



## Relative Contribution of Reading Fluency and Vocabulary Knowledge in Predicting Korean EFL Learners' Reading Comprehension\*

Yusun Kang

*Korea University*

Despite the growing body of research evidence validating the Simple View of Reading (SVR) which highlights decoding and listening comprehension abilities as the prominent contributors of reading comprehension, there have been concerns regarding the need to augment it to consider other relevant variables. For advanced readers whose decoding skills are fully developed, an alternate code-related skill such as reading fluency needs to be considered. This is especially pertinent for second language readers whose phonics skills tend to be superior to their language abilities. Another concern has not only been with the need to consider vocabulary knowledge as an independent predictor, but also with the need to discern the contribution of both quantity and quality of vocabulary knowledge. Although there have been numerous studies showing the significant relationship between reading comprehension and both vocabulary breadth and depth, these have been rarely looked at discretely in the SVR framework. This study investigated the relative contribution of vocabulary breadth, vocabulary depth, and reading fluency to secondary Korean EFL learners' reading comprehension within an augmented SVR model. The findings indicated that although all of the considered predictors were significantly related to their reading comprehension, only listening comprehension and vocabulary depth demonstrated significant unique contribution.

**Keywords:** Simple View of Reading, reading fluency, vocabulary breadth, vocabulary depth, Korean EFL learners

### Introduction

The simple view of reading (SVR), a view that explains reading comprehension as joint effects of decoding skill and oral language comprehension abilities, has now been well established as a model of reading comprehension for both monolinguals (Adlof, Catts, & Little, 2006; Conners, 2009; Cutting & Scarborough, 2006; Høien-Tengesdal, 2010; Joshi & Aaron, 2000; Vellutino, Tunrner, Jaccard, & Chen, 2007) and bilinguals or second language (L2) learners (Gottardo & Mueller, 2009; Hoover & Gough, 1990; Nakamoto, Lindsey, & Manis, 2008). While the significant contribution of decoding skills and language comprehension abilities, often measured in terms of accuracy of discrete word identification and listening comprehension, respectively, have been consistently demonstrated, there also have been a rising acknowledgement that other factors, such as reading fluency and vocabulary knowledge, should be considered instead of or in addition to those two main components in order to gain a more accurate picture of reading comprehension process (Dreyer & Katz, 1992; Kirby & Savage, 2008; Proctor, Silverman, Harring, & Montecillo, 2012).

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For L2 learners, especially those in a foreign language (FL) contexts where exposure to the target language is mainly limited to school instruction, such as Korean English as a foreign language (EFL) learners, the two main components in the SVR model may not fully explain their reading comprehension abilities. Such learners often have limited opportunities to develop their oral language competence in both production and comprehension, yet have relatively stronger literacy skills because of the explicit instruction on and early introduction of the target language writing system. In fact, they show high command of decoding skills even at the very early stage of language instruction (Kang, Kang, & Park, 2012). Thus, for Korean EFL learners, especially those in secondary school and thus presumably have advanced English decoding skills, it is more likely that oral language comprehension abilities will turn out to be a stronger, if not sole, predictor of their reading comprehension abilities. For such populations, then, reading fluency could be a good candidate indicator of code-related abilities rather than word identification tasks, and more detailed attention to oral language comprehension abilities by considering other relevant skills such as vocabulary knowledge, rather than relying exclusively on listening comprehension abilities, seems pertinent.

Although many researchers have argued for the need to consider reading fluency or vocabulary knowledge as potential components to explain reading comprehension in SVR, most such studies have usually measured fluency only at the word level, thus merely adding *speed* to the *accuracy* element of decoding skills (Adlof et al., 2006; Cutting & Scarborough, 2006; Joshi & Aaron, 2000), and either considered vocabulary knowledge as a sub-construct of oral language comprehension abilities rather than an independent predictor or regarded only the quantity of receptive vocabulary knowledge (Gottardo & Mueller, 2009; Kim & Kang, 2014; Proctor et al., 2005), not to mention the scarcity of studies that considered both potential candidates in a single study. Thus, this study aims to gain better understanding of the reading comprehension process of Korean EFL learners, who possess superior decoding skills compared to their limited oral language comprehension abilities, by considering reading fluency at the sentence level as well as potential independent contribution of both the quantity and quality of vocabulary knowledge in addition to their oral language comprehension skills.

## Backgrounds

According to the SVR framework, reading comprehension is defined as a product of decoding and language comprehension abilities, which further suggests that absence of either one leads to reading comprehension failure. Numerous studies have identified the joint effects of the two main component skills on reading comprehension and provided much empirical support for the adequacy of SVR for both monolinguals and bilinguals (Georgiou, Das, & Hayward, 2009; Gottardo & Mueller, 2009; Høien-Tengesdal, 2010; Joshi & Aaron, 2000; Savage, 2001; Nakamoto et al., 2008; Verhoeven & Leeuwe, 2011). Most of these studies on SVR have measured decoding abilities in terms of accuracy of word identification. It is noteworthy, however, that the relative importance between the two main components of SVR seems to shift over time. Studies have identified growing contribution of oral language comprehension and decreasing influences of decoding skills with readers' increasing age and improved reading abilities for both monolinguals (Carver, 1997; Chen & Vellutino, 1997; Gough, Hoover, & Peterson, 1996; Vellutino et al., 2007) and bilinguals (Droop & Verhoeven, 2003; Kang, 2011, 2013; Proctor et al., 2005; Royer & Carlo, 1991). Such changes in the relative roles of decoding and oral language comprehension abilities in reading comprehension may imply that the initial SVR model may not fully explain reading comprehension of more advanced readers when code-related skill is assessed only through *accuracy* of word reading. In the SVR framework, once readers have developed autonomy in decoding skills to the extent that there are hardly any miscues in their word identification, their reading comprehension may be solely dependent upon their oral language skills. However, there may be other literacy skills that play a major role in their reading comprehension beyond the accuracy of decoding skills. Consequently, the need to consider reading fluency in addition to or in lieu of decoding in

explaining reading comprehension within the SVR model has been raised by researchers (Kirby & Savage, 2008).

A few studies that have included reading fluency, which involves *accuracy* and *speed* of reading discrete words and text (Crosson & Lesaux, 2010; Torgesen, Rashotte, & Alexander, 2001) have demonstrated its positive effects on reading comprehension of both monolinguals (Cutting & Scarborough, 2006) and bilinguals or L2 learners (Mancilla-Martinez et al., 2009; Nakamoto et al., 2008), both at the word (Proctor et al., 2005) and text level (Crosson & Lesaux, 2010; Cutting & Scarborough, 2006). Word and text reading fluency seem to have differential effects on reading comprehension, as text reading fluency is more strongly related to reading comprehension, especially for non-beginning readers (Crosson & Lesaux, 2010; Jenkins et al., 2003) while dissociations between word reading fluency and reading comprehension are often identified (Crosson & Lessaux, 2010; Walczyk, Marsiglia, Johns, & Bryan, 2004). Overall, the differential roles word and text reading fluency seem to play in reading comprehension suggest that reading fluency measured at these two different levels may be different constructs (Fuchs et al., 2001), as text reading fluency requires understanding of connected discourse and the ability to process information beyond the word level, while word reading fluency is more of a reflection of word recognition abilities (Fuchs et al., 2001; Jenkins et al., 2003).

The acknowledgement of potential different roles of different types of reading fluency, especially in terms of readers' age and language proficiency (Crosson & Lesaux, 2010) not only suggests that different types of fluency should be considered for older and more advanced readers but also that more than automatic and rapid recognition of words or word strings are needed in promoting reading comprehension abilities as they gradually advance in reading. Once they have full control of automaticity at the word level, readers need to process the string of words and parse texts into meaningful phrases. The significant relationship between text reading fluency and reading comprehension for older, thus usually more advanced, readers may be related to the semantic and syntactic processes they share in processing the decoded phrases and sentences. That is, unlike discrete word reading, one needs to access lexical representations for the words decoded, parse the decoded strings of words into meaningful phrases, and process meaningful connections within and between sentences when reading at the text level. In fact, the ability to syntactically and/or semantically process the language at the phrase or sentence level mediate the relationship between word decoding and reading development (Jenkins et al., 2003). Then it is questionable whether such parsing abilities would have similar relation to reading comprehension for whom Hamilton and Shinn (2003) refer to as "word callers", who do not necessarily comprehend what they decode.

By nature, L2, especially FL, readers are more likely to be word callers at the early stage of reading development. Korean EFL learners, for example, tend to have great command over English word decoding, although they do not necessarily know the meanings of words they decode (Ko, 2010; 2012), partly due to the heavy emphasis on phonics from early stages of English instruction and also to their fully developed decoding abilities in L1 before their English instruction. This speculation that Korean EFL learners are more likely be word callers points to the need to reconsider the conceptualization of fluency employed in the research. That is, fluency is much more than reading with accuracy and speed, although a majority of research on fluency has mainly focused on these two aspects. Samuels (2012) explains, "The essence of fluency is not reading speed or oral reading expression but rather the ability to decode and comprehend text at the same time" (p.5), and "the less important characteristics are accuracy and speed"(p.14). Despite little research attention paid to L2 learners, Wiley and Deno (2005) examined the relative predictive power of oral reading and maze test, a test that requires students to understand the content about what they read through syntactic and semantic parsing and processing, on reading comprehension of third and fifth grade ELLs and non-ELLs and showed significant correlations between both ELLs' and non-ELLs' performance on the maze test and reading comprehension. However, performance on the maze test explained significant variance in reading comprehension beyond text reading fluency only for the non-ELLs. Although the researchers do not provide possible explanations for this finding or sufficient information about the participants, it could be speculated that the ELLs in their

study may not have developed as much language and/or literacy skills to actively extract meanings and syntactically and semantically process the decoded texts at the sentence level simultaneously as the non-ELLs. This speculation also relates to previous research findings that oral language competencies covary with text-reading fluency in explaining reading comprehension (Crosson & Lesaux, 2010; Riedel, 2007; Yovanoff et al., 2005). But since those studies measured fluency with only speed and accuracy, more research, especially with L2 learners in foreign language contexts, is in great need in order to arrive at a firm conclusion about the relationship between reading comprehension abilities and fluency that also entails simultaneous understanding of decoding, or simultaneous processing of decoded text. Overall, reading fluency at the syntactic level seems to be an appropriate code-related skill to be considered in understanding reading comprehension of L2 learners, especially those in foreign language contexts where they have limited exposure to develop oral language and reading skills outside school and whose command of decoding skills in L2 are sufficiently developed. This may also be a reasonable approach to complement the initial SVR to be more sensitive to the characteristics of foreign language learners.

In addition to the limited research attention paid to the alternate code-related skills that should be considered in the SVR framework, considerations for the potential subskills of oral language abilities other than listening comprehension abilities have been very limited. One such measure is vocabulary knowledge which shows strong relations to reading abilities (Kamalian, Soleimani, & Safari, 2017; Lin, Pandian, & Jaganathan, 2018; Wang, 2013). Both trends of research which include vocabulary knowledge as a sub-skill of oral language abilities, together with listening comprehension abilities, and which treat vocabulary knowledge as an independent additional construct on top of oral language comprehension abilities and decoding skills in SVR have found their significant contribution to reading comprehension abilities of both monolinguals and bilinguals (Droop & Verhoeven, 2003; Lesaux, Crosson, Kieffer, & Pierce, 2010; Proctor et al., 2005). Yet most such studies have considered only the quantity of vocabulary knowledge, measuring readers' breadth of receptive vocabulary knowledge (Lesaux et al., 2010; Proctor et al., 2005; Verhoeven & van Leeuwe, 2008). For example, Lesaux et al. (2010) investigated the relative contribution of elementary Spanish ESL students' English decoding skills and oral language abilities that included the amount of receptive vocabulary they possessed as part of the latent construct and demonstrated the stronger predictive power of their oral language abilities. The finding was attributed to the students' relatively more advanced decoding skills compared to their language proficiency.

It should be noted, however, that while numerous research studies have identified the depth of vocabulary knowledge, or quality of one's vocabulary knowledge, as a relatively stronger predictor of reading comprehension of both L1 and L2 readers (Kang 2013; Nation & Snowling, 2004; Ouellette, 2006), it has been rarely considered within the SVR framework. Depth of vocabulary knowledge, unlike breadth of vocabulary knowledge which only measures the quantity of vocabulary one knows, measures the quality of vocabulary knowledge by taking into account how well and how much one knows about words. There have been some research attempts to include both breadth and depth of vocabulary knowledge in L2 SVR studies, but none of them tested the relative independent contribution the two types of vocabulary knowledge play, either by treating both types of vocabulary knowledge as sub-components of a single language proficiency construct (Kang, 2013; Lesaux et al., 2010), by considering both breadth and depth of vocabulary knowledge in the absence of general listening comprehension abilities (Leider, Proctor, & Silverman, 2013) or by treating only depth of vocabulary knowledge as an independent construct while including breadth of vocabulary knowledge as a subcomponent of language proficiency construct (Kim & Kang, 2014). For example, Kang (2013) showed that English oral language comprehension abilities that comprise listening comprehension, vocabulary breadth and vocabulary depth made a significant contribution to Korean high school EFL learners' reading comprehension, and Kim and Kang (2014) demonstrated that vocabulary depth, when treated as an independent construct in addition to oral language abilities consisted of listening comprehension and vocabulary breadth and decoding skills, made unique contribution to Korean high school EFL learners' reading comprehension abilities. None of these studies, however, provides research evidence as to whether vocabulary breadth and/or depth play significant independent additional predictive role within the SVR, in addition to the

initially suggested two main predictors of reading comprehension, namely listening comprehension and decoding skills.

In short, although abundant research evidence has acknowledged the SVR as a valid model of reading comprehension, it still needs to be augmented for a broader population including advanced readers who have developed mastery in decoding skills and for considerations of potential independent role other reading sub-skills, such as vocabulary breadth and depth, play in the reading process. Thus, this study attempts to examine the role of reading fluency as an alternate code-related skill in lieu of decoding abilities in explaining reading comprehension of Korean EFL learners within the SVR model. In doing so, it also expands on the original SVR by examining the independent and discrete roles of both vocabulary breadth and depth instead of embedding them under the oral language construct together with listening comprehension abilities. This study aims to answer the following research questions:

1. In an augmented SVR model that includes reading fluency as a code-related skill and vocabulary knowledge and listening comprehension abilities as independent indicators of language proficiency, which reading subskill(s) have significant direct and/or indirect effects on Korean middle school EFL learners' reading comprehension in English?
2. Between vocabulary breadth and depth, which has relatively stronger effects on Korean EFL learners' reading comprehension in English when their reading fluency and listening comprehension abilities are controlled for?

## **Method**

### **Participants**

148 (70 boys and 78 girls) Korean EFL learners in seventh and eighth grade served as participants of this study. They were attending a local public middle school in Seoul, Korea, and had been learning English since third grade. Because the preliminary evaluation of the participants revealed that they had great control over English decoding skills, only those who received the maximum possible scores on the English word- and pseudoword-reading measured with Word Identification and Word Attack sub-tests of the Woodcock Reading Mastery Tests-Revised (Woodcock, 1987) were selected for this study, in order to avoid ceiling effects and control for their mastery in English decoding. Based on the preliminary survey conducted, about 58% of the participants were learning English outside school with private tutors or at language schools, largely focusing on English grammar instruction. However, they had very limited access to natural English exposure, and none of them had lived abroad in English-speaking countries.

### **Measures**

#### **Vocabulary breadth**

The Peabody Picture Vocabulary Tasks-III (PPVT-III; Dunn & Dunn, 1997) was used to measure students' receptive vocabulary knowledge in English. Students were asked to point to the correct picture among four choices that corresponded to the target word they heard. The test terminated when the student provided five consecutive errors, and each correct item received 1 point.

#### **Vocabulary depth**

The Word Comprehension subset of the Woodcock Reading Mastery Test-Revised (WRMT-R; Woodcock, 1998) was administered to measure the quality of the participants' word knowledge in

English. The subtest comprises three different sections, assessing test takers' knowledge of antonyms, synonyms, and analogies in English. The synonyms and antonyms subtests (33 and 34 test items in total, respectively) required the students to read a given word and provide its synonym and antonym, respectively. The analogies subtest (79 test items in total) asked students to read a pair of words, discern the relationship between the two words, and provide an appropriate word to complete the analogy for the first word of a second pair presented. Each subtest was terminated when the students provided six incorrect answers consecutively, and each correct answer received one point.

### **Oral language comprehension**

In assessing students' oral language comprehension abilities, the Listening Comprehension subtest of WLPB-R (WLPB-R, Woodcock, 1994) was administered. The students were required to listen to oral passages read aloud by an American English native speaker and provide a one-word oral response to complete each unfinished sentence. The complexity of sentences and passages increased, and the test was terminated when six incorrect answers were provided consecutively. Each correct answer scored one point.

### **Reading Fluency**

The Reading Fluency subtest of the Woodcock Johnson Diagnostic Reading Battery (WJIII; Woodcock, Mather, & Schrank, 2004) was used to test students' sentence-level reading fluency. This subtest required students to read a total of 98 simple sentences silently and circle either Y (for "Yes") or N (for "No"), depending on whether it was true or false. They were directed to read as many sentences as they could and make judgments about the truth value within 3-minute time constraint. Thus, this particular subtest not only assessed accuracy and speed of the students' decoding ability but also tested whether they can simultaneously attend to and understand the meanings of the sentences they read. The score was computed by subtracting the number of incorrect answers from the total number of test items.

### **Reading comprehension**

The Passage Comprehension subtest of the Woodcock Reading Mastery Test-Revised (WRMT-R; Woodcock, 1998) was used as a measure of students' reading comprehension abilities. Students were asked to read each passage silently and provide an appropriate response to complete each unfinished sentence. There are a total of 68 test items, and the test was stopped when six consecutive incorrect answers were provided. Each correct response received one point.

For data analyses, structural equation modeling (SEM), using AMOS 21.0, will be conducted in order to fully capture the underlying potential relationship among these different constructs and identify both direct and indirect predictive role they might play in predicting the Korean EFL learners' reading comprehension abilities.

## **Results**

Table 1 presents the descriptive statistics for all the measures used in the study. In general, the participants of this study did not seem to have developed much oral language and comprehension abilities in English, as reflected in their relatively low listening comprehension, receptive vocabulary and word comprehension scores. Not only were those scores low, but wide distributions of scores were observed, as there were students who barely answered any questions correctly, while some strived to provide many more correct answers. On the PPVT, measure of vocabulary breadth, for example, there were a couple of students who answered only 10 test items correctly, while there was another one who provided as many as

115 correct responses. Such diverse ranges of scores were observed across reading measures as well: although the participants, on average, showed spontaneous understanding of 26.30 discrete sentences during a three-minute time constraint, there were some who were not able to do so for even one sentence. There was a wide distribution of reading comprehension score as well. These wide variations across English oral language and reading measures reflect the heterogeneity in English language and literacy skills despite the participants' uniformly (homogeneously) superior English decoding abilities and Korean reading comprehension skills. Although these measures do yield information about grade equivalent scores, they do not mean much for the participants in this study who are studying English in a foreign language context.

TABLE 1

*Means and Standard Deviations of Emergent Literacy, Oral Language, and Reading Comprehension Scores*

|                         | Mean (SD)     | Minimum | Maximum |
|-------------------------|---------------|---------|---------|
| Listening comprehension | 10.30 (3.71)  | 0       | 19      |
| Vocabulary Breadth      | 72.32 (22.96) | 10      | 115     |
| Vocabulary Depth        |               |         |         |
| Synonyms                | 2.10 (1.43)   | 0       | 8       |
| Antonyms                | 7.75 (2.00)   | 2       | 12      |
| Analogies               | 12.94 (8.09)  | 0       | 33      |
| Reading Fluency         | 26.30 (12.36) | 0       | 69      |
| Reading Comprehension   | 20.05 (6.10)  | 4       | 36      |

Correlation analysis was conducted next to understand the potential relationships among the variables. As presented in Table 2, there were strong positive correlations among all of the variables included in this study. Not only was reading fluency significantly correlated with reading comprehension ( $r = .58$ ,  $p < .001$ ), but all other language-related measures – listening comprehension, vocabulary breadth and vocabulary depth – were positively correlated with reading comprehension at the .001 significance level. In addition, significant correlation was observed between those language-related measures and reading fluency.

TABLE 2

*Correlations of among Listening Comprehension, Vocabulary Breadth, Vocabulary Depth, Reading Fluency, and Reading Comprehension Abilities of Korean EFL Learners*

|                            | 1      | 2      | 3.1    | 3.2    | 3.3    | 4      |
|----------------------------|--------|--------|--------|--------|--------|--------|
| 1. Listening Comprehension | 1.00   |        |        |        |        |        |
| 2. Vocabulary Breadth      | .44*** | 1.00   |        |        |        |        |
| 3. Vocabulary Depth        |        |        |        |        |        |        |
| 3.1 Synonyms               | .34*** | .34*** | 1.00   |        |        |        |
| 3.2. Antonyms              | .40*** | .38*** | .52*** | 1.00   |        |        |
| 3.4. Analogies             | .31*** | .22*** | .43*** | .40*** | 1.00   |        |
| 4. Reading Fluency         | .55*** | .48*** | .45*** | .52*** | .43*** | 1.00   |
| 5. Reading Comprehension   | .54*** | .49*** | .53*** | .61*** | .45*** | .58*** |

\*\*\*  $p < .001$

Before testing the structural model, a measurement model was tested using a confirmatory factor analysis to determine whether the observed variables served as adequate indicators of the latent variable, vocabulary depth, and whether it was feasible to further test the full model. The vocabulary depth latent variable comprise three measures: synonyms, antonyms and analogies which are part of the Word Comprehension subset of WRMT-R. All of the factor loadings from the observed variables to the latent variable were significant, ranging from .55 to .81.

Two fit indices that are less dependent on sample size, the ratio between chi-square and degrees of freedom and the root-mean squared error of approximation (RMSEA), indicate a good fit for a model if they are or less than 3 and .06, respectively (Hu & Bentler, 1999; Kline, 1998). The ratio between chi-square and degrees of freedom was 1.66, and the RMSEA was .06 for this measurement model, thus

indicating a good fit. Other fit indices, the model goodness of fit (GFI), adjusted goodness of fit (AGFI), and comparative fit index (CFI), with values of .90 or higher indicating a good fit (Hu & Bentler, 1999), were .99, .96, and .99, respectively for this model. Overall, all the fit indices indicated that the measurement model fit the data well.

Next, the structural model was tested, as presented in Figure 1. Other than the latent variable Vocabulary Depth, all other variables, reading comprehension, reading fluency, listening comprehension, and vocabulary breadth were measured with one observed variable. Direct paths to reading comprehension were drawn from reading fluency, listening comprehension, vocabulary breadth and vocabulary depth, while indirect paths were included from both vocabulary breadth and vocabulary depth through listening comprehension abilities and through reading fluency. The fit indices for this model were within the acceptable range: The ratio between chi-square and degrees of freedom was 1.50,  $\chi^2(13.51, N = 148) = 13.51, p = .14$ ; RMSEA = .058, GFI = .98, AGFI = .92 and CFI = .99.

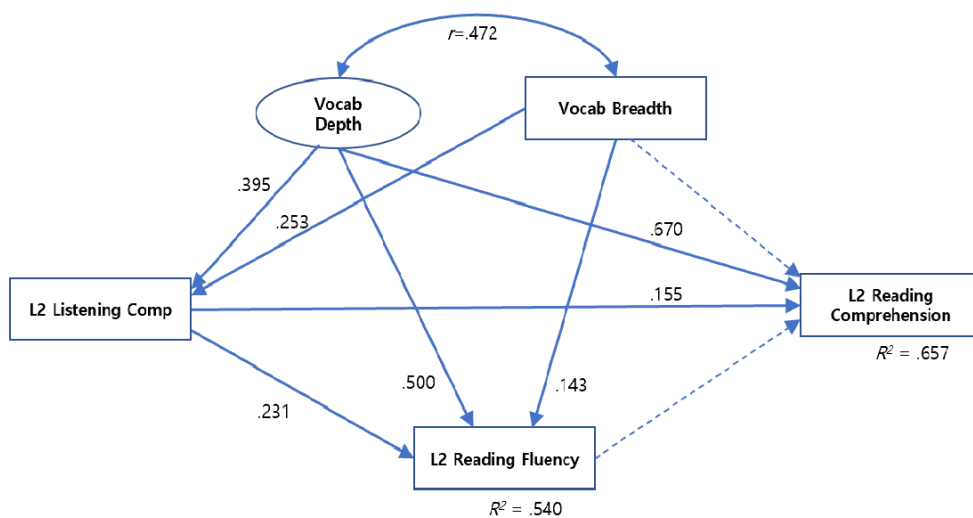


Figure 1. Structural model of English reading comprehension predicted by reading fluency and vocabulary breadth and depth and listening comprehension abilities.

In this model, the participants' reading comprehension in English was significantly predicted by their listening comprehension abilities and vocabulary depth, but not by reading fluency and vocabulary breadth (All path coefficients presented are standardized). That is, reading fluency and vocabulary breadth, when controlling for the effects of vocabulary depth and listening comprehension abilities, did not show any direct effects on Korean EFL readers' reading comprehension abilities. When the direct effects are compared between vocabulary breadth and depth, it was only vocabulary depth ( $\beta = .69, p < .001$ ) that showed significant direct effects on reading comprehension abilities when the effects of listening comprehension abilities and reading fluency were accounted for. It is important to note, however, that both vocabulary breadth and depth had significant indirect effects on reading comprehension through listening comprehension abilities ( $\beta = .25, p < .01$ ;  $\beta = .40, p < .001$ , respectively). The path from listening comprehension ability, vocabulary breadth, and vocabulary depth to reading fluency were all significant, but their effects were not mediated through reading fluency skills. Thus, significant direct effects of listening comprehension abilities and vocabulary depth on the Korean middle school EFL learners' reading comprehension abilities were identified, while indirect significant effects from both vocabulary depth and breadth through listening comprehension abilities were observed. This model explained about 67% of the variance in the participants' reading comprehension abilities in English. Overall, vocabulary depth not only showed relatively stronger predictive power compared to vocabulary breadth, but also in comparison to listening comprehension abilities.



## Discussions and Conclusions

This study was designed to investigate the potential role reading fluency and vocabulary knowledge play in Korean EFL learners' reading comprehension abilities. Taking into account their superior English decoding skills, reading fluency was conceptualized as rapid and accurate sentence-level processing of text, thereby tapping into their simultaneous understanding of decoded text at the syntactic level. Further, in order to provide detailed evidence regarding specifically what kind of vocabulary knowledge promotes reading comprehension, vocabulary was subdivided into vocabulary breadth and depth. As documented in many previous studies (Kang 2013; Kieffer & Lesaux, 2008; Klaua & Guthrie, 2008; Nation & Snowling, 2004; Ouellette, 2006; Young & Bowers, 1995), significant bivariate correlations between reading comprehension and fluency and between reading comprehension and both types of vocabulary knowledge was observed in this study. That is, for Korean EFL learners who have great command of English decoding skills to the extent that they received perfect scores on word and pseudoword reading sub-tests of Woodcock Reading Mastery Test-Revised (WRMT-R, Woodcock, 1998), their ability to decode with accuracy and speed and also to simultaneously make sense of what they read was significantly related to their overall reading comprehension abilities, as were both the quantity and quality of their vocabulary knowledge. These findings highlight the legitimacy of augmenting the initial SVR for L2 learners with superb phonics skills to include an alternate code-related measure such as reading fluency and consider different types of vocabulary knowledge as discrete contributors in addition to the usual listening comprehension measures.

When oral language measures, including listening comprehension abilities, vocabulary breadth and vocabulary depth, were taken into consideration in assessing their relative predictive role compared to reading fluency, however, reading fluency no longer showed significant direct effects on reading comprehension. That is, when Korean EFL learners' oral language abilities and their relation to reading fluency were accounted for, reading fluency did not explain any unique variance in reading comprehension abilities. This finding is contrary to other studies that showed significant contribution of reading fluency beyond word-level to reading comprehension (Jenkins et al., 2003). On the other hand, while controlling for the effects of reading fluency and listening comprehension abilities, vocabulary depth but not breadth, was identified as a significant contributor to Korean EFL learners' reading comprehension, showing both significant direct and indirect effects. As numerous studies have reported the growing importance of oral language measures in contrast to the decreasing role of code-related skills such as decoding skills and reading fluency with age, and the increasing contribution of vocabulary depth over breadth with reading development, the research findings may reflect the Korean middle school learners' general developmental trend in reading. Yovanoff et al. (2005), for example, showed that the relative importance of oral reading fluency decreased, in comparison to vocabulary knowledge, in explaining reading comprehension of upper graders. In the same manner, vocabulary depth facilitates reading comprehension with language and literacy development (Schwartz & Katzir, 2012). Taken together, this study seems to suggest that L2 readers who have developed mastery over English decoding show similar developmental trend in reading comprehension as L1 readers for whom oral language abilities gradually takes over the role of code related skills and vocabulary depth exerts more influence compared to vocabulary breadth in explaining reading comprehension as their language and literacy abilities develop and mature.

However, considering the shared processes in reading fluency and comprehension and their mutual facilitative roles (Fuchs et al., 2001; Klaua & Guthrie, 2008), the findings are contradictory to the assumption that readers' ability to parse and semantically and syntactically process the read text will account for much of the variance in reading comprehension once they have developed full command of decoding skills in terms of accuracy and speed. In other words, while the findings from this study may stress on the significant role oral language competence plays for advanced readers who are great decoders and provides evidence for their target language and literacy development, they may also indicate that for reading fluency to have an effect on reading comprehension abilities, certain level of oral language

competence is required. There have been a number of studies that revealed differential relationship between reading fluency and comprehension in relation to the readers' oral language proficiency for both monolinguals and L2 learners (Buly & Valencia, 2002; Crosson & Lesaux, 2010; Jenkins et al., 2003; Wiley & Deno, 2005). In the aforementioned study, Yovanoff et al. (2005) also showed that oral language competence covary with reading fluency in explaining reading comprehension of fourth through eighth grade students. Overall, considering the view that reading comprehension is an oral translation of text (Adams, 1990), the Korean EFL learners lacked the ability to orally translate what they were able to read with speed and accuracy. Thus, their limited oral competence in English may have hindered their syntactic processes to further make meanings and connections between phrases and sentences they read. This observation is in line with previous research findings that suggest that L2 learners are more likely to struggle with fluent reading due to underdeveloped oral language competence (Al Otaiba et al., 2009; Schilling, Carlisle, Scott, & Zeng, 2007).

However, in order to make a firm conclusion, further studies with L2 learners with diverse language abilities are warranted. In addition, this study is limited in that reading fluency only at the syntactic level was considered in investigating its role in reading comprehension. Other studies have shown the significant effects of readers' fluency at the word and passage level on reading comprehension (Klauda & Ghturie, 2008; Schastschneider et al., 2004; Torgesen, Nettles, Howard, & Winterbottom, 2003). In addition, in an attempt to fully capture the concept of reading fluency, this study did not consider oral reading fluency of the participants. As it is shown to be an important predictor of one's reading comprehension abilities, regardless of how it does not reflect whether the reader simultaneously understand what they read, inclusion of such measures might have provided a more complete picture. Also, at the same time, other language and literacy factors not considered in this study should be taken into consideration, as cautioned by Paris et al. (2005), as multiple shared processes such as syntactic knowledge, which is an oral language proficiency skill that is often delayed in L2 learners (Droop & Verhoeven, 1998; Lipka & Siegel, 2007), and background knowledge may account for relations between fluency and comprehension. Thus, further studies that include fluency measures of diverse text units and oral reading fluency, as well as other relevant language and literacy measures are in great need in gaining a full understanding of the relative roles oral language comprehension and reading fluency play in explaining reading comprehension abilities. Nevertheless, this study confirms the need to consider different types of vocabulary knowledge and code-related abilities in explaining reading comprehension processes of L2 readers in foreign language contexts.

### The Author

*Dr. Yusun Kang* is a professor in the Department of English Education at Korea University in Seoul, Korea. Her primary research interests are in second language reading development.

Department of English Education  
College of Education, Korea University  
Seoul, 02841, Korea  
Tel: +82 32902354  
Email: jenkang@korea.ac.kr

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