Gender Disparities in the Influence of vocabulary size on Reading Comprehension among Iranian male and female (EFL) Learners

Abstract

Vocabulary knowledge is widely recognized as a crucial component of language proficiency, particularly in the context of reading comprehension, where understanding the meaning of words directly influences the ability to interpret and engage with texts effectively. This study investigates the relationship between vocabulary breadth and reading comprehension among Iranian EFL learners. The research involved 80 intermediate-level learners, aged around 20, enrolled in an English language institute in Ardebil, Iran. Participants took the Vocabulary Levels Test (VLT) and the TOEFL Reading Comprehension Test to assess their vocabulary knowledge and reading skills, respectively. The data were analyzed using Two-way ANOVA, which revealed a significant positive correlation between vocabulary size and reading comprehension, with learners possessing a larger vocabulary performing better on comprehension tasks. However, gender differences did not significantly affect reading comprehension scores. These findings underscore the pivotal role of vocabulary development in enhancing reading comprehension and suggest that vocabulary breadth is a key predictor of reading proficiency in EFL contexts. For language pedagogy, the study highlights the importance of incorporating vocabulary-building activities into curriculum design to improve reading comprehension. Additionally, the findings have implications for assessment practices, advocating for assessments that consider vocabulary knowledge as a critical component of reading proficiency evaluation. Future research should focus on expanding the sample size and exploring the effectiveness of specific vocabulary enhancement strategies in diverse EFL contexts.

Keywords: EFL learners, female, male, reading comprehension and vocabulary size

Introduction

Lexical comprehension plays a critical role in second language acquisition, serving as the foundational element that underpins all language skills, including reading, writing, speaking, and listening. A well-developed vocabulary enables learners to interact more effectively with the target language, facilitating smoother communication, improved comprehension, and greater overall language proficiency (Nguyen & Nation, 2023; Rahimi et al., 2023). Therefore, setting clear goals for vocabulary expansion and ensuring learners engage with diverse vocabulary sources is paramount to successful language acquisition (Zhang & Wu, 2022). A strong lexical foundation not only contributes to comprehension but also boosts learners' confidence in using language, as it provides them with the tools to express themselves more accurately and effectively across various contexts (Laufer, 2023; Nation, 2023). Moreover, a well-rounded vocabulary aids in learners' ability to engage critically with texts and media, enhancing their

analytical skills and fostering a deeper understanding of cultural nuances, idiomatic expressions, and contextual meanings that are integral to mastering a second language (Chen et al., 2023; Harmon et al., 2023).

In the realm of language learning, vocabulary is not merely a collection of words; it is the key mechanism through which meaning is conveyed and communicative competence is achieved (Laufer, 2023). Extensive research has consistently shown that the breadth of one's vocabulary is strongly correlated with success in language use, particularly in reading comprehension. Learners with larger vocabularies are better equipped to perform across all areas of language proficiency, especially in reading comprehension, where the ability to decode and understand words in context is fundamental (Nation, 2023). A rich vocabulary allows learners to process information more efficiently and accurately, leading to improved reading comprehension and greater overall language proficiency. Additionally, vocabulary proficiency has been linked to enhanced cognitive abilities such as making inferences, drawing connections between concepts, and understanding abstract ideas (Harmon et al., 2023). These cognitive skills are essential for achieving higher levels of language proficiency, as they enable learners to engage with complex texts and ideas in a more sophisticated manner (Khosravi & Aliakbari, 2024).

This relationship between vocabulary size and reading comprehension is particularly crucial for academic achievement. Learners with a broad vocabulary are more likely to excel in academic settings, as they can process and understand complex texts, identify key ideas, and grasp nuanced meanings (Nation, 2023). This ability to engage with challenging academic content is vital for success in higher education and professional environments, where advanced language skills are often required (Abedini & Riazi, 2023; Harmon et al., 2023). Moreover, vocabulary proficiency helps learners to articulate their thoughts more clearly and effectively, contributing to better communication and academic performance (Ahmadi & Safavi, 2024; Zhang & Wu, 2022). Thus, vocabulary acquisition plays a central role in both cognitive development and academic success, making it an essential focus of language learning (Chen et al., 2023).

Recent studies suggest that the impact of vocabulary size on reading comprehension may not be uniform across genders, an area of increasing interest in language acquisition research (Chen et al., 2023; Laufer, 2023). While both male and female learners with larger vocabularies tend to demonstrate improved reading comprehension, the cognitive processes and strategies they employ to process language may differ significantly (Chen et al., 2024). These gendered differences in cognitive processing can influence how vocabulary size interacts with reading comprehension abilities. For instance, research indicates that female learners may use a more integrative approach, connecting new vocabulary with emotional and contextual cues, which helps them derive meaning in a more nuanced way (Laufer, 2023). In contrast, male learners may show a preference for direct, task-oriented strategies, focusing on the more literal aspects of vocabulary, which could shape the way they apply their vocabulary knowledge to comprehend texts (Chen et al., 2024; Harmon et al., 2023). These differences suggest that tailored teaching methods, taking into account gendered cognitive patterns, could optimize vocabulary learning and reading comprehension outcomes for both male and female learners (Chen et al., 2024; Laufer, 2023).

For example, female learners have been found to rely more on contextual clues and make a greater number of inferences during reading, which could enhance their ability to extract deeper, more nuanced meanings from texts (Chen et al., 2023; Laufer, 2023). This reliance on

inferential reasoning suggests that female learners might benefit more from having a larger vocabulary, as it may enable them to more effectively interpret complex or ambiguous passages, ultimately leading to better comprehension (Laufer, 2023). Furthermore, female learners often exhibit a more holistic approach to reading, focusing on overall text coherence and emotional resonance, which could further support their comprehension when armed with a richer vocabulary (Chen et al., 2024; Zhang & Li, 2024).

In contrast, male learners have been observed to focus more on specific, task-oriented aspects of texts, such as the literal meaning of individual words or phrases. This tendency may limit their ability to engage with the text on a deeper, more interpretive level (Laufer, 2023). Such differences in cognitive processing suggest that vocabulary proficiency may play a distinct role in the reading comprehension of male learners. For instance, those with a larger vocabulary may be better able to integrate information and establish connections across the text (Abedini & Riazi, 2023). Consequently, understanding these gender-specific cognitive strategies can inform more tailored pedagogical approaches, thereby enabling more effective vocabulary instruction and improving reading comprehension outcomes for both male and female learners (Abedini & Riazi, 2023; Zhang & Wu, 2022).

Additionally, male learners are often noted to adopt different cognitive strategies when approaching reading comprehension. Some research suggests that male learners tend to concentrate on the literal meanings of texts and may rely more on direct information retrieval rather than engaging in inferential reasoning (Chen et al., 2023; Laufer, 2023). This approach could imply that, while males with larger vocabularies might perform well in comprehending straightforward content, their comprehension may not benefit as significantly from vocabulary size compared to their female counterparts. Moreover, male learners might exhibit different patterns of attention and memory processing, which could influence how they utilize vocabulary to interpret and make sense of texts (Chen et al., 2024).

These gender-specific differences in learning strategies, reading habits, and cognitive processing are crucial to understanding the broader implications for vocabulary instruction and reading comprehension outcomes (Chen et al., 2024; Laufer, 2023). As these cognitive and behavioral patterns vary, it is essential to consider gender differences when developing instructional strategies. Tailoring vocabulary instruction to accommodate these differences could lead to more effective teaching approaches that support both male and female learners in their reading comprehension development (Chen et al., 2024). The exploration of these gendered learning strategies, along with further research into how they interact with vocabulary acquisition, is an exciting and critical avenue for future studies in language education (Harmon et al., 2023).

In EFL contexts, where learners often face challenges in understanding complex cultural and linguistic nuances, vocabulary knowledge plays a significant role in promoting both comprehension and effective communication. Possessing a broad vocabulary enables learners to engage more fully with academic content and navigate cross-cultural interactions, making it essential for intercultural communication and global engagement (Gass & Selinker, 2024). Therefore, exploring how gender differences influence vocabulary acquisition and reading comprehension is vital for designing effective language learning programs that address the needs of both male and female learners (Chen et al., 2024; Harmon et al., 2023; Laufer, 2023).

Ultimately, understanding the role of vocabulary in reading comprehension, alongside the influence of gendered differences, is crucial for developing instructional strategies that maximize

learner success. Future research should continue to investigate how gender impacts vocabulary acquisition and reading strategies, particularly in diverse, globalized classrooms. By incorporating these insights, educators can create more targeted instructional approaches that cater to the specific needs of male and female learners, ultimately enhancing language proficiency and improving students' academic, social, and professional success.

Reading Comprehension

Reading comprehension refers to the ability to understand, interpret, and derive meaning from written texts. It involves not only recognizing and decoding words but also integrating this information with prior knowledge to construct a coherent understanding of the content. The process requires the reader to engage actively with the text, using cognitive strategies like making inferences, predicting content, and synthesizing information from various parts of the text. Successful readers do not passively absorb information; rather, they interact with the material by questioning, clarifying, and reflecting on what they read (Nation, 2023). This active engagement is essential for building a deeper understanding, as it encourages learners to go beyond surface-level comprehension and actively construct meaning from the text.

Reading comprehension is closely linked to higher-order cognitive skills such as critical thinking, analysis, and evaluation. These skills allow readers to assess arguments, evaluate the credibility of sources, and connect concepts, helping them engage with more complex material (Wang & Li, 2024; Zhang, 2023). Effective reading comprehension also involves the ability to summarize, paraphrase, and question, helping learners reflect, compare knowledge, and retain key aspects for future use.

Vocabulary

Vocabulary refers to the set of words known and used by a person in a particular language. It encompasses both receptive vocabulary, which involves understanding words when encountered in listening or reading, and productive vocabulary, which includes words used in speaking and writing. A well-developed vocabulary is crucial for effective communication, as it allows individuals to express ideas more clearly and understand others more fully (Nation, 2023). Vocabulary acquisition is a dynamic process that evolves over time as individuals encounter new words and their meanings, particularly in academic and social contexts (Zhang & Wu, 2022). Learners actively build their vocabulary through exposure to new words, repeated encounters with words in various contexts, and deliberate learning strategies, such as using flashcards, language games, and vocabulary exercises (Nation, 2023; Zhang & Wu, 2022).

The size and depth of one's vocabulary are strongly correlated with reading comprehension, as learners with a broader vocabulary are better equipped to decode texts, make inferences, and grasp nuanced meanings (Chen et al., 2023). This correlation underscores the idea that vocabulary development is not just about knowing more words but also about understanding how those words function in different contexts and how they interact with one another. For example, a learner with a large vocabulary is not only able to recognize a variety of

words but also can understand the subtleties of meaning, tone, and context in which those words are used, leading to a more refined understanding of texts (Chen et al., 2023).

Recent research has emphasized the role of both breadth (the number of words known) and depth (the richness of understanding and use of those words) in language proficiency and reading success (Harmon et al., 2023). While having a large vocabulary is essential, the depth of knowledge—such as understanding the multiple meanings of words, recognizing synonyms, and using words appropriately in different contexts—is equally important. Depth of vocabulary knowledge also contributes to the ability to engage with complex texts, enabling learners to interpret idiomatic expressions, technical language, and literary devices that require a deeper level of understanding (Harmon et al., 2023; Chen et al., 2023).

Given the close relationship between reading comprehension and vocabulary, a strong vocabulary is essential for enhancing comprehension skills and overall language proficiency. As learners expand their vocabulary, they become more adept at understanding and interpreting both simple and complex texts, thereby improving their academic performance and communication skills (Nation, 2023; Zhang & Wu, 2022). Furthermore, vocabulary development also promotes other cognitive processes such as memory, attention, and problem-solving, as learners are required to store, retrieve, and apply the words they learn in various situations (Zhang & Wu, 2022). Thus, a rich and versatile vocabulary serves as a foundation for academic success and is crucial for effective language use in real-life communication (Nation, 2023).

This study aims to investigate the relationship between vocabulary acquisition and reading comprehension among Iranian EFL learners, with a specific focus on gender differences in language learning strategies and outcomes. By analyzing how male and female learners approach vocabulary usage and reading comprehension, the study seeks to provide insights into the cognitive and pedagogical factors that influence language proficiency. Furthermore, it explores how these differences can inform more effective, gender-sensitive instructional practices to enhance learning outcomes in diverse classroom contexts.

In order to achieve the purpose of this study, the following research questions were probed:
1. Does vocabulary size have any effect on reading comprehension of Iranian intermediate EFL learners?
2. Does gender have any effect on reading comprehension of Iranian intermediate EFL learners?
3. Does the interaction between vocabulary size and gender have any effect on reading comprehension of Iranian intermediate EFL learners?

Method

Participants

The study recruited 80 learners from four English language classes at a language institute in Ardebil, Iran. The sample included 30 males and 50 females, reflecting the typical gender distribution in Iranian EFL classrooms, where females often outnumber males. All participants, whose native language was Turkish, shared a linguistic background that could influence their

language learning strategies. Convenience sampling was used for practical reasons, which, while facilitating recruitment, may limit the generalizability of the findings.

Participants were not homogenized through a placement test. Instead, they were selected based on their enrollment in intermediate-level English classes, as determined by the institute's internal assessment procedures. This approach ensured that learners were at a similar proficiency level suitable for the study. The participants, around 20 years old, represented intermediate-level English learners at a critical stage of language development. All learners provided informed consent after receiving detailed information about the study's aims and procedures. The sample size ensured adequate statistical power for analyzing gender differences, though future studies should consider larger, more diverse samples to enhance generalizability.

Instruments

Two assessment tools were employed to measure the variables investigated in this study:

Vocabulary Levels Test (VLT):

To evaluate the participants' vocabulary size, the Vocabulary Levels Test (VLT) by Nation (1990) was administered. Renowned for its reliability and precision, the VLT is widely regarded as one of the most reliable tools for quantifying vocabulary knowledge. The test consists of five sections, each assessing different levels of lexical knowledge, with each section containing six items where participants match words to their corresponding definitions. Previous studies have validated the use of the VLT with Iranian EFL learners, confirming its suitability for this particular group. This validation ensures that the VLT effectively captures both the breadth and depth of participants' vocabulary within the Iranian EFL context. The reliability of this test was 0.97(Cronbach's alpha) which was acceptable. In this study the vocabulary tests contained 80 items and each item was worth of 0/25 point.

Reading Comprehension Test (RCT):

The reading comprehension section of the TOEFL test (January 2004 version) was used to measure participants' L2 reading proficiency. This test was chosen for its reliability and validity, supported by its high correlation with the Vocabulary Levels Test (Nation, 1990). Recent studies, such as those by Asadi and Ebadi (2024) and Nurjaya et al. (2024) have emphasized the consistent effectiveness of standardized tests like the TOEFL in evaluating reading comprehension among EFL learners. Qian (1999) reported a correlation of r = .82 between these tests, while Laufer (1996) found a correlation of r = .71. The comprehension section included four passages, each followed by 10 multiple-choice questions, totaling 40 items. Each correct answer was worth 0.5 points.

Procedure

Participants attended an orientation session before the testing began to familiarize themselves with the procedures and testing environment. During this session, they were informed about the

study's purpose, the voluntary nature of their participation, and their rights, including confidentiality and anonymity. This orientation ensured that participants fully understood the study and felt at ease proceeding with the assessments. To maintain data reliability, the testing environment was carefully controlled to minimize distractions, with immediate resolution of any disruptions to preserve the integrity of the results.

To enhance ecological validity, the reading comprehension passages from the TOEFL test were selected. Adequate breaks were provided between the Vocabulary Levels Test (VLT) and the Reading Comprehension Test (RCT) to alleviate test anxiety and fatigue, allowing participants to perform at their best. Participants were allocated 70 minutes to complete the VLT, which consisted of 80 items, and 90 minutes for the RCT, which included 40 multiple-choice questions across four passages. These measures ensured high-quality, reliable data collection while prioritizing participants' comfort and well-being.

Data Analysis

In order to analyze the collected data and address the research questions, SPSS software was utilized for statistical analysis. A two-way ANOVA was conducted to examine the interaction effects between gender and vocabulary size on reading comprehension. This analysis enabled the researcher to determine whether gender moderates the relationship between vocabulary size and reading comprehension performance. The statistical significance level was set at 0.05, and effect sizes were calculated to assess the practical significance of the findings.

Results

Table 1 below presents descriptive statistics for the students' performance on vocabulary level test. The mean for low vocabulary students was 14.025 and for high vocabulary students was 17.55. Also, the standard deviation of vocabulary for low vocabulary students was 1.40 and for high vocabulary students were 1.15.

Table 1

Descriptive Statistics for the Participants' Scores on Vocabulary level Test

GENDER	Vocabulary	Mean	Minimum	Maximum	Std. Deviation
	Low	14.4500	12.00	15.00	.94451
Males	High	17.4500	15.00	19.00	1.19097
	Total	15.9500	12.00	19.00	1.85293
	Low	13.6000	10.00	15.00	1.66702
Females	High	17.6500	15.00	19.00	1.13671
	Total	15.6250	10.00	19.00	2.48779
	Low	14.0250	10.00	15.00	1.40489
Total	High	17.5500	15.00	19.00	1.15359

Total	15.7875	10.00	19.00	2.18565

A. Exploration of the Primary Research Inquiry

The initial aim of the research was to explore how vocabulary size affects the reading comprehension abilities of intermediate-level EFL learners in Iran. To answer this question thoroughly, the study compared the reading comprehension performance of participants with different vocabulary levels, specifically those with low and high vocabulary sizes. This comparison provided a deeper understanding of how varying levels of vocabulary proficiency can impact reading comprehension among Iranian intermediate EFL learners.

Table 2

Comparison of the Two Groups (Low and High) in Terms of Comprehension

Dependent Variable: Reading Comprehension

(I) Voc	(J) Voc	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Low (<=15)	High (>15)	-2.850[*]	.274	.000	-3.396	-2.304

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

The comparison of mean scores between the low and high vocabulary groups revealed a significant difference. Specifically, participants with high vocabulary scores demonstrated a mean reading comprehension score that was 2.85 points higher than those with low vocabulary scores (Table 2). This indicates a statistically significant difference in reading comprehension between the two groups at the 5% level of significance.

Recent studies have further emphasized the significant relationship between vocabulary knowledge and reading comprehension among Iranian intermediate EFL learners. For instance, a study by Torabi and Maleki (2022) found that vocabulary knowledge, along with text organization and grammar, are key factors affecting reading comprehension. Similarly, research by Shehu (2015) highlighted that insufficient vocabulary knowledge can impede the reading comprehension process. These findings underscore the critical role of vocabulary proficiency in enhancing reading comprehension skills among Iranian EFL learners. This consistency across studies emphasizes the fundamental role of vocabulary acquisition in fostering effective reading skills among language learners. Furthermore, these results underscore the need for targeted vocabulary instruction strategies and interventions aimed at enhancing learners' lexical repertoire to bolster their reading comprehension performance.

B. Exploration of the secondary research inquiry

The secondary research question was designed to delve into the impact of gender on reading comprehension proficiency among Iranian intermediate EFL learners. This inquiry sought to elucidate any potential influence of gender on participants' reading comprehension abilities. To address this question comprehensively, the outcomes of the assessments were meticulously scrutinized to discern any discernible patterns or correlations between gender and reading comprehension performance.

Table 3

Average, standard deviation and confidence limits 95% comprehension for males and females

Dependent Variable: Reading Comprehension

GENDER	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Males	16.500	.194	16.114	16.886
Females	16.000	.194	15.614	16.386

In examining the data presented in Table 3, it is evident that the mean reading comprehension score for the male group was 16.5, while for the female group, it was 16. Despite this slight difference, statistical analysis revealed no significant distinction between the two groups at the 5% confidence level.

Table 4

Comparison of the average comprehension for males and females

Dependent Variable: Reading Comprehension

(I) GENDER	(J) GENDER	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
Males	Females	.500	.274	.072	-.046	1.046

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Based on the data presented in the table above, the gender effect does not reach statistical significance at the 5% confidence level (P = 0.072). With a significance level of 0.072, which

exceeds the conventional threshold of 0.05, it can be inferred that gender does not exert a significant influence on vocabulary comprehension.

Consequently, there is no discernible impact of gender on vocabulary and reading comprehension scores. These findings are consistent with previous research conducted by Samadi and Aziz Mohammadi (2013), Güngör and Yaylı (2016), and Volkel et al. (2016), which similarly found no substantial gender-based disparities in reading performance among learners. Therefore, it can be concluded that instructional strategies aimed at enhancing vocabulary and reading comprehension skills may not need to be tailored differently based on gender, supporting the adoption of gender-neutral pedagogical approaches in EFL education.

C. Exploration of the third research query

The third research question aimed to delve into the interaction effects of vocabulary size and gender on the reading comprehension of Iranian intermediate EFL learners. Utilizing a two-way ANOVA, the researcher sought to scrutinize how these variables interacted and whether any combined effects influenced the participants' reading comprehension abilities.

Table 5

Two-way variance analysis table for content comprehension variable

Dependent Variable: Reading Comprehension

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	168.7	3	56.233	37.390	0.000	0.596
Intercept	21125	1	21125	14046.369	0.000	0.995
Vocabulary size	162.45	1	162.450	108.016	0.000	0.587
Gender	5	1	5.000	3.325	0.072	0.042
gender * vocabulary size	1.25	1	1.250	0.831	0.365	0.011
Error	114.30	76	1.504			
Total	21408	80				
Corrected Total	283	79				

a.   R Squared = .596 (Adjusted R Squared = .580)

As you can infer from table 5, the interaction effect was not significant (Gender * Vocabulary size: sig. = 0.365) thus p> .05. This indicated that there was no significant difference in the effect of vocabulary on reading comprehension for males and females.

Table 6

Mean standard deviation and confidence limits 95% comprehension for four different groups

Dependent Variable: Reading Comprehension

Gender	Vocabulary	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Males	Low (<=15)	15.200	.274	14.654	15.746
	High (>15)	17.800	.274	17.254	18.346
Females	Low (<=15)	14.450	.274	13.904	14.996
	High (>15)	17.550	.274	17.004	18.096

As illustrated in the table above, the results highlight a significant impact of vocabulary size on reading comprehension, with statistical significance observed at a 5% confidence level. The ANOVA analysis indicated a statistically significant effect for Vocabulary size (F = 108.016, p = .000, p < .05, Effect size = 0.587). Furthermore, the ANOVA outcomes revealed no statistically significant effect for gender (F = 3.325, p = 0.072, p > .05, Effect size = 0.042). Additionally, the interaction between gender and vocabulary was found to be not significant at the 5% confidence level (F = 0.831, P = 0.365). Moreover, Table 6 presents the mean comprehension scores for different genders and vocabulary levels. The insignificant interaction between gender and vocabulary suggests that the change in reading comprehension remains consistent across both male and female participants when transitioning from low to high vocabulary levels.

Figure 1 illustrates the relationship between vocabulary size, gender, and reading comprehension. The mean scores show that high-vocabulary students outperform their low-vocabulary counterparts, with females scoring 17.55 and vocabulary group. This reflects a 2.85-point advantage for high-vocabulary learners. The data confirms a significant positive relationship between vocabulary size and reading comprehension, as higher vocabulary knowledge males 17.80 in the high-vocabulary group, compared to 14.45 and 15.20, respectively, in the low- leads to better comprehension scores. However, the interaction effect between gender and vocabulary size was not significant, indicating that vocabulary size equally influences reading comprehension improvement across both genders.
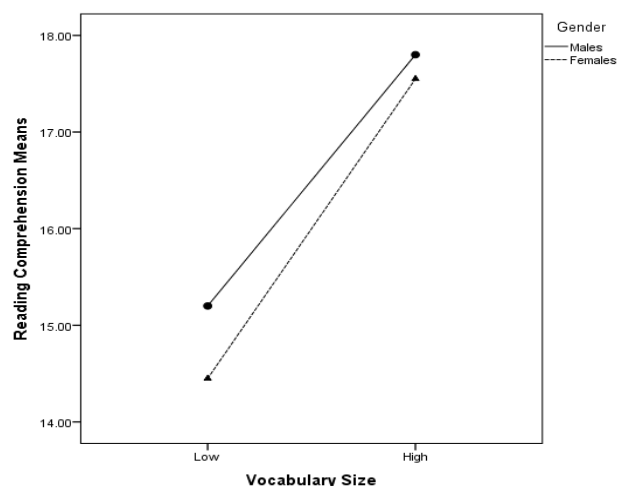
Figure 1: Interaction between Vocabulary Size and Gender on Reading Comprehension

These findings underscore the paramount importance of vocabulary acquisition in enhancing reading comprehension abilities, irrespective of gender differences among learners.

Discussion

The findings of this study highlight the crucial role of vocabulary knowledge in reading comprehension among Iranian EFL learners. A significant positive correlation between vocabulary size and reading comprehension reaffirms the well-established view that vocabulary is a key determinant of language proficiency, particularly in reading (Nation, 2023; Laufer, 2023). Learners with a larger vocabulary are better equipped to decode and understand texts more effectively, especially in academic or specialized contexts where a robust vocabulary is essential for efficient processing of information (Zhang & Wu, 2022). This underscores the importance of vocabulary development in fostering reading comprehension skills. A larger vocabulary not only allows learners to recognize words more easily but also aids in integrating these words into a coherent understanding of the text (Harmon et al., 2023). Furthermore, vocabulary proficiency provides learners with the cognitive flexibility necessary to navigate different reading contexts (Zhang & Wu, 2022).

The interaction between vocabulary size and reading comprehension is also shaped by factors such as motivation and reading strategies, which can influence how vocabulary is used during reading (Chen et al., 2023; Gass & Selinker, 2024). Additionally, recent studies have highlighted the significance of cultural and contextual factors in vocabulary acquisition, particularly in EFL contexts like Iran, where the language learning environment may uniquely influence vocabulary learning processes (Ahmadi & Alavi, 2023). These factors emphasize the importance of incorporating culturally relevant vocabulary materials into language learning curricula to enhance comprehension.

Interestingly, the study did not find significant gender differences in reading comprehension scores, despite previous research suggesting that gender may influence cognitive strategies and learning preferences (Chen et al., 2023; Laufer, 2023). While studies have noted

gendered differences in vocabulary acquisition strategies, with females often using more integrative and inferential methods and males focusing on more literal interpretations (Chen et al., 2024), the present study observed no clear distinction in reading comprehension performance based on gender. This finding could be explained by the specific educational context, where both male and female learners were exposed to similar instructional materials and methods. This exposure may have minimized the potential impact of gendered cognitive strategies, suggesting that vocabulary knowledge might be a more significant factor in reading comprehension across both genders. Furthermore, the relatively small sample size and the intermediate proficiency level of the participants may have contributed to the lack of observable gender differences, as vocabulary knowledge could overshadow gendered cognitive processing strategies at this stage of language proficiency (Nassaji, 2023).

The absence of significant gender differences warrants further investigation into how cognitive processes interact with vocabulary acquisition across genders in different learning contexts. Future studies should explore larger, more diverse samples to better understand how gender influences reading comprehension, particularly in terms of vocabulary application. It would be valuable to examine how gendered strategies evolve at various proficiency levels and whether the type of instructional approach plays a role in diminishing or amplifying these differences (Chen et al., 2024; Nassaji, 2023).

In terms of pedagogical implications, the findings suggest that vocabulary instruction should be dynamic and contextually embedded. Learners need opportunities to engage with new vocabulary in meaningful contexts across a variety of authentic texts and real-world situations. Teaching strategies that focus not only on the breadth but also on the depth of vocabulary knowledge could be especially beneficial, as this approach ensures learners understand how words function in different contexts (Harmon et al., 2023; Laufer, 2023). Furthermore, vocabulary instruction should be differentiated to meet the varying needs of learners at different proficiency levels. Tailored support can help address individual gaps and provide focused practice for students who need more extensive vocabulary development (Chen et al., 2024; Nation, 2023).

The study also highlights the need for assessment practices that go beyond merely testing vocabulary knowledge in isolation. Since vocabulary size is a key predictor of reading comprehension, assessments should consider both receptive and productive vocabulary knowledge, as well as learners' ability to apply vocabulary in context. Incorporating tasks that assess learners' ability to use vocabulary meaningfully in different reading contexts would provide a more comprehensive measure of their language proficiency (Zhang & Wu, 2022). Furthermore, recent studies have suggested that incorporating context-specific vocabulary tasks in assessments can provide a more accurate reflection of learners' ability to comprehend and produce language in real-world situations, as well as their ability to transfer vocabulary knowledge to new contexts (Abedini & Riazi, 2023). This approach ensures that assessment practices align more closely with learners' actual language use, providing a more holistic evaluation of their language skills.

In conclusion, this study contributes to the growing body of research on the relationship between vocabulary size and reading comprehension among EFL learners. While gender differences were not found to be significant, the findings underscore the importance of vocabulary acquisition in enhancing reading proficiency. It is evident from the results that a larger vocabulary plays a critical role in fostering reading comprehension, particularly as learners progress in language acquisition. These findings not only reinforce the well-established view that

vocabulary is a key determinant of overall language proficiency but also highlight the complex interaction between vocabulary knowledge, reading strategies, and cognitive processes.

The implications for EFL teaching are substantial. The study suggests that educators should place a strong emphasis on vocabulary development as a core component of their instructional practices. Vocabulary instruction must not only focus on word recognition but should also ensure that learners understand how words function in context, which is crucial for deepening reading comprehension skills. Furthermore, teaching strategies should integrate vocabulary instruction across various authentic texts and real-world contexts, encouraging learners to actively engage with new words in meaningful ways. The importance of developing both the breadth and depth of learners' vocabulary cannot be overstated, as this enables learners to approach reading tasks with greater cognitive flexibility and adaptability.

Additionally, the study suggests that differentiated vocabulary instruction is essential to accommodate learners at different proficiency levels. By tailoring instructional materials and activities to meet the specific needs of individual students, educators can help learners address gaps in their vocabulary knowledge and enhance their reading comprehension abilities. This approach may involve providing more explicit instruction for students who have limited vocabulary knowledge while challenging advanced learners with more complex and nuanced vocabulary tasks.

Moreover, this study underscores the need for assessment practices that extend beyond measuring vocabulary size in isolation. While vocabulary proficiency is a key predictor of reading comprehension, it is equally important to assess learners' ability to use vocabulary effectively in context. Assessments should therefore evaluate both receptive and productive vocabulary knowledge, as well as learners' ability to apply words in diverse reading contexts. Tasks that require students to demonstrate their understanding of vocabulary through summarizing, paraphrasing, and contextualizing will offer a more holistic view of their language proficiency.

Finally, future research should aim to further explore the intricate relationship between vocabulary development and reading comprehension, with a focus on a broader range of learner characteristics, including gender, motivation, and reading strategies. It would be particularly valuable to examine how gender influences the acquisition of vocabulary and reading comprehension across different age groups and proficiency levels. Additionally, future studies should consider the role of instructional approaches in shaping the effectiveness of vocabulary development, particularly in online or hybrid learning environments. Larger, more diverse samples would allow for a more nuanced understanding of how vocabulary knowledge impacts reading comprehension in various educational settings and help to refine instructional strategies that can optimize learning outcomes for all EFL learners.

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