



**Second Language Reading and Vocabulary Acquisition by Adult
Learners of English**

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ABSTRACT

Even though vocabulary knowledge is crucial in receiving and producing meaning in a language, improving vocabulary knowledge can be challenging for both teachers and students. Exposure to the target language through meaning-focused reading can be considered one of the predictors that can address this challenge. As language learners are exposed to written language while reading, reading may help them enrich their vocabulary knowledge. Accordingly, this study investigated whether meaning-focused reading can contribute to the development of vocabulary knowledge (Breadth and Depth) among adult learners of English as a second language (ESL). Among the students of a Sri Lankan state university, a group of undergraduate students participated in the study. Measures of reading and vocabulary knowledge were administered to 189 participants as part of the research implementation. Additionally, a questionnaire was utilized to gather data on the participants' backgrounds, including their prior exposure to the target language. In a multiple regression analysis, reading significantly contributed to both breadth and depth of vocabulary knowledge. However, it appears that reading contributes more to the breadth than to the depth of vocabulary knowledge. Thus, although meaning-focused reading can contribute to vocabulary knowledge, the contribution might vary depending on the type of vocabulary knowledge. Overall, the findings indicate that exposure to the target language through meaning-focused reading plays a significant role in enhancing vocabulary knowledge among adult ESL learners.

1. Introduction

Tannenbaum et al. (2006) define vocabulary knowledge as the ability to comprehend the meanings of words in different contexts. It is a powerful carrier of meaning in a language and as a result, developing vocabulary knowledge is an essential task in the process of enhancing a second language (L2). Although second language learners are aware of the linguistic structures of the target language, it is not possible for them to construct meaning effectively in that language unless they have a sufficient vocabulary knowledge. Consistent with this view, while Schmitt & Carter (2000) and Levelt (1993) stated that vocabulary knowledge is one of the essentials and fundamental components of constructing meaning in a language, According to Laufer (1997), communication in a second language cannot take place in a meaningful manner without words to express a wider range of meaning. It is crucial for a second language learner to have a good knowledge in vocabulary to receive and produce meaning. Knowledge of vocabulary may play a major role in enhancing fluency in L2 learners and help them use the language confidently. Therefore, one of the important aspects of developing a second language is developing vocabulary knowledge.

Enhancing knowledge of vocabulary is a complex process since vocabulary encompasses various linguistic elements such as form, grammatical pattern, meaning, function, use, and word collocation. Despite the fact that vocabulary is made up of different linguistic elements, Anderson and Freebody (1981) proposed fundamentally two distinct levels of vocabulary knowledge: breadth and depth. According to them, depth of vocabulary refers to the depth of understanding of words or how well an individual knows the behavior of these words in context in the language (word collocation) whereas breadth of vocabulary refers to the number of words an individual knows.

Although these two dimensions show distinct features, they are highly correlated (Samaraweera, 2019), and they both facilitate the construction of meaning in a language. These two dimensions could be acquired through the exposure to reading as Krashen (2004) highlights that comprehensible input is necessary for the development of language skills. Vocabulary acquisition is a gradual process (Nation, 2001), and it continues throughout one's life. As a result, vocabulary acquisition in the L2 classroom through explicit instruction within a limited period of time is not possible. However, when this gradual process is encouraged with an adequate amount of exposure to the target language through meaning-focused reading, it can lead to a potential vocabulary acquisition in L2.

Exposure to the target language through meaning-focused reading can be defined as the contact that the learners have with the target language through written materials. According to meaning-focused reading, learners may learn the language through reading in which they mostly focus on context, researching words and comprehension. Second language acquisition is a function of comprehensible input designed to convey messages in low-anxiety situations (Krashen, 1985), and exposure to the target language mostly takes place outside classrooms and it entails self-directed, and self-instruction naturalistic learning in a stress-free environment (Benson (2001). Exposure to the target language through reading can be considered a major source of vocabulary growth as it may facilitate learners to identify linguistic features in written words and help incidental vocabulary acquisition. As reading is a linguistic process and a language-based skill (Mattingly, Kavanagh, & Mattingly, 1972), when learners are exposed to the target language through reading, they may understand the behavior of words in the language and receive better insight into how vocabulary is used in constructing meaning in

written texts. They may acquire words from context. Consistent with this view, Sanacore (1994) stated that encouraging learners to read will lead them to guess the meaning of words and phrases from the context. When learners increase their exposure to vocabulary, they could become aware of diverse aspects of vocabulary knowledge. Exposure to the target language through reading may facilitate language learners to acquire a number of words (breadth) and elements of word collocation (depth). The breadth of vocabulary knowledge consists of primary forms and meaning, whereas the depth of vocabulary knowledge consists of syntax and grammar (Rie Koizumi, 2005). Both breadth and depth of vocabulary knowledge are necessary for receiving and producing meaning in a second language. Given that readers have adequate exposure to written words through reading, reading may facilitate L2 language learners to acquire a number of words and elements of word collocation. Therefore, it is vital to examine whether exposure to a second language through meaning-focused reading contributes to second language vocabulary knowledge.

Both experimental and correlational studies (Dupuy and Krashen, 1993; Elley, 1991; Elley & Mangubhai, 1983; Politzer, 1965; Briere, 1978; Zoubi, 2018; Ghaderpanahi, 2012; Ellis, 2002; d'Ydewalle & De Bruycker, 2007; Lambine, 2008; Anjomshoa, & Sadighi, 2015; Peregoy & Boyle, 2005; Vygotsky, 1987) have reported that exposure to a target language plays a significant role in language acquisition. It may also create opportunities for the learners to interact with the target language and identify the linguistic features in words. It helps learners to learn outside the classroom with self-directed instructions in a natural, autonomous environment (Benson, 2001) and practice the target language in different contexts and meet different speakers and writers (Zoubi, 2018). Sufficient exposure to the target language can create opportunities for learners to identify the use

and functions of the language and experience new things. In line with this notion, Lambine (2008) argued that the more exposure to the target language, the more the learners learn the target language. Meanwhile, Ellis (2002) emphasized that learners can acquire the target language through repeated exposure to the language. Similarly, d'Ydewalle & De Bruycker, (2007) and Lambine, (2008) argued that when individuals are exposed to the target language outside the classroom, they learn the language more than others. While sufficient exposure increases learners' interest and motivation to develop the target language (Anjomshoa, & Sadighi, 2015), insufficient exposure increases learners' language anxiety (Peregoy & Boyle, 2005) and negatively impacts the development of confidence in using the target language (Ellis, 2002). In line with this, Politzer (1965) and Kennedy (1973) argued that second language learners could successfully acquire the target language if they are given adequate opportunities to expose to it in the same way they are exposed to their L1. Meanwhile, Ellis, (2002) and Drew & Sortheim (2009) argued that through exposure to the second language, learners can acquire the language in general and understand the linguistic features in words in particular.

Both accuracy and fluency are important in the effective use of the target language. It is therefore vital to improve both accuracy and fluency when developing a second language. Accuracy can be developed mostly in the formal classroom environment whereas fluency can be mostly developed in an autonomous, natural, stress-free environment through exposure to the target language. However, both instruction and exposure are important to develop second language competence in learners (Krashen, 1982). Exposure to target language is important to improve both accuracy and fluency in language learners in general and vocabulary knowledge in particular. Nagy, Herman, and Anderson (1983) argued that incidental vocabulary acquisition can be

acquired through exposure to print materials whereas Dupuy and Krashen (1993) argued that students acquired vocabulary knowledge even after limited exposure to the target language through reading.

Vocabulary knowledge: breadth and depth can be considered one of the aspects of language fluency in second language learners. Vocabulary knowledge is a vital component of effective communication for any second language learner as limited vocabulary knowledge tends to hinder successful communication. Consistent with this view, while Cook, (2003) and Adam (2016) argued that effective communication is a result of adequate vocabulary knowledge, Schmitt (2008) explained that vocabulary learning is essential because it is a vital indication of language proficiency. Furthermore, Macis & Schmitt, (2017) argued that learners may not show language competence without adequate vocabulary knowledge whereas Wilkins, (1972) argued that learners can communicate very little without grammar knowledge, but without vocabulary knowledge, nothing can be communicated. Similar to this view, Nation, (2005); Anglin, (1993) explained that a rich vocabulary makes both productive and receptive skills easier to perform. August, Carlo, Dressler, and Snow (2005) express that learners who have limited vocabulary are less able to involve comprehension and oral communication. In this context, it can be argued that vocabulary knowledge is an indispensable part of second language learning. However, developing vocabulary knowledge is a challenge for the teachers and the learners because, unlike grammar, vocabulary learning continues throughout one's life (Schmitt, (2010). Additionally, if learners understand vocabulary items during classroom instruction, they tend to forget them after a short period of time. As a result, learners and teachers are uncertain about the best practices for learning vocabulary (Schmitt, 2008). Given that reading may help learners reinforce their vocabulary knowledge, it can

be argued that meaning-focused reading is one of the most influential predictors to develop vocabulary knowledge.

Reading is a language-based process. Through reading, learners can understand how words behave in a language and how they are used in generating meaning in written discourse. In the process of reading, the reader may understand linguistic information encoded by the writer and understanding this information may help the reader acquire vocabulary knowledge from context. In line with this view, while Nation & Waring, (1997) argued that learners acquire words while reading a newspaper, novel, textbook, an academic journal article, Krashen (2004) argued that when opportunities are created for learners to read, it leads to greater literacy development than traditional skills building approaches. Furthermore, many researchers (Elley, 1991; Elley & Mangubhai, 1983; McQuillan, 1998; Kim and Krashen, 1998; Hafiz and Tudor, 1989; Cong-Lem, & Lee, 2020; Liu, & Zhang, 2018; Warnby, 2022; Martin-Chang, Kozak, & Rossi, 2020; Ha, 2021; Masrai, 2019) argued that print exposure may develop vocabulary knowledge. For example, Kim and Krashen (1998) examined the contribution of print exposure to vocabulary knowledge with a group of Korean high school students studying English as a foreign language. They found that print exposure significantly contributed to vocabulary knowledge and argued that students who read more had a high level of vocabulary knowledge. When L2 learners are exposed to written language regularly, they might pick up words as they pick up words in their L1.

Although vocabulary knowledge is important in the process of constructing meaning effectively in language, learners and teachers are uncertain about the best practices for vocabulary acquisition (Schmitt, 2008). Given that vocabulary knowledge is important in the process of constructing meaning effectively in language and exposure to the

target language through reading may facilitate language learners to acquire a several words and elements of word collocation, it is vital to examine whether reading contributes to vocabulary knowledge: breadth and depth. Although researchers (Pitts, White, and Krashen, 1987; Dupuy and Krashen (1993) Webb (2010); Vygotsky, 1987; McLean, Stewart, & Batty, 2020; Pigada, Schmitt, 2006; Nation, 2005; Anglin, 1993 Cong-Lem, & Lee, 2020; Liu, & Zhang, 2018; Warnby, 2022; Martin-Chang, Kozak, & Rossi, 2020; Masrai, 2019) have paid attention to the importance of the investigation of L2 vocabulary acquisition, it is difficult to find studies that focus on L2 reading and its contribution to adults' vocabulary acquisition, particularly both breadth and depth of vocabulary acquisition in the Sri Lankan context. Therefore, this study investigated the contribution of second language reading to adults' vocabulary acquisition in the Sri Lankan context.

2. Materials and Methods

2.1 Participants

Participants in this study (N = 189) were full-time undergraduates enrolled in a Sri Lankan public university. A total of 48 males and 141 females were included in the cohort. Their first language was Sinhala. The students had studied at the university for one month by the time the study began. Additionally, the background questionnaire revealed that most participants were between the ages of 7 and 8 when they were first exposed to the English language and they had been learning English for about 12-14 years before they entered the university.

While some participants reported speaking both English and Sinhala at home, the majority reported speaking only Sinhala at home. Participants were recruited voluntarily and those who consented to participate were enrolled.

2.2 Measures

The primary objective of this study was to investigate whether exposure through meaning-focused reading to the target language contributes to the acquisition of breadth and depth of vocabulary knowledge among second language adult learners. Therefore, the data for this study were collected using an assessment battery that included reading and vocabulary measures. In addition, the participants were asked to complete a background questionnaire to gather demographic data (age, gender, English language learning background).

2.2.1 Reading

The reading assessment best suited for the sample of this study was the Adult Reading Text (Brooks, Everatt, & Fidler, 2004). This is a standardized measure. This has been used in a number of studies. The measure had 40 open-ended questions following four passages (each passage included 10 questions). Here, participants were required to respond to open-ended questions (memory and inference). In marking, while one point was given for correct response, incorrect response or no response was given 0 point.

2.2.2 Vocabulary Knowledge

The participants' vocabulary knowledge was assessed using two vocabulary measures: breadth and depth. The measure of the breadth of vocabulary knowledge was designed and validated by Schmitt, Schmitt, & Clapham, (2001) whereas the depth of vocabulary knowledge was designed and validated by Read (1993). These variables have been employed as reliable measures of vocabulary knowledge across L2 research (e.g., Samaraweera, 2019; Choi, 2013; Qian, 1999).

The Breadth of Vocabulary measure comprised 30 items. Six words were on the

left of each item, while three definitions were on the right. The participants had to match three of the six words on the left with one of the three definitions. Three of the six words were distractions. As the test-takers progressed through it, the difficulty level

increased. In marking, while one point was given for a correct response, incorrect response or no response was given 0 point. An example is given below:

Example

- | | | | |
|---|--------|-------------------------------|-----|
| 1 | copy | | |
| 2 | event | end or higher point | ___ |
| 3 | motor | this moves a car | ___ |
| 4 | pity | thing made to be like another | ___ |
| 5 | profit | | |
| 6 | tip | | |

Each of the 160 items in the Depth of Vocabulary Knowledge Measure had an adjective as the target word, the first box of four adjectives from which one to three adjectives could be synonyms, and the second box of four nouns from which one to three nouns could collocate with the adjective as the stimulus word (i.e., they could occur together with the target word in a sentence). The participants had to pick four words from each of the two boxes that were

either collocational or synonymous with the stimulus word. The number of correct answers in the two boxes varied; either both boxes had two correct responses each, or one box had one valid response and the other three correct responses. Any successful response received one mark, whereas a false response or a blank space indicating no response received zero. An example is given below:

Example

sudden

<input type="checkbox"/> beautiful	<input type="checkbox"/> surprising	<input type="checkbox"/> change	<input type="checkbox"/> noise
<input type="checkbox"/> quick	<input type="checkbox"/> thirsty	<input type="checkbox"/> doctor	<input type="checkbox"/> school

All the measures were piloted with a group of students from a university population similar to those who would be targeted for the main study. The pilot study was conducted to assess the reliability and applicability of the chosen measures.

To investigate the degree and direction of associations between the two measures, Pearson correlations (zero-order correlation) were computed. The results demonstrated positive significant correlations ($r = .750$ $n = 189$, $p < .001$) between the two measures. This evidence suggests both variables captured a single expected construct (i.e., vocabulary knowledge). As the pilot study results determined that the selected measures maintain validity and reliability, it was decided to collect data using these assessments in the main study. The numerical

The internal consistency reliability of all the measures was computed and the measure of reading had an internal consistency reliability score of .879, the breadth of vocabulary had a score of .934, and depth of vocabulary had a score of .898. These reliability indices were considered as proof of the reliability of these assessments.

data collected from these assessments were analyzed using quantitative statistical techniques.

3. Results and Discussion

To ensure that all variables maintained psychometric characteristics that were consistent with the pilot data and to assess the validity and reliability of the data gathered during the main test phase, initial analyses were performed. The levels of performance for each measure were evaluated after descriptive statistics (minimum, maximum, mean, and standard

deviations) were computed. Cronbach's alpha was also calculated, along with data on the dispersion of the values and correlations between different measures. All assessments showed an acceptable range of results, demonstrating projected variability for the assessments and evidence of test discrimination. Further, Cronbach's Alpha reliability indices indicated acceptable reliability scores for all measures. For all the measures, the predicted internal consistency reliability was greater than 0.77. The following table shows the reliability scores for the assessments.

Table 1. Scores of Internal consistency reliability for all the assessments

Tests		No of items	α
Reading	Reading Texts	40	.901
Vocabulary	Breadth of Vocabulary	90	.970
	Depth of Vocabulary	160	.921

Table 2. Correlations between reading and vocabulary assessments

Reading Texts	
Breadth of Vocabulary	.753**
Depth of Vocabulary	.409**

** $p < .01$

Table 3. Hierarchical regression analysis results

Variable	R ²	R ² Change	Sig. R ² Change	Final Beta
1. Age and YLE	.048	.058	F=5.72 $p=.004$	Age .087 YLE -.076
2. Breadth of Vocabulary	.576	.518	F=226.28 $P<.001$.751
3. Depth of Vocabulary	.212	.154	F=36.165 $P<.001$.395

YLE = years of learning English

The association between exposure to language through reading and acquisition of vocabulary knowledge was examined using hierarchical regression analysis.

Measures of vocabulary knowledge were the dependent variables in this research, whereas the measure of reading was the independent variable.

Pearson product-moment correlation coefficients were computed to assess the relationships between the dependent variables (vocabulary knowledge: breadth and depth) and the independent variable (reading) used in this study. The correlation results showed a strong positive relationship between vocabulary breadth and reading ($r = .753$ $n = 189$, $p .001$) and vocabulary depth and reading ($r = .409$ $n = 189$, $p .001$). The reading scores and vocabulary scores appeared to be associated when correlations between the two were examined. The following table shows the correlation results.

Given that reading significantly correlated with vocabulary knowledge, further investigation was done to examine whether reading predicts variability in vocabulary knowledge (breadth and depth). In this investigation, both vocabulary measures (breadth and depth) were used as dependent variables (DVs) after controlling for effects of age (in years) and years of English learning (YLE), whereas the reading measure was used as the independent variable (IV). Given that age (in years) and time spent studying English may have an impact on vocabulary knowledge, participants' age (in years) and time spent learning English were entered into the model each time as a control in the first phase. The findings demonstrated that reading was statistically significant, accounting for approximately 51 percent of the variance in the breadth of vocabulary knowledge and 15 percent of the variance in the depth of vocabulary knowledge. The results suggest that reading influences more on the breadth of vocabulary knowledge than the depth of vocabulary knowledge. Overall, the results indicated that meaning-focused reading predicts variability in vocabulary knowledge: breadth and depth. The following table shows the regression results.

The primary purpose of this study was to determine whether meaning-focused reading contributes to the acquisition of breadth and depth of vocabulary knowledge of second

language adult learners. The findings indicated that exposure to reading significantly contributed to both the breadth and depth of vocabulary knowledge and exposure to reading can be an important source for ESL learners' vocabulary acquisition. The results are consistent with the Input Hypothesis (Krashen, 1985) which is only concerned with 'acquisition', not 'learning'. According to this hypothesis, the learner improves and progresses along the 'natural order' when he/she receives second language 'input' that is one step beyond his/her current stage of linguistic competence. Consistent with the study of Sanacore, (1994) and Krashen, (1985), it can be claimed that vocabulary acquisition is a function of comprehensible input, and exposure to a second language through reading can be considered a major source of vocabulary growth.

The current results are consistent with previous studies (Bright and McGregor (1970); Nation & Waring, 1997; McLean, Stewart, & Batty 2020; Elley & Mangubhai, 1983; Cong-Lem, & Lee, 2020; Liu, & Zhang, 2018; Warnby, 2022; Martin-Chang, Kozak, & Rossi, 2020; Masrai, 2019; McQuillan, 1998; Kim and Krashen, 1998; Nagy, Herman, & Anderson, 1985). For example, Nagy, Herman, and Anderson (1983) investigated the relationship between print exposure and vocabulary acquisition with a group of Spanish/English bilingual high school students, and their results indicated that print exposure significantly contributed to vocabulary knowledge. Furthermore, the current results are accorded with Nation & Waring, (1997) who argued that learners may acquire words while reading a newspaper, novel, textbook, an academic journal article. This argument is in line with Bright and McGregor (1970) who suggested that learners are more likely to find new words through reading. Contextual features provide the base for acquiring vocabulary knowledge (Firth & Wagner, 1997; Vygotsky, 1978). Additionally, in consistent with Liu & Zhang

(2018), McLean, Stewart & Batty, (2020), Warnby (2022) and Kim and Krashen (1998) it can be claimed that reading may lead learners to guess the meanings of words and phrases from the context and in turns acquire vocabulary knowledge.

The findings suggest significant theoretical ramifications that provide more evidence in favor of the idea that exposure to reading increases the acquisition of vocabulary knowledge. The results are suitable for explaining and understanding the importance of incorporating reading modules in second language programs to support learners in acquiring vocabulary knowledge. However, in relation to the findings of this study, it appears that the association between exposure to reading and vocabulary knowledge varies across types of vocabulary knowledge: breadth and depth. The results demonstrated that exposure to reading contributes more to the breadth of vocabulary knowledge (51%) than to the depth of vocabulary knowledge (15%). Therefore, it can be argued that although exposure to reading can contribute to vocabulary knowledge, the contribution may vary depending on the type of vocabulary knowledge (breadth or depth).

The linguistic variation of these two dimensions could be one potential reason for the different contributions. The breadth of vocabulary consists of primary meaning and forms whereas the depth of vocabulary consists of syntax, morphology, semantics, and collocation (Rie Koizumi, 2005; Nation (1990). It seems that learners need to be aware of both structural and functional elements of a word in order to considerably acquire the depth of vocabulary knowledge in reading. However, when learners read more extensively, they will have more exposure and improve their ability to recognize word structure (McBride-Chang et al., 2008; Katz, 2004). Exposure to more multi-morphemic words provides additional possibilities to be aware of the structural and functional

elements of a word and in turn enhances the depth of vocabulary knowledge (Anglin et al., 1993; Nagy Anderson, 1984). Another possible explanation for the observed relationship between exposure to reading and vocabulary knowledge could be the readers' limited English language ability. The relationship between exposure to reading and acquisition of vocabulary knowledge may differ depending on the readers' degree of language ability. In line with this view, Nurweni and Read (1999) suggested that breadth and depth of vocabulary knowledge may converge when their language level is relatively advanced but when it is low they are dissimilar.

In line with previous studies (Silva and Clahsen, 2008; Neubauer and Clahsen, 2009; Nurweni and Read, 1999), this study suggests that vocabulary acquisition may diverge according to the learners' level of language proficiency. When a second language (L2) is not fully established, learners are more likely to use their breadth of vocabulary knowledge than the depth of vocabulary knowledge in the process of generating meaning from print materials. When learners have relatively little experience in L2, they may rely on the breadth of vocabulary than the depth of vocabulary and in turn, they may acquire more breadth of vocabulary knowledge than the depth of vocabulary knowledge. As a result, it can be claimed that the language proficiency of ESL learners is a factor that may affect their ability to learn new words. Furthermore, it has been reported that students in Sri Lanka have a low level of English proficiency (Wijewardene, Yong, & Chinna, 2014; Walisundara & Hettiarachchi, 2015). Therefore, it seems that the L2 proficiency level of the participants of this study had not reached the appropriate competency level, and as a result, they may not be able to acquire both breadth and depth of vocabulary knowledge simultaneously.

Furthermore, in line with second language researchers (Politzer, 1965; Kennedy, 1973; Chandrasegaran, 1979; Ellis, 2002) it can be argued that more exposure may increase language proficiency. This argument is consistent with Briere, (1978) and Chandrasegaran, (1979). While Briere (1978) conducted research with native Mexican children learning Spanish as a second language and demonstrated that continuous exposure significantly influences second language learning, Chandrasegaran (1979) conducted research among Malay learners who learned English as a second language and found a strong correlation between the extent of exposure to the second language and proficiency in the language. Both experimental and correlational studies (Elley, 1991; Nagy, Herman, & Anderson, 1983) found that exposure to the target language contributes to several aspects of language acquisition and in turn to proficiency in that language. Given that the reader's language proficiency affects vocabulary knowledge, it can be suggested that until ESL learners reach a sufficient level of L2 proficiency, they may rely more on breadth than the depth of vocabulary knowledge in reading and may subsequently acquire breadth rather than depth of vocabulary knowledge. Therefore, based on the current results, it can be argued that both classroom instructions and exposure are important in developing vocabulary knowledge in L2 learners. Exposure to reading can mostly develop the breadth of vocabulary knowledge, whereas both classroom instructions and extensive exposure can improve mostly the depth of vocabulary knowledge.

Depth of vocabulary is much more challenging to acquire and it needs to be acquired through extensive exposure to the target language (Schmitt, 2010). The acquisition of the depth of vocabulary knowledge in reading may mostly depend on the cognitive process as it consists of different linguistic features such as semantic, orthographic, phonological, morphological,

syntactic, collocational, and pragmatic. In this cognitive process, learners may focus on the structures of a word rather than the word as a whole. When generating meaning from written texts, L2 learners are more likely to rely on words as entire units rather than on word structure (Clahsen et al., 2010). They also do not separate inflectional affixes from their stems (Neubauer & Clahsen, 2009). In consistent with this view, Clahsen & Felser, (2006), argued that in reading, learners' lack of morpheme sensitivity causes words to be interpreted in reading as full words. Therefore, learners may mostly acquire the breadth of vocabulary knowledge than the depth of vocabulary knowledge in reading. In consistent with this claim, Felser, Roberts, Marinis, & Gross, (2003) and Papadopoulou & Clahsen, (2003) argued that L2 learners create meaning from sentences more frequently using non-structural information.

Although the breadth of vocabulary can be mostly developed through exposure to reading, in order to develop the depth of vocabulary knowledge both classroom instructions and extensive exposure to reading are required. This claim is consistent with White et al. (1989). They argued that learners who receive guidance in word usage not only have a greater understanding of prefixes and suffixes but also the application of this knowledge in determining the meanings of complex words. In line with White et al. (1989), Bowers & Kirby, (2010) argued that teaching a large number of base words while paying close attention to how morphological concepts are used enhances learners' vocabulary knowledge. In the classroom instructions, in addition to strategies of developing vocabulary, morphological awareness should be given to the learners as it helps them analyze and identify linguistic features of words and in turn acquire vocabulary knowledge, particularly depth of vocabulary knowledge. Morphological awareness supports the learner to identify familiar meaningful units in unfamiliar words during reading (Kieffer et

al., 2013; Kieffer & Lesaux, 2012; Samaraweera, 2019). Morphological awareness provides information on the structures and syntactic properties of words (Kuo & Anderson, 2006) and contributes to interpreting words, and facilitates the generation of the meaning of the words (Carlisle & Feldman, 1995). Individuals who are more knowledgeable about the roles of morphemes in words are better able to ascertain the meanings of unfamiliar words and the grammatical characteristics of words (Perfetti, 2007; Perfetti & Hart, 2002), which in turn may lead to the acquisition of depth of vocabulary knowledge.

While reading, learners may understand meaning and form in words but not syntax and grammar in words. They may not understand where the word fits with other words. The learner needs to be aware of the components of words, the rules for combining these components, and their behavior in order to acquire depth of vocabulary knowledge. Studies have shown that the examination of word forms makes a considerable contribution to vocabulary development (Nagy & Anderson, 1984; White et al., 1989). When learners are able to analyze words in reading, they may understand both the structural and functional elements of a word and in turn enhance depth of vocabulary knowledge. Having a superficial understanding of the meaning of words is not sufficient to receive and produce meaning in a language. They need to know detailed knowledge of each individual word (Read, 2004). They need to know the quality of the word, depth, specific knowledge of its meaning, knowing the semantic feature of a word and its orthographic, phonological, morphological, syntactic, collocational, pragmatic, characteristics, and ability to distinguish its meaning and form (Read, 2004). Therefore, both classroom instruction and extensive reading are needed to develop vocabulary knowledge, particularly, the depth of vocabulary knowledge in L2 learners. This is consistent with (Dongbo &

Koda, 2013; Kern, 1989). They argued that L2 learners do not acquire the structure of words automatically.

However, the current results suggest that exposure to the target language through reading is necessary for vocabulary acquisition. Even though reading accounted for significant variance in vocabulary knowledge, the considerable variance was left unaccounted for, particularly depth of vocabulary. Therefore, in addition to written language, spoken language also may support in acquiring vocabulary knowledge of ESL learners. In line with Krashen's (2003) comprehension hypothesis, it can be argued that exposure to both spoken and written language is likely to be contributing to ESL learners' vocabulary acquisition. Additionally, Loewen, & Sato, (2018) suggested, that explicit instruction also supports vocabulary development. Therefore, reading, listening, and explicit instruction can be used as independent variables in future studies which focus on ESL learners' vocabulary acquisition. Given that exposure to reading is one of the major sources of the acquisition of vocabulary knowledge of adult ESL learners, ESL programs aimed at developing vocabulary knowledge should focus on exposing learners to written language through reading as it is likely to facilitate them to acquire vocabulary knowledge. The more reading the learners do, the more they increase their exposure to vocabulary and in turn expand their wider vocabulary scope. If learners are provided more free reading time and greater access to print materials, they may acquire vocabulary knowledge.

4. Conclusion and Recommendation

Overall, it can be suggested that sufficient exposure to the target language can create opportunities for learners to identify the use and functions of the language and experience new things. Exposure may create opportunities for the learners to interact with

the target language, learn and practice it in different contexts and identify the linguistic features in words. The more exposure to the target language, the more the learners learn the target language. The more reading the learners do, the more they increase their exposure to diverse aspects of vocabulary. Learners should be provided with more opportunities to meet the words in context, as contextual features provide the base for acquiring vocabulary.

The relationships found between exposure to reading and vocabulary knowledge, suggest the need for exposure to reading in developing vocabulary knowledge in L2 learners. The current results indicated that the acquisition of the depth of vocabulary knowledge is considerably lower than the breadth of vocabulary knowledge through exposure to reading. It seems that exposure to reading could mostly develop the breadth of vocabulary knowledge, whereas both classroom instructions and extensive exposure could improve the depth of vocabulary knowledge. However, in the process of receiving and producing meaning in a language both breadth and depth of vocabulary knowledge are important. Therefore, based on the current results, it could be suggested that language courses designed to develop vocabulary knowledge in adult L2 learners should include suitable and structured classroom instructions on vocabulary knowledge and allocate time for learners to expose to the target language through reading as it is likely that both exposure and classroom instructions would result in the development of vocabulary knowledge, particularly the depth of vocabulary knowledge among L2 learners. Furthermore, it can be suggested that in addition to exposure to print materials, voice and visual materials may also help learners to develop their vocabulary knowledge. Therefore, in the process of developing L2 skills, learners should be provided more and more opportunities to expose to the target language.

Although regression analysis provides evidence for the relationship between exposure to reading and acquisition of vocabulary knowledge, the findings of the current study cannot establish that these two elements are causally related. To establish the effects of exposure to reading on the acquisition of vocabulary knowledge, evidence from intervention studies is required. It may be beneficial to investigate how reading exposure and classroom instructions affect L2 learners' acquisition of vocabulary knowledge in future intervention-based research.

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