1988). Words that learners can recognize rapidly, accurately, and automatically are referred to as "sight vocabulary" (Stanovich, 1986, p. 363). When learners have a rich sight vocabulary, they become able to decode more words automatically (Hedgcock & Ferris, 2009). Consequently, they can save their limited cognitive resources for the purpose of understanding the overall meaning of a text (Ehri, 2005). In other words, even though readers might accurately recognize numerous words, if they spend too much energy and time on the process of word identification, a breakdown in comprehension can occur. Therefore, in order to become fluent readers, readers need to increase their sight vocabulary. This is most effectively achieved through "repeated exposure to the same word numerous times" as Iwahori (2008, p. 72) argues. As has been pointed out by numerous researchers, the kind of repeated word exposure that helps to expand sight vocabulary can be effectively fostered by the ER approach (Grabe, 2009).

The second component of the interactive model, the top-down process, relates to the utilization of readers' prior knowledge in constructing meaning (Samuels & Kamil, 1988). When readers read, they use not only their language knowledge but also additional schematic knowledge, such as experiential and background knowledge, in order to predict and comprehend the text (Hedge, 2000). Due to its inclusion of high-order processing, such as activating schemata and prediction, this reading process is often referred to as the "top-down" process (Grabe, 2009). Through top-down processing, readers can infer the meaning of a text from contextual clues or from their own experience, confirming their predictions as they read (Field, 1999).

In brief, according to the interactive reading model, readers read a text by combining the lexical information acquired from rapid and automatic word recognition (i.e., the bottom-up process) with the contextual information obtained by high-order reading processes that utilize schemata in order to make predictions and then confirm those predictions through information checking (i.e. the top-down process). Based on the interactive model, a number of reading researchers argue that rapid reading rate (from the bottom-up process) and accurate comprehension (from the top-down process) are essential elements of reading fluency (Taguchi & Gorsuch, 2012). For instance, Blevins (2005) claims that reading fluency is dependent on rapid automatic word recognition and correct phrase comprehension. In addition, Samuels (2006) argues that a fluent reader reads with "automatic word-decoding skills" and "accurate understanding of the content" (p. 831). Despite some researchers suggesting other elements of reading fluency (e.g. Martinez, Roser, & Strecker, 1999; Reutzel, 2006), most scholars in the reading field share a consensus on the two core components of reading fluency: rapid reading rate and accurate comprehension. The current study is also in line with this widely accepted understanding of reading fluency.

2.2 Measuring Reading Rate in ER Studies

In order to build on the learning from previous ER research studies, the current study focuses on exploring the diverse range of reading rate measurement tools used in several previous ER studies as a reference for assessing participants' reading rate gains in the current study. As Table 1 presents, many existing studies show that ER improves L2 learners' reading rate. However, these findings should be interpreted with caution, since existing ER studies contain the following methodological problems in measuring reading rate: (a) using an identical reading rate text for both the pre and post tests; (b) rarely including information about the readability of the text used to measure reading rate; and (c) seldom reporting comprehension measures, despite the fact that gains in reading rate must also be accompanied by satisfactory levels of comprehension to constitute reading fluency development.

Table 1. Reading rate measures in ER studies

Study	Participants	Measurement of Reading Rate	Measurement of Reading Comprehension	Reading Texts for Pre/Post Tests	Readability of Texts for Pre/Post Tests	Rate Pre test-post test (words per minute)
Robb & Susser (1989)	125 EFL Japanese university students	Not mentioned	Not mentioned	Not mentioned	Not mentioned	ER: 79.31- 86.55 IR: 78.5 – 76.75
Lai (1993)	207 EFL Hong Kong secondary students	Entire text method	Questions from reading rate text	Two different texts	Not mentioned	ER 1: 165 – 266 ER 2: 85 - 181 ER 3: 106 - 121
Bell (2001)	14 EFL Yemenite adults	3-minutes reading method	Different text from the reading rate text	Two identical texts	Not mentioned	ER: 68.1 – 127.53 IR: 78.45 – 92.54
Taguchi & Gorsuch (2004)	20 EFL Japanese university students	Entire text method	Questions from reading rate text	Two different texts	Flesch-Kincaid readability evaluations Fog readability evaluations Fry's readability evaluations	ER: 85 - 119 RR: 85 - 82
Iwahori (2008)	37 EFL Japanese high school students	1-minute Method	Different text from the reading rate text	Two identical texts:	Not mentioned	ER: 84.18 - 112.82
Al-Homoud & Schmitt (2009)	70 EFL Saudi Arabian university students	Entire text method	Different text from the reading rate text	Two identical texts	Not mentioned	ER: 60.08 - 93.57 IR: 61.62 - 87.75
Cha (2009)	20 EFL Korean high school students	Entire text method	Questions from the reading rate text	Two identical texts	Not mentioned	ER: 97.80 - 178.40 NR: 77 - 99.6
Kao (2013)	15 EFL Chinese adults	Entire text method	Questions from the reading rate text	Two different texts	Not mentioned	ER: 189.6 - 233.6
Beglar, Hunt, & Kite (2012)	97 EFL Japanese university students	Entire text method	Questions from the reading rate text	Two different texts	Flesch-Kincaid readability	ER 1: 89.71 – 97.73 ER 2: 95.5 – 107.34 ER 3: 103.09 – 119.93 IR: 88 - 91
Chang & Millet (2015)	64 EFL Taiwanese secondary students	Entire text method	Questions from the reading rate text	Three different texts	Not mentioned	ER: 101 - 119 AR: 103 - 145

Note: NR = no reading, RR = repeated reading, AR = audio assisted extensive reading

Firstly, some of the previous ER studies used identical reading texts for pre and post tests; in other words, the exact same passages were used for the pre and post reading fluency tests (e.g. Cha, 2009; Iwahori, 2008; Al-Homoud & Schmitt, 2009). Considering that most of these ER studies were conducted over relatively short periods of time (i.e. a minimum of 2 weeks to a maximum of one year), there is a possibility that the participants became familiar with the reading text during the pre test or even memorized its content. This may have caused an artificial increase in their post-test scores, threatening the test reliability. For example, in Iwahori's (2008) study, 37 Japanese high school EFL students took a reading fluency test using the same text for the pre and post tests. The result revealed that the ER group's reading fluency increased significantly after the ER intervention. However, since the interval between the pre-test and the post-test was only 7 weeks, the test takers may have remembered the content or style of the text. Although the influence of the pre-test on the post-test score may have been significant, this potential influence is not identified in the study.

Secondly, although many of the ER studies did use different texts for the pre and post fluency tests (e.g., Kao, 2013; Lai, 1993; Beglar, Hunt, & Kite, 2012; Chang & Millet, 2015), there is no mention of whether the texts were of equivalent readability. Readability means how easy a reading text is to read and understand (Kintsch & Vipond, 2014). In other words, the comparability of the reading difficulty of the texts used in the pre and post tests were not examined in those studies (Park, 2015), a factor that could weaken the reliability of the fluency test and its result. For instance, in the research carried out by Chang and Millet (2015) on 64 EFL Taiwanese secondary students, two different reading texts were used for the pre and post tests. While Chang and Millet (2015) don't specifically mention readability, they do confirm that the levels of syntactic complexity and vocabulary difficulty differed between the two reading texts used in the pre and post tests. If the level of readability of these two tests differed, a comparison of the results of the pre and post test is suggestive rather than conclusive. To increase the reliability of measuring reading fluency for the data collection, within the process of data collection and analysis, the present study used different reading texts of equivalent readability in the pre and post tests.

Finally, in some of the ER studies on reading fluency – that is, rapid reading with accurate comprehension – reading rate and reading comprehension were measured separately using different reading texts (e.g. Bell, 2001; Iwahori, 2008). In other words, reading rate and reading comprehension were not measured in the same context. Accordingly, it cannot be confidently concluded that the increase in reading rate that occurred between the pre and post tests did not impair reading comprehension. For example, Bell's (2001) quasi-experimental study on 26 EFL Yemeni learners explored the impact of the ER approach. In his study, Bell (2001) also measured the reading rate and reading comprehension based on different reading texts respectively. Since the reading text for the comprehension test was different from the one used

in the reading rate test, Bell's (2001) research cannot conclude whether learners gained reading speed without impairing their comprehension of the text, a limitation that Bell (2001) admits in his study. As Nuttall (1996, p. 58) claims, "speed is worthless unless the reader understands what he reads". The studies above could not provide significant evidence of the positive impact of the ER approach on reading fluency because they didn't measure participants' overall reading fluency in terms of both reading speed and reading comprehension. More recently, a study by Beglar, Hunt and Kite's (2012) study showed the positive impact of the ER approach on L2 learners' reading rate without impairing comprehension by measuring reading rate in a more sensitive way than previous ER studies. However, other methodological limitations concerning the measurement of reading rate remain. In Beglar, Hunt and Kite's (2012) study, the authors acknowledged that reading rate was measured somewhat imprecisely; specifically, the elapsed time was written on the whiteboard in 10-second increments, and when students finished their reading the text, they looked up and recorded their time.

To summarize, this review of the previous studies points out a number of design criteria for valid experimental assessment of reading fluency to investigate the effect of ER on fluency development. Keeping these findings in mind, the current study selected different reading texts with the same readability for the pre-test and post-test to measure participants' reading rate. Furthermore, the current study measured reading rate and comprehension in the same context using the same reading text.

2.3 Language Proficiency

Linguistic threshold hypothesis proposes that L2 learners must obtain a threshold level of L2 proficiency in order to achieve functional general L2 competence (Grabe, 2009). Consequently, L2 proficiency is considered to be a core aspect of L2 reading pedagogy (Samuel, 2006). Lee and Schallert (1997), who apply the linguistic threshold hypothesis specifically to the L2 reading context, assert that L2 learners reach a threshold level of L2 proficiency before becoming fluent L2 readers (Grabe, 2009). Likewise, Hedgcock and Ferris (2009) state that "general L2 proficiency is likely the strongest predictor of success in developing L2 literacy" (p. 122). Thus, there appears to be a general consensus that reaching this L2 "threshold" proficiency is crucial to becoming a fluent L2 reader. To further develop this concept of a "threshold", most researchers agree that the minimum lexical coverage for sufficient L2 reading comprehension is the point at which the reader meets the 95% known-word criterion (Schmitt, Jiang & Grabe, 2011). However, there remains a lack of classroom-based research that directly compares the ER and IR approaches in relation to L2 learners' proficiency differential.

This research gap points to the need for additional ER research focusing on learner proficiency, particularly in foreign language contexts, which are under-researched compared to second language contexts (Grabe, 2009). As observed by Finch and Shin (2005), EFL teachers commonly struggle to meet the different learning needs that occur within mixed-proficiency classes. In such situations, EFL teachers often compromise by trying to match the level of the teaching material to their learners' average proficiency level (Negi, 2010). However, this uniform approach to teaching students of varying proficiencies can reduce learners' motivation (Bell, 2001). To summarize, because L2 proficiency plays such a central role within L2 reading pedagogy, further research into proficiency level is needed, particularly in under-researched EFL contexts where large class sizes are common and where the IR approach predominates. In order for the present study to address these research gaps, the following research questions (RQs) were devised:

- 1) RQ1. To what extent do ER and IR approaches effect Korean EFL learners' reading rate and comprehension development over a 12-week instructional period?
- 2) RQ2. Do learners from different proficiency levels differentially benefit from IR versus ER approaches?

3. Methodology

3.1 Participants

This quasi-experimental study included two all-female suburban private high school classes ($M_{Age} = 15.3$ years; *range* = 15-16): one class of 36 students who received ER lessons, and another class of 36 students who received traditional IR lessons. Both lessons were delivered once a week for two hours for one academic semester lasting 12 weeks and were taught by the same teacher with the condition that the two groups had participants with equivalent learning characteristic. Based on reports from the mock College Scholastic Ability Test (CSAT), the participants' English proficiency levels were diverse, ranging from beginner to advanced level. The mock CSAT is a practice test which administered four times a year by 16 Metropolitan and Provincial Offices of Education in Korea. It adopts the same format and difficulty level as the CSAT, which is the high-stakes university entrance test approved by the Korean Administration of Education (Shin, Chon, & Kim, 2011). All participants received an average of 6.5 hours of English lessons per week at school. After school, one participant in the ER group and two participants in the IR group took English lessons at private institutes for 1 hour a week. Six participants in the ER group and four participants in the IR group experienced additional English input such as reading English magazines or novels, using English websites, listening to English songs, and watching English movies or TV programs. This result implied that the majority of the participants in both experimental groups had little opportunity to be exposed to English input other than during their English lessons at school.

3.2 Treatment

The ER group received a course of reading classes based around their own choices of reading material. Learners were provided with a class library of graded readers from which they were free to make their own choices. Graded readers,

which are stories written with systematic control of vocabulary and sentence structure, are designed to provide progressive difficulty and complexity for a range of proficiency levels (Day & Prentice, 2016). Participants were advised to read one graded reader per week of their choice, conforming to guidelines about the number of repetitions needed to reinforce the meaning of new words from the vocabulary literature (Nation & Ming-Tzu, 1999). Based on the twelve books they had chosen, each participant created an individualized reading list of graded readers that they wished to read over the 12-week ER course. The participants were encouraged to read extensively, both inside and outside of class, and to avoid focusing on learning vocabulary or grammatical features (Bamford & Day, 2004). No specific instruction relating to reading skills or strategies was given during lessons. After each lesson, participants were required to complete their assigned reading (i.e. one book per week) as homework and to keep a reading log. For the reading log, they recorded the titles of the books they had read, the amount of time spent reading, and the number of pages read.

In contrast to the ER lessons, the IR lessons consisted of carefully structured and phased instruction. The weekly lessons focused on close analysis and translation of four short reading texts from the reading material, each consisting of around 700 to 800 words. The reading material used was a reading exercise book called "Finalizing English Reading I" (Kim, 2010), which had been selected for the upcoming term by the school's English teachers while setting the curriculum in accordance with Ministry of Education guidelines. During lessons, the teacher offered explicit instruction in grammar points, and vocabulary relating to the texts. Afterwards, the teacher helped them complete the accompanying exercises. For homework, they were required to read four new reading texts from the exercise book and then complete further exercises that were similar to those completed in class. Homework was then checked by the teacher in the following lesson in order to monitor participants' reading outside class.

3.3 Data Collection Instrument

3.3.1 Reading rate test

Keeping the methodological limitations of the previous ER studies in mind, the current study measured participants' reading rate development in a more sensitive way than was done in previous studies. This was ensured by (a) selecting different reading texts with the same readability for the pre-test and post-test when measuring participants' reading rate and (b) measuring both reading rate and comprehension in the same context using the same reading text.

To obtain a measure of reading rate (words per minute), the entire-text method (Alderson, 2005) was applied. In this method, a test taker reads an entire text and reading time is measured. After completing the test, reading time is divided by the number of words read to calculate how many words were read per minute. This method was selected because it measures not only reading speed but also how much participants understood the reading text. For example, in the 1-minute method and the 3-minute method, which were used in previous ER studies (e.g. Bell, 2001; Iwahori, 2008), test takers read the given text for 1 or 3 minutes. While useful for measuring reading rate, the 1 and 3 minute methods are not appropriate for measuring participants' reading comprehension because neither one minute nor three minutes is sufficiently long enough to assess reading comprehension. In order to ensure the content validity of the reading rate test, the reading passages used for the test had to be appropriate to the participants' reading level (i.e. an appropriate level of readability). To assure the readability of the reading passage, the Flesch-Kincaid Grade Level formula was used. This is one of the most popular methods for measuring the readability of a written text in ER studies. To measure the target participants' average reading level, an English text that was currently being used by the participating high school was measured according to the Flesch-Kincaid Grade Level, according to the suggestion of Nuttall (1996). The result produced was Flesch-Kincaid Grade Level 5.2. Reading texts for reading rate tests were selected from Millett et al.'s (2007) twenty reading passages based on this established reading level of Flesch-Kincaid Grade Level 5.3. Millett, Quinn, and Nation (2007)'s reading passages were chosen for the following reasons. Firstly, these passages consist of twenty 550-word reading texts at a diverse range of readability levels so that a test administrator can choose reading texts that are appropriate for the test takers' reading ability. Secondly, all Millett et al.'s (2007) twenty reading texts stay within the limit of the 2000 most frequently used words in English (the General Service List 2000, or GSL 2000) and contain only restricted grammatical structures that limit the number of relative clauses in order to ensure internal consistency. Internal consistency is important, since the current study is based on the pre and post-test research design. Therefore, these different versions of the pre and post tests should be comparable; that is, there should be internal consistency reliability between two tests. Since in the initial stage, the current study planned to conduct pre, post and delayed-post tests, three reading passages were selected. The Flesch-Kincaid Grade Levels of the three chosen reading passages for the first pilot study were 5.2, 5.2, and 5.1 respectively. However, for the main study, only the pre and post tests were used, since the delayed-post test couldn't be conducted due to time constraints. Therefore, the delayed-post test was instead used as a practice reading fluency test before the main data collection.

Secondly, to assess how much participants understood the reading texts used in the reading rate test, their reading comprehension was also measured. As Beglar and Hunt (2014) argue, reading rate is worthless unless the reader understands what he or she reads. Therefore, it is critical to apply reading rate tests that can measure reading speed and reading comprehension simultaneously. Each of the chosen reading passages had 10 follow-up comprehension check-up questions in a multiple-choice format. These questions asked participants to identify correct items such as the main idea or title of the reading passage. As Iwahori (2008) points out, the main goal of these kinds of follow-up questions is to confirm that "participants read the test with a certain degree of comprehension" (p. 78). The Rasch item reliability calculated for the comprehension questions was .72.

3.4 Procedure

The ER and IR treatments were administered in the class by the same teacher that taught their regular lessons. Following completion of a background questionnaire, the reading fluency test was administered to both the ER group and the IR group in order to collect pre-test data. After the 12-week treatments had been completed, a post-test was then given to the students to capture any changes that had resulted. In order to familiarize students with the test procedure, a practice reading fluency test was administered a week before the actual pre-test. The actual test consisted of one reading text and accompanying multiple-choice comprehension questions. The format of the test was a cover sheet outlining the procedure, then a double-sided sheet with the reading text on the front and ten multiple-choice comprehension questions on the back. Students were told to start reading the text upon the instructor's signal and to read as quickly as possible while maintaining comprehension. They were also instructed to record their time at the bottom of the sheet. For this purpose, a large stopwatch was displayed at the front of the classroom. After recording their time, students turned the page and answered the comprehension questions on the back of it without looking back at the text. The instructor observed the students carefully, ensuring that they did not refer back to the reading text. The post-test was administered in the same manner, but without a practice test. Participants were not informed that they would be taking the test after the treatment.

3.5 Data Analysis

Statistical analyses were computed using the statistical software package SPSS, version 18.0. For RQ1, the same analysis procedure was applied to both reading rate and comprehension. First, a between-subjects t-test was conducted to compare the mean pre-test scores of the ER and IR groups for both reading rate and comprehension. Next, a one-way between-groups analysis of covariance (ANCOVA) was performed to control for initial group differences on the pre-test. For RQ2, a two-way ANCOVA was performed to investigate whether the treatment's impact on participants differed according to their proficiency level for both reading rate and comprehension. In this analysis, there was one between-subjects independent variable with two levels, specifically, the type of treatment (ER or IR approach), and one within-subjects independent variable with three levels relating to English proficiency level (advanced, intermediate and low). The dependent variable was the post-test scores from the reading rate test and comprehension test. The covariate was the pre-test scores from the reading rate and comprehension test. The probability value of $p \leq .05$ was adopted for all statistical tests in the current study. Before applying the t-test and ANCOVA, preliminary checks were conducted to determine whether assumptions were met concerning normality, linearity, homogeneity of variances and regressions slopes, and reliable measurement of the covariate, in accordance with Huck (2012).

4. Results

To address RQ1, the results for both reading rate and reading comprehension were analyzed. Firstly, it was necessary to determine whether there was a significant initial difference in reading rate test scores between the ER and IR groups at Time 1 (pre-test), and an independent t-test was conducted respectively. For the reading rate test, the independent variable was the type of treatment (the ER or IR approach) and the dependent variable was the reading rate pre-test score. The probability value was set at $p < .05$. As described in Table 2, the IR group scored slightly higher ($M = 117.10$, $SD = 23.51$) in the pre-test than the ER group ($M = 113.57$, $SD = 22.48$), but this difference was not significant ($t(70) = -.65$, $p = .51$, two-tailed) with a small effect size ($\eta_p^2 = .06$). To address this issue, a one-way ANCOVA was applied to reduce sampling error. In this analysis, the independent variable was the type of treatment (either ER or IR approach), and the dependent variable consisted of the reading rate test scores at Time 2 (post-test). Scores on the reading rate test at Time 1 (pre-test) were used as the covariate.

Table 2. Comparison of Reading Rate Mean Score (Standard Deviations) by t-test. And Adjusted Mean Score (Standard Deviations) by ANCOVA at Time 1(Pre-test) and Time 2 (Post-test), Partialling out Time 1 score

Treatment	Time 1	Time 2	Estimated Time2 ^a
ER (n = 36)	113.57 (22.48)	139.39 (30.36)	140.70 *
IR (n = 36)	117.10 (23.51)	127.43 (27.28)	126.12 *

^aCovariates value of reading rate mean score at Time 1 (pre-test) in both groups is evaluated at 115.34 * $p < .05$

After applying a one-way ANCOVA, there was a significant difference between the ER and IR groups in the post-test scores ($f(1, 69) = 6.93$, $p = .01$) with a small effect size ($\eta_p^2 = .09$). The adjusted mean score for reading rate in the post-test was significantly higher in the ER group by 14.57 WPM than in the IR group, as indicated in Figure 1. The test results estimated by a one-way ANCOVA indicated that the ER approach did enhance participants' reading rate significantly compared to the IR approach ($p < .05$).

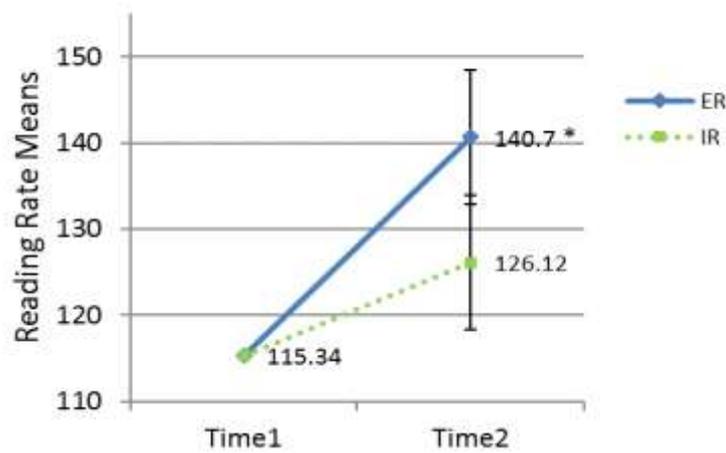


Figure 1. Estimated means of reading rate (words per minute) at Time 2 (post-test). The covariate value of the reading rate mean scores for both groups at Time 1 (pre-test) was evaluated at 115.34. Brackets enclose ± 1 SE. An asterisk designates a significant difference between the two groups after a one-way ANCOVA adjustment.

To identify whether any reading rate increase was accompanied by a decrease in comprehension, it was necessary to investigate the reading comprehension test result. Several steps were carried out relating to the reading comprehension test scores. Firstly, they were analyzed using an independent t-test. This was done to explore whether there was a significant initial difference between the scores of the ER and IR groups at Time 1 (pre-test). The independent variable was the type of treatment (ER or IR approach), and the dependent variable was the reading comprehension pre-test scores. As shown above in Table 3, the ER group scored slightly lower ($M=64.72$, $SD=10.55$) in the pre-test than the IR group ($M=65.83$, $SD=10.25$), but this difference was not significant ($t(70) = -.45$, $p = .65$, two-tailed) with a minimal effect size ($\eta_p^2 = .04$).

Table 3. Comparison of Reading Comprehension Mean Score (Standard Deviations) by t-test and Adjusted Mean Score (Standard Deviations) by ANCOVA at Time 1(Pre-test) and Time 2 (Post-test), Partialling out Time 1 Score

	Time 1	Time 2	Estimated Time2 ^a
ER ($n=36$)	64.72 (10.55)	77.22 (13.44)	77.54*
IR ($n=36$)	65.83 (10.25)	73.33 (7.56)	73.01*

^a Covariate value of reading comprehension mean score at Time 1 (pre-test) in both groups was evaluated as 65.28 * $p < .05$. The maximum possible score was 100 and the minimum possible score was 0.

Next, using the same method that was applied to the reading rate results, a one-way ANCOVA was performed to reduce sampling error (Field, 2009). In this analysis, the independent variable was the type of treatment (ER or IR approach), and the dependent variable consisted of the reading comprehension test scores at Time 2 (post-test). Scores on the reading comprehension test at Time 1 (pre-test) were used as the covariate. After adjusting for the Time 1 (pre-test) mean scores, a statistically significant difference appeared between the ER and IR groups' mean score at Time 2, $f(1, 69) = 4.38$, $p = .04$, with a minimal effect size ($\eta_p^2 = .06$). The adjusted mean score for reading comprehension on the ER group's post-test was significantly higher by 4.53 than that of the IR group, as presented in Figure 2.

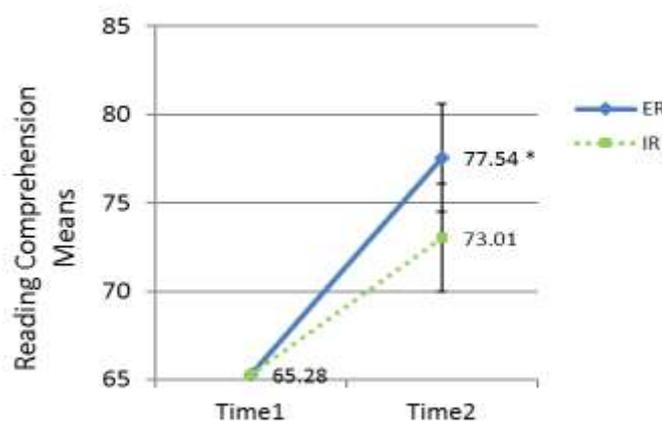


Figure 2. Estimated means of reading comprehension at Time 2 (post-test). Covariate value of reading comprehension mean score at Time 1 (pre-test) in both groups was evaluated at 65.28. Brackets enclose ± 1 SE. An asterisk designates a significant difference between the two groups after a one-way ANCOVA adjustment. The maximum possible score was 100 and minimum possible score was 0.

The results estimated by a one-way ANCOVA shows that the ER approach did have a significantly positive impact on participants' reading comprehension compared to the IR approach ($p < .05$).

To address RQ2, a two-way ANCOVA was applied in order to compare the impact of the ER and the IR approach on reading rate according to participants' English proficiency level. Initially, participants' proficiency levels were determined by a placement test. Participants were then placed in one of three groups based on their English proficiency: Group1 = advanced; Group2 = intermediate; Group3 = low. The independent variables were the type of treatment (the ER or IR approach) and the proficiency level (advanced, intermediate or low). The dependent variable was the reading rate test mean scores at Time 2 (post-test). Means scores from the reading rate test at Time 1 (pre-test) were employed as the covariate to adjust the initial group differences. The results of the two-way ANCOVA revealed that there was no interaction effect between the type of approach (the ER or IR) and proficiency level (advanced, intermediate or low), $F(2,65) = 1.27$, $p = .29$. However, the effect size was minimal (partial eta squared = .04). These results showed that there was evidence that the ER approach influenced participants' reading rate irrespective of their proficiency level. That is, the ER approach showed a significantly positive impact on participants' reading rate compared to the IR approach, regardless of proficiency level.

In terms of reading comprehension, a two-way ANCOVA was conducted to compare the impact of the ER and IR approaches on the reading comprehension of secondary EFL learners at different English proficiency levels. Participants were divided into three groups according to their proficiency level: Group1 = advanced; Group2 = intermediate; Group3 = low. The independent variables were the type of treatment (the ER or IR approach) and proficiency level (advanced, intermediate or low). The dependent variable was the reading comprehension test mean scores at Time 2 (post-test). The mean scores from the reading comprehension test at Time 1 (pre-test) were used as the covariate to control initial group differences.

After adjusting for reading comprehension test mean scores at Time 1 (pre-test), there was a statistically significant interaction effect. $f(2, 65) = 8.85$, $p < .005$, with a medium effect size (partial eta squared = .21). There was also a statistically significant main effect for proficiency level, $f(1, 69) = 6.3$, $p = .003$ with a minimal effect size (partial eta squared = .162). In other words, the three proficiency groups (advanced, intermediate and low) benefited differently from the ER and the IR approaches.

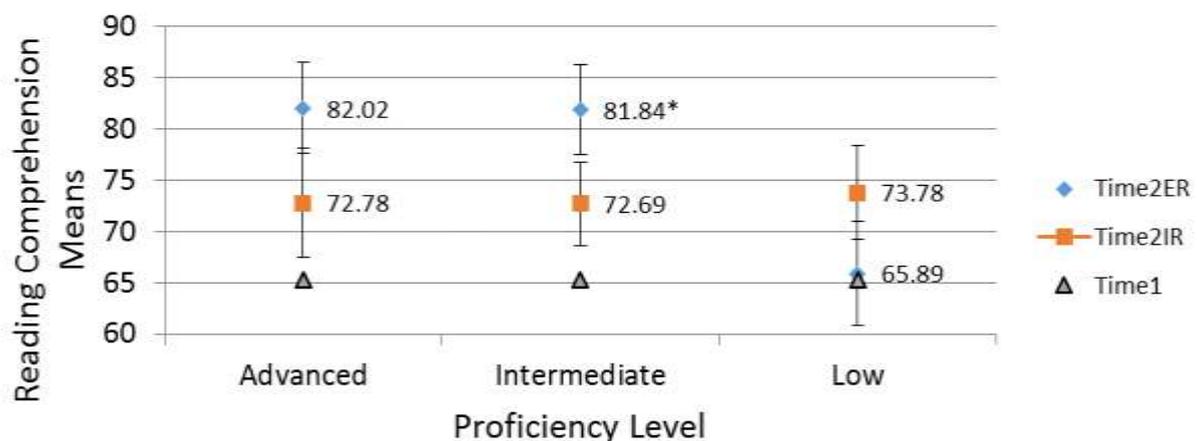


Figure 3. Estimated means of reading comprehension at Time 2 (post-test) by a two-way ANCOVA. Covariates value of reading comprehension mean score at Time1 (pre-test) in both groups was evaluated at 65.89 Brackets enclose ± 1 SE.

An asterisk designates a significant difference between the two groups after a two-way ANCOVA. The maximum possible score was 100 and the minimum possible score was 0.

5. Discussion

The current study assessed the impact of the ER approach on Korean EFL learner's reading rate and comprehension compared to the IR approach over a 12-week reading course. The findings revealed a significant improvement in the ER group's reading rate without sacrificing comprehension compared to that of the IR group.

The first part of RQ1 discussion relates to reading rate. The current study's findings showed that the ER approach improved EFL learners' reading rate significantly more than the IR approach. More specifically, the ER approach increased participants' reading rate by 24%, while the IR approach increased it by just 11%. Despite the fact that the ER group in the current study experienced a significant increase in reading rate, this increase was less than that demonstrated by previous ER studies, with the exception of Chang and Millett's (2015) study, which showed an increase from 101 to 119 WPM (an increase of 17.82%). Specifically, while the current study found reading rate to have increased by less than 30%, other ER studies reported increases of over 50%. For example, in Bell's (2001) study, reading rate increased from 68.10 to 127.53 WPM (87.13%.); in Taguchi et al.'s (2004) study, from 84.84 to 136.39 WPM (60.76%.); in Lai's (1993) study, from 85 to 185 WPM (117.64%), in Robb and Susser's (1989) study, from 68.10 to 127.53 WPM (50.51%), Although these results cannot be directly compared to those of the current study, since the conditions of the experiment were different, there are two possible explanations for the relatively small enhancement of

reading rate in the current study: (a) the initial reading rate and (b) the method used to measure reading rate. Firstly, in the present study, the initial reading rate was much higher than in the ER studies cited above. It is estimated by Nuttall (2005) that secondary school learners in ESL countries read at a rate of around 120 to 150 wpm before undertaking training. Although the mean initial reading rate in the current study was included in his suggested range, it is still much higher than in previous ER studies as presented in Table 1. It is understandable that an initially high reading rate, such as that found in the current study, might not show a dramatic improvement because of ceiling effect. Secondly, a smaller increase might be partly due to the way in which reading rate is measured (Iwahori, 2008). In the current study, an entire-text method (Alderson, 2005) was applied to measure reading rate. For this method, the test taker is required to read an entire text while reading time is measured. After reading, the test taker is required to answer comprehension questions related to the reading text to examine whether they read the text “with a certain degree of comprehension” (Iwahori, 2008, p. 78). However, this method differs from those used by other ER researchers to measure reading rate. For example, Iwahori (2008) and Bell (2001) used the 1-minute method. This test measures how many words test takers can read in one minute. As explained in the previous section, this test measures how many words test takers can read in one minute but cannot measure comprehension due to the time constraint. Therefore, test takers using this approach are likely to be more concerned with speed alone than with speed and comprehension. This might have resulted in a relatively lower result for reading rate in the current study compared to that of previous ER studies. In addition, while the present study used different reading texts in the pre and post reading rate tests to prevent the participants from becoming familiar with their content or structure, many other studies used identical texts (e.g., Bell, 2001; Cha, 2009; Iwahori, 2008; Sheu, 2003). It is therefore possible that the participants in those ER studies might have become familiar with the content and structure of the reading texts. This familiarity might have brought about a greater reported increase in reading rate.

The second part of the discussion relating to RQ1 focuses on reading comprehension. The findings from the statistical analyses suggested that the reading comprehension score of the ER group was twice as large as that of the IR group. This finding, which shows a significant increase in the ER group’s reading comprehension, is worthwhile to notice, since it makes the first finding that ER is effective in improving participants’ reading rate more meaningful. As Nation (2009) states, measuring reading rate alone without ensuring a certain amount of understanding is meaningless. Nuttall (1996, p.58) claims that “around 70%” of reading comprehension is appropriate when measuring reading rate (Nation, 2009; Kweon & Kim, 2008). In the current study, the ER groups’ mean score on the reading comprehension test was about 70% after the ANCOVA adjustment (from 65.28% to 77.54%), as presented in Figure 2. That is, the significant increase in the ER group’s reading rate is meaningful since reading comprehension also maintained around 70%.

With respect to RQ2, the results for reading comprehension according to participants’ proficiency level showed that the advanced group benefited most from the ER treatment, with the intermediate group coming a close second. The low group gained the least benefit from the ER approach; in fact, the low ER group benefited even less than the low IR group. Conversely, the low-level IR group experienced the greatest benefit from the IR treatment. This result was in line with Rashidi and Piran’s (2011) comparative study although their study covered a limited range of proficiency levels (i.e. advanced and high-advanced levels). This finding suggests that the linguist threshold theory is indeed applicable to the effect of the ER approach on reading comprehension demonstrated in the present study.

It is thus worth considering why, unlike in the ER group, the linguist threshold theory didn’t apply to the findings from the IR group. More specifically, why did the findings from the IR group seem to reveal the opposite effect of that stated in the linguistic threshold theory, with the lowest group improving most among the three proficiency levels? At least one possible explanation for this contrast is the different amount of emphasis on the “autonomy” of learners in the ER and IR approaches (Rashidi & Piran, 2011). Holec (1981, p. 3) refers to autonomy as “the ability to take charge of one’s learning”. As Day and Prentice (2016) state, the ER approach fosters a high degree of learner autonomy by encouraging learners to read on their own without much help or guidance. This learner-centred approach could be challenging, or even intimidating, for low proficiency learners. Meanwhile, in the teacher-centred IR approach, the teacher guides and helps the learners to read and understand. Understandably, remaining under the close guidance of a teacher could allow low proficiency learners to feel more supported and confident. Of course, there is the possibility that other factors (e.g. age, gender, reading strategies, learning motivation and L1 literacy, etc.) that are beyond the current study’s research scope might have influenced the two groups’ reading comprehension development (Hedgcock & Ferris, 2009). Nonetheless, this finding imparts the useful implication that secondary school EFL teachers should consider learners’ proficiency level when using the ER or IR approach.

To discuss RQ2 in terms of reading rate, the result showed that the ER group’s reading rate increased irrespective of the participants’ English proficiency levels. That is, a low level of English proficiency didn’t seem to hinder improvement in reading rate, which appears to contradict linguistic threshold theory. The reason why participants’ proficiency levels didn’t significantly influence their reading rate development in the current study might be explained by a statement from Nuttall (1996, p. 58). She argues that “as reading is a partly physical skill, to some extent speed [=reading rate] can be improved without reference to comprehension”, and thereby without reference to participants’ proficiency level. In contrast, Nuttall’s (1996) claim also implies that after an improvement in reading rate “to some extent”, there is the possibility that participants’ proficiency levels have an effect on their reading rate development. In other words, it can be assumed that if the current study had conducted a longer intervention, thereby giving participants further opportunities to increase their reading rate, then participants’ proficiency levels might have influenced their reading rate development. Thus, longitudinal ER research is needed to explore whether learners’ proficiency levels do indeed have an influence on the impact of the ER approach on reading rate development in the long term.

To sum up, the results showed a significant improvement in the ER group's reading rate without an accompanying decrease in reading comprehension compared to that of the IR group. These results contribute to a growing body of empirical evidence that supports the positive impact of ER on EFL learners' reading fluency. Although the amount of improvement in the current study was relatively small compared to the results of previous ER studies, the current study's finding is still meaningful for two reasons. Firstly, the current study measured not only participants' reading speed (reading rate) but also how much they understood the reading text (reading comprehension) in order to test their reading fluency, thereby arguably increasing the content validity of the test. Secondly, the current study used different reading texts in the pre and post tests to prevent the participants from developing familiarity with their content and structure, thereby increasing the reliability of the developed test. While this methodological strength almost certainly led to a more valid and reliable assessment of reading fluency, it might have also had the effect of reducing the apparent improvement of the ER group in comparison with the findings from previous ER studies.

The findings of the current study propose some useful suggestions in measuring reading rate that are of particular relevance to ER research. First, the current study employed a method of measuring L2 learners' reading rate by assessing not only their reading speed but also their reading comprehension, since reading speed is not meaningful unless the reader understands what s/he has read. Therefore, it is critical to apply reading rate tests that can measure reading speed and reading comprehension simultaneously. By measuring both aspects, reading rate and comprehension, researchers in the L2 reading field can obtain a more comprehensive understanding of the effect of a reading approach on L2 learners' reading fluency development. Furthermore, the current study successfully increased internal consistency by ensuring the comparability of the reading difficulty of the texts used in the pre and post tests. Internal reliability should be considered of critical importance in studies employing a pre and post-test research design, such as the current study, since they require more than one version of the test. Therefore, it is necessary to ensure internal consistency reliability among the tests; accordingly, the different versions of the pre and post tests should be designed to be comparable in the pre and post-test research design.

The findings of the current study also have useful implications for teaching practice. According to the current study's results, learners with different proficiency levels benefit from differentiated reading approaches. The implication for EFL practitioners in mixed-ability learning environments is that they should consider streaming learners according to English proficiency level (Finch & Shin, 2005). The benefit of proficiency streaming is that it allows practitioners to use the reading approach that most effectively meets each group's particular learning needs (Krashen, 2004), which improves their reading fluency.

Like many experimental studies, the current study is subject to certain limitations including the small sample size, short duration of treatment, and limited information on the participants. Future research should investigate the relationship between the degrees of development to language learners' reading rate and reading comprehension arising from the ER approach. Moreover, further research is needed to measure the effect of the ER approach on more diverse aspects of reading fluency, such as oral reading fluency. Exploring the effect of ER on aspects of reading beyond reading rate and comprehension would provide fertile ground for further research.

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