

# Receptive Vocabulary Size of Omani Post-Basic Education Graduates

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## Abstract

This descriptive study examined the receptive vocabulary size of Omani post-basic education graduates. Also, it investigated the relationship between receptive vocabulary size and language proficiency among these students. Finally, it examined differences in receptive vocabulary size with respect to gender. The sample consisted of 294 Omani post-basic education graduates (183 males and 111 females) who were enrolled in foundation programs at Sultan Qaboos University. The study instrument was the Vocabulary Level Test Version B, which was developed by Nation (1983) and revised by Schmitt, Schmitt, and Clapham (2001). The study found that the Omani post-basic graduates had a small receptive vocabulary of approximately 1,725 word families. It also found a statistically significant relationship between students' receptive vocabulary size and their language proficiency. Finally, it revealed statistically significant differences in receptive vocabulary size with respect to gender in favor of female students. Accordingly, the researcher provides recommendations for practice and further research.

**Keywords:** vocabulary size, receptive vocabulary, EFL, Oman, post-basic education

## 1. Introduction

Vocabulary is crucial for learning English as a foreign language (EFL), as “without grammar very little can be conveyed, without vocabulary nothing can be conveyed” (Wilkins, 1979, p. 111). That emphasizes the vital role of vocabulary in communication in a second language (L2), because without vocabulary no meaning can be delivered through either speaking or writing. Moreover, Ellis (1997) claimed that vocabulary is vital, as it represents the extent to which learners can comprehend discourse in L2, which contributes to the learning of grammar. In the same vein, Thornbury (2002) highlighted the importance of vocabulary over grammar in developing successful communication skills, as having a small vocabulary can restrict learners from fully understanding messages conveyed through listening and reading. According to Staehr (2009) and Nation (2011), learners need to recognize 98% of words in a text to comprehend the meaning of the text. Nation (2011) categorized vocabulary as high-frequency, low-frequency, academic, and technical vocabulary. High-frequency vocabulary, or the 2,000 most frequently used words, covers about 80% of the vocabulary used in novels and 90% of that used in academic passages. Academic and technical words are not high-frequency vocabulary; rather, academic vocabulary comprises the most frequently used words in academia, whereas technical vocabulary comprises words used in a particular realm. The remaining words in a language fall under the category of low-frequency vocabulary.

A noticeable trend in current research in language learning has been the measurement of vocabulary size. *Vocabulary size* refers to the number of words an individual possesses in his or her vocabulary. To determine the proper vocabulary size for an EFL learner, Nation and Waring (1997) proposed three questions: How much vocabulary is there in the English language? What is the vocabulary size of native speakers? and How much vocabulary is needed to be able to do things with the language? Because English is a constantly changing language, it is difficult to answer the first two questions. However, according to Nation (2006), English has about 88,000 to 114,000 word families. Also, he emphasized that native speakers do not know this amount of vocabulary, as they tend to use a lot fewer words in their daily lives. However, the vocabulary of native speakers is expected to increase by 1,000 word families per year. Based on these calculations, a university graduate is expected to obtain a vocabulary of 20,000 word families. The answer to Nation and Waring's third question is determined by what EFL learners need to do with the language. Because English is a lingua franca in many different countries, reading and listening comprehension are crucial for EFL learners for different purposes. EFL learners need a large vocabulary to engage in communication and daily life situations as well as comprehend

academic discourse. Therefore, examining the receptive vocabulary size of EFL learners is crucial for drawing conclusions that may be useful to learners, teachers, curriculum developers, and others.

Vocabulary size can be used as an indicator of a learner's language proficiency. According to Nation (2001), learners are required to know about 3,000 word families to be able to tackle other skills in L2. Adolphs and Schmitt (2004) claimed that learners must know around 2,000 word families to comprehend 90% to 94% of spoken discourse; what is more, Hirsh and Nation (1992) emphasized that knowing around 5,000 word families enables learners to read for pleasure. In addition, Staehel (2009) found that learners with low proficiency in EFL who had mastered about 2,000 words performed better at reading, listening, and writing than those with a smaller vocabulary. Realizing the importance of vocabulary for language proficiency, the Ministry of Education (MOE) in Oman has implemented curriculum and textbook reforms to improve students' vocabulary level. According to the Teacher's Book, by the end of Grade 10, learners are expected to have mastered about 2,500 words and to recognize about 2,000 additional words, which is a total of 4,500 words after 10 years of EFL (MOE, 2014). In addition, after Grade 12 learners are expected to have a vocabulary of 6,000 to 7,000, which will prepare them for university (Curriculum Framework, 2011).

As an experienced teacher, the researcher has noticed that Omani EFL students have serious difficulty comprehending written and spoken language because of a lack of adequate vocabulary. In the same vein, a number of scholars have reported that vocabulary remains one of the most problematic areas affecting Omani students' receptive language skills. Al Ajmi (2003) and Al Barashdi (2002) investigated challenges learners encounter when reading. Both placed a lack of vocabulary at the top of the list. Another study conducted by Al-Mahrooqi (2012) showed that one of the challenges female university students faced when reading literature is vocabulary, as they considered their lack of vocabulary a demotivating factor in continuing reading.

The present research was motivated by the fact that no systematic study has investigated Omani learners' receptive vocabulary size after 12 years of EFL instruction. The findings help bridge the gap between Curriculum Framework expectations and the actual vocabulary profiles of Omani students. Also, there is a need to investigate the relationship between Omani post-basic education graduates' receptive vocabulary size and their language proficiency as well as the effects of gender on this relationship.

Hence, this study answers the following questions:

1. What is the receptive vocabulary size of Omani post-basic education graduates?
2. Is there any significant relationship between students' receptive vocabulary size and their language proficiency?
3. Are there any statistically significant differences in students' receptive vocabulary size with respect to gender?

## 2. Literature Review

No one can doubt the vital role of vocabulary in all aspects of EFL. This unique study estimates the receptive vocabulary size of Omani post-basic education graduates and its relationship with language proficiency and gender. This chapter first explores the definition of *vocabulary* and different approaches to vocabulary knowledge. Then it investigates the relationship between vocabulary and language proficiency, focusing on each language skill (i.e., reading, listening, speaking, writing) separately. Finally, it discusses the amount of receptive vocabulary needed for reading and listening as well as reviews related studies that have investigated these same variables.

### 2.1 Defining Vocabulary

Given the importance of vocabulary in L2 acquisition, it is crucial to define *vocabulary*. Applied linguists use the terms *word*, *lexis*, and *vocabulary item* interchangeably to refer to vocabulary (Gardner, 2013). Using various terms, scholars define *vocabulary* differently. Neuman and Dwyer (2009) described vocabulary as "words we must know to communicate effectively; words in speaking (expressive vocabulary) and words in listening (receptive vocabulary)" (p. 15). However, Gardner (2013) stated that vocabulary has two meanings, which she referred to as "linguistic reality" and "psychological reality" (p. 9). Linguistic reality refers to the vocabulary of a particular language that is documented in dictionaries, whereas psychological reality refers to a user's mental repertoire of words or phrases of a particular language. Similar to Gardner's linguistic reality of vocabulary, Hornby (1995) referred to vocabulary as all words in a language along with their meanings. In sum, all scholars agree that vocabulary is the words in a language; however, a vital question is what does it mean to know a word in a language?

## 2.2 Vocabulary Knowledge

Vocabulary knowledge is a complex concept, and a review of the literature reveals that scholars do not agree on a specific definition. However, Milton and Fitzpatrick (2014) categorized three different approaches to defining vocabulary knowledge: component approaches, developmental approaches, and metaphorical approaches.

### 2.2.1 Component Approaches

Component approaches consider spoken forms, written forms, as well as meanings of vocabulary. Such approaches date back to Aristotle, who made the first distinction in vocabulary knowledge (Milton & Fitzpatrick, 2014). His distinction consisted of four components: real things, ideas, spoken forms, and written forms. In other words, according to Aristotle, knowing a word involves knowing the item in question and having a mental idea of that item along with its spoken and written forms. Unlike Aristotle, Palmer (1921) classified vocabulary into two categories: receptive and productive vocabulary. Receptive vocabulary refers to words that can be recognized in listening and reading, whereas productive vocabulary refers to words that can be used in speaking and writing. This classification perfectly matches Harmer's (1991) distinction between active and passive vocabulary. A more recent definition of vocabulary knowledge is Nation's (2001). He built on previous distinctions to provide three dimensions of vocabulary knowledge: knowledge of form, knowledge of meaning, as well as knowledge of use. Form involves the pronunciation and written form of a word as well as the parts that distinguish that word from another. Meaning involves the selection of a form to convey the meaning of a word and the meanings a single word possesses. In addition, it expresses the association of the word with other words. Finally, use refers to how a word functions grammatically, how and where a word can be used, as well as its collocations. For each dimension, Nation subcategorized the knowledge to be used with receptive and productive vocabulary.

Anderson and Freebody (1981) provided a more comprehensive distinction of word knowledge. They divided word knowledge into two dimensions: depth and breadth. Depth of vocabulary knowledge, which refers to how well an individual understands a word, involves knowing the word's meaning, synonymy, morphological features, spelling, register, and style. In addition, it involves knowledge of relationships between words, either semantic or syntactic. According to Anderson and Freebody (1981), age has a critical impact on depth of word knowledge. Children might understand the meaning of a word differently than adults, and as they become older this understanding keeps changing. Measuring the depth of vocabulary is difficult because it requires designing a test that measures learners' production, yet Nation (2011) claimed that free writing or translation tests can effectively measure depth of vocabulary knowledge. Breadth of word knowledge involves the number of words a learner knows as either receptive or productive vocabulary.

### 2.2.2 Developmental Approaches

Component and developmental approaches to understanding vocabulary knowledge are directly related, as the latter are extensions of the former. For example, Dale's (1965) developmental model measures the breadth and depth of vocabulary knowledge. The model consists of four developmental stages:

*Stage 1:* The learner has never encountered the word.

*Stage 2:* The learner has heard the word but does not know the meaning.

*Stage 3:* The learner can recognize the word: it is related to \_\_\_\_\_.

*Stage 4:* The learner knows the word.

This model helps to provide evidence of one's vocabulary knowledge, as it measures word recognition along with word meaning. Paribakht and Wesche (1993) proposed another developmental model that goes beyond Dale's (1965) model, as it provides information about one's semantic and syntactic knowledge. The Vocabulary Knowledge Scale is a five-stage self-report model (Paribakht & Wesche, 1993, p. 180):

*Stage 1:* The word is not familiar at all.

*Stage 2:* The word is familiar but the meaning is not known.

*Stage 3:* A correct synonym or translation is given.

*Stage 4:* The word is used with semantic appropriateness.

*Stage 5:* The word is used with semantic appropriateness and grammatical accuracy.

One problem with self-report scales is that some individuals may mistakenly feel that they do not know a word or that they can recognize a word and assume that they know the meaning and can use it appropriately.

### 2.2.3 Metaphorical Approaches

Similar to developmental approaches, metaphorical approaches to understanding vocabulary knowledge are based in component approaches. The most critical metaphorical approach is the lexical space framework developed by Daller, Milton, and Treffers-Daller (2007). These researchers added a fluency dimension to Anderson and Freebody's (1981) two dimensions of breadth and depth of word knowledge. This three-dimensional framework is represented as a cube, as illustrated in Figure 1.

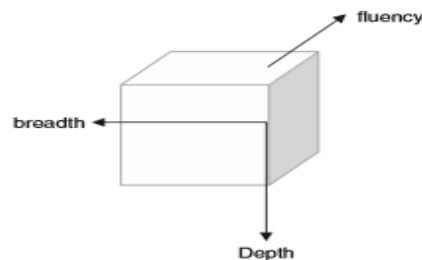


Figure 1. The Lexical Space Framework

According to the lexical space framework, each dimension—breadth, depth and fluency—can develop independently. This framework helps to distinguish between learners who know words and their meanings but fail to use them and those who know words and use them naturally in their writing and speech. The idea behind the metaphor of the cube is that learners are placed on a space in the shape based on their knowledge of the three dimensions. Despite the fact that each dimension can develop independently, in practice they cannot function separately, as a learner cannot have limited breadth of vocabulary but a high depth of vocabulary knowledge and fluency.

## 2.3 Vocabulary Size and Language Proficiency

### 2.3.1 Vocabulary Size and Reading

New vocabulary is best learned through reading and knowing a large number of words enhances reading comprehension (Eskey, 2005). The relationship between vocabulary and reading has received attention from a number of scholars (Ekey, 2005; Qian, 2002; Schmitt, 2000; Laufer, 1992). Findings have shown a positive correlation between vocabulary and reading comprehension.

Gungor and Yayli (2016) investigated the relationship between reading comprehension and vocabulary coverage among 178 university students in Turkey. The participants filled out a checklist of vocabulary items found in two reading tests that measured their comprehension level. There was a moderate positive correlation between reading comprehension and vocabulary coverage. When it comes to vocabulary coverage, the findings showed that EFL students need 8,000 word families, which is about 98% vocabulary coverage, to be able to understand academic texts.

Similarly, Ocampo and McNeill (2019) studied the correlation between vocabulary size and reading achievement. Their sample include 140 Grade 12 Thai students. They used Nation's (1990) Vocabulary Level Test (VLT) to estimate participants' vocabulary size along with a reading comprehension test that tested different skills (i.e., text interpretation, information retrieval, and reflection and evaluation). There was a strong positive correlation between vocabulary size and reading comprehension as well as the three aforementioned skills.

In the Iranian context, Rashidi and Khosravi (2010) investigated the relationship between vocabulary depth, vocabulary breadth, and reading comprehension among 38 Iranian senior university students. All participants had the same proficiency level: intermediate. The researchers adapted the VLT developed by Nation in 1983 to measure vocabulary breadth, the Word Associates Test (WAT) developed by Read in 1993 to test vocabulary depth, and the Test of English as a Foreign Language (TOEFL) reading comprehension test to examine reading comprehension skills. There was a significant positive relationship between vocabulary breadth and reading comprehension. However, the positive correlation between vocabulary depth and reading comprehension was

stronger.

Recently, Tan and Goh (2017) examined the relationship between vocabulary size and reading comprehension among 53 Malaysian university students. The Vocabulary Size Test by Nation and Beglar (2007) and the IELTS Reading Test were used to collect data. Participants had a vocabulary of almost 6,300 word families, which the researchers considered inadequate for reading comprehension; Tan and Goh proposed that learners need about 8,000 word families for general reading comprehension and 10,000 for optimal comprehension. It is surprising that the study revealed no correlation between vocabulary size and reading comprehension based on participants' scores.

### 2.3.2 Vocabulary and Listening

Compared to other language skills, the research on listening is relatively sparse. Although listening and reading are both receptive language skills, they are processed differently (Staehr, 2009). Thus, the impact of vocabulary knowledge on listening differs from the impact on reading.

In a study of 33 Turkish EFL learners, Atas (2018) found that vocabulary breadth correlated significantly with listening comprehension. Also, he found that 5,000 word families was an adequate predictor of listening comprehension, as it contributed up to 43% of the variance in scores.

Similarly, Staehr (2009) investigated the effects of vocabulary breadth and vocabulary depth on listening comprehension among 115 EFL Danish learners. He used the VLT Version 2 developed by Schmitt, Schmitt, and Clapham in 2001 to estimate vocabulary breadth and the WAT by Read (1993) to measure vocabulary depth. In addition, he used the Cambridge English: Proficiency listening comprehension test to examine participants' ability to listen for details and gist and make inferences. He found that both depth and breadth of vocabulary had strong positive correlations with listening comprehension. Specifically, vocabulary breadth contributed up to 46% of the variance in participants' listening comprehension, and vocabulary depth added only 2% to that variance. In sum, Staehr emphasized that vocabulary breadth is a more important core element of listening comprehension than vocabulary depth.

By contrast, Dabbagh (2016) investigated the extent to which vocabulary depth and breadth can predict listening comprehension. The VLT, WAT, and IELTS listening comprehension test were used to measure vocabulary breadth, vocabulary depth, and listening comprehension, respectively, among 73 Iranian EFL learners. Vocabulary breadth and vocabulary depth positively predicted participants' listening comprehension. However, vocabulary depth predicted up to 72% of the variance in participants' listening scores, whereas vocabulary breadth contributed only 22% to the variance. This study highlights the importance of looking beyond the number of words participants know to investigate the quality of this vocabulary.

### 2.3.3 Vocabulary Knowledge and Speaking

No one can doubt that vocabulary knowledge contributes greatly to skills in productive language (speaking and writing), as vocabulary is the means of conveying messages. A number of studies have investigated such contributions; one is Hilton (2008). This study examined the contribution of lexical knowledge to oral fluency among 56 L2 speakers. The participants differed in their backgrounds (German, Italian, and French) and their language proficiency (novice to advanced). Participants were asked to describe a video immediately after watching it. A computerized analysis was run to identify the length of production, length of hesitations, number of words in a production, number of hesitations, and number of utterances. Based on the analysis, the participants were placed into three groups: disfluent speakers who hesitated more than 52% of the time, fluent speakers who hesitated less than 33% of the time, and native speakers. Grammar correlated negatively with error rates, as the fewer grammatical errors participants made, the better their oral productions were. In addition, lexical knowledge correlated positively with hesitation rate, length of utterances, number of words, and percentage of total number of hesitations. Hilton determined the causes of errors and hesitations by analyzing the word or phrase immediately after the pause. The analysis showed that about 78% of pauses were caused by difficulty retrieving or lack of vocabulary, and 47% of disfluency was caused by idea boundaries like cohesion and organization of ideas. These findings emphasize the greater impact of vocabulary knowledge than grammatical knowledge on oral production.

In the same vein, Koizumi (2005) studied the relationship between speaking skill and productive vocabulary knowledge and vocabulary use among 172 Japanese high school students. The author used a speaking test that consisted of five tasks, three of which were monologic and two of which were interactive. Students were rated on task completion, vocabulary size, accuracy, and fluency. The 1,000 to 3,000 word frequency sections of the Productive Vocabulary Knowledge Test (Mochizuki, 1998) were used to measure participants' productive

vocabulary knowledge. Participants' productions were transcribed and analyzed. Productive vocabulary knowledge predicted up to 60% of participants' speaking skill, but vocabulary use predicted only 19%. Despite the fact that vocabulary use contributed little to speaking skill, the author argued that this factor should not be ignored, as it can be affected by other factors, such as pronunciation, context, and so on. The author suggested that these other factors should also be investigated.

An empirical study by Shahrestanifar and Rahimy (2014) examined the influence of word frequency knowledge on learners' speaking skills. About 60 Iranian students were selected to participate based on their scores on the Oxford Placement Test. Participants' word frequency knowledge was measured with a 40-item multiple-choice lexical test in which they decided whether a word was high or low frequency. Based on their performance on the lexical test, the participants were divided into two groups: high and low scorers. In addition, the participants were interviewed to test their speaking skills. There was a significant difference in the performance of the two groups: The high word frequency knowledge group performed better than the low word frequency knowledge group. Consequently, the researchers asserted that high word frequency knowledge has a significant positive impact on learners' speaking skills.

#### 2.3.4 Vocabulary Knowledge and Writing

Similar to its relationship with speaking, vocabulary plays a major role in L2 writing, as it is a key predictor of the ability to produce well-written academic compositions (Laufer, 1992). Olinghouse and Wilson (2013) investigated the impact of vocabulary on the quality of writing in three different genres—informative, narrative, and persuasive—among 105 fifth-grade students. They used a writing task from the Test of Written Language–3 by Hammill and Larsen (1996) to test participants' narrative writing and developed two other tests to measure informative and persuasive writing. The quality of participants' writing was measured based on clarity of ideas, organization, word choice, and elements of the genre. Moreover, six different aspects of vocabulary were measured: diversity using Textual Lexical Diversity (McCarthy & Jarvis, 2010), maturity using the General Service List (GSL; West, 1953), elaboration using CohMetrix (McNamara, Louwerse, Cai, & Graesser, 2005), register using VocabProfile (Cobb, n.d.), academic vocabulary using the Academic Word List (AWL; Coxhead, 2000), and content vocabulary using a content list developed by the authors. Result showed that fifth graders tended to vary their vocabulary based on genre. Also, diversity of vocabulary was a key predictor of narrative compositions. Register and content words were the unique predictors of persuasive compositions, and content words was the main and only predictor of informative compositions.

Similarly, Choi (2017) examined the effects of receptive and productive vocabulary knowledge on writing ability among 178 EFL students in a Korean university. The researcher used multiple measures to test each variable. The Vocabulary Size Test by Nation (2010) was adapted to assess breadth of receptive vocabulary knowledge, whereas Read's (1993) WAT was adapted to test depth of receptive vocabulary knowledge. Laufer and Nation's (1999) Productive Vocabulary Size Test was used to measure breadth of productive vocabulary knowledge, and the Productive Vocabulary Knowledge Depth Test by Lee (2015) was used to measure depth of productive vocabulary knowledge. Participants' writing skill was measured with a writing task involving an argumentative essay from TOFEL. There were strong positive correlations between depth and breadth of receptive vocabulary knowledge and writing skill as well as between depth and breadth of productive vocabulary knowledge and writing skill. Specifically, depth and breadth of productive vocabulary knowledge made higher contributions to participants' writing performance compared to depth and breadth of receptive vocabulary knowledge. Therefore, the author emphasized the importance of incorporating both types of knowledge into the curriculum to enhance L2 learners' writing skills.

#### 2.4 How Much Vocabulary Is Needed?

The answer to the question of how much vocabulary is needed depends on how much vocabulary is needed to be able to do things with the language (Nation & Waring, 1997). As the current study is concerned with receptive vocabulary size, this section considers studies that investigated vocabulary size in relation to receptive language skills (i.e., reading and listening).

Based on an analysis of a number of novels and newspapers, Nation (2006) asserted that learners should recognize the 4,000 most frequent word families to reach 95% coverage of novels and newspapers and know the 8,000 to 9,000 most frequent word families to reach 98% coverage. What is more, he analyzed spoken discourse in radio programs and found that the 3,000 most frequent word families must be recognized to reach 95% coverage and the 6,000 to 7,000 most frequent word families must be recognized to reach 98% coverage.

Laufer (1992) investigated the correlation between vocabulary size and reading comprehension and what size vocabulary distinguishes readers from nonreaders. Participants in the study were 92 first-year university students

who were Hebrew and Arabic speakers. Laufer used a reading comprehension test that consisted of 40 multiple-choice items. In addition, to measure participants' vocabulary size, the researcher administered Nation's (1983) VLT to 62 students and Meara and Jones' (1989) Eurocentres Vocabulary Test to 32 students. Based on their vocabulary size, the participants were divided into five groups: fewer than 2,000 word families, 2,000 word families, 3,000 word families, 4,000 word families, and 5,000 word families. Learners needed about 3,000 word families to achieve 56% reading comprehension of a text and 4,000 word families to reach 63% reading comprehension. Moreover, 5,000 word families were needed to achieve 70% reading comprehension.

In the same vein, Hsueh-Chao and Nation (2000) sought to answer the following question: How much text coverage is needed to read for pleasure without assistance with vocabulary? The 66 participants in their study, all of whom were almost proficient in English, were chosen based on their scores on the VLT (Nation, 1983). The participants were divided into four groups, each of which received a different version of a story: 100% group, 95% group, 90% group, and 80% group. The different versions of the story were created by replacing low-frequency words with fake words (e.g., in the 80% version, 20% of the words were fake). Reading comprehension was measured with two tests: a multiple-choice test and a short-answer writing test. The rationale for using the two tests was that the multiple-choice test measured the extent to which participants understood the text, whereas the short-answer test showed the quality of participants' understanding by giving them the opportunity to add details. The main finding of this study was that learners were required to recognize 98% of the words in a given text to enjoy reading for pleasure. Thus, the load of unknown vocabulary should be 1 in every 50 running words to ensure adequate comprehension of a text.

Finally, Dang and Webb (2013) measured the vocabulary size needed to comprehend spoken academic English. They analyzed academic discourse recorded from 39 seminars and 160 lectures in different disciplines in the social sciences, medical sciences, physical sciences, and humanities and arts. The data were analyzed with a computer program called RANGE that was developed by Nation and Heatley in 2002. To comprehend 96% of spoken academic discourse, learners needed to recognize the 4,000 most frequent word families. Recognizing the 8,000 most frequent word families enabled learners to comprehend about 98% of spoken academic language. Specifically, 7,000 word families were needed to comprehend 98% of spoken academic discourse in humanities and arts, whereas 10,000 word families were needed for physical sciences. Social sciences was the least demanding discipline, with 5,000 word families needed, and medical sciences was the most demanding, with 13,000 word families. Also, 3,000 to 5,000 word families was considered suitable for adequate comprehension of 95% of spoken academic language.

### *2.5 Related Studies*

A number of studies on receptive vocabulary size have been conducted in various EFL contexts. For example, Lin et al. (2017) investigated the relationship between vocabulary size and listening comprehension among 43 second-year students in a Malaysian university. The results revealed that the students had a vocabulary of 6,000 word families. Although their vocabulary was considered large, it was not sufficient for adequate listening comprehension of academic English. Similarly, another study investigated the relationship between vocabulary size and reading comprehension among 129 freshmen in a Malaysian university (Ibrahim et al., 2016). It found a moderate relationship between vocabulary size and reading comprehension. In addition, the majority of students had a vocabulary of 5,000 word families.

In the Arab context, a study conducted in Saudi Arabia measured the vocabulary size of 120 tertiary students (Altalhab, 2019). It found that Saudi students had a small vocabulary of 3,000 word families. The author emphasized that students with such a small vocabulary may have difficulty reading authentic texts and writing high-quality compositions.

Similarly, Alkhofi (2015) investigated variation in receptive vocabulary size among intermediate students in an intensive English program. The 79 participants, studying at the University of Central Florida, were divided into two groups: high-intermediate and low-intermediate. The researcher used the revised version of the VLT (Schmitt et al., 2001). The receptive vocabulary size of the high-intermediate group was about 3,152 word families, whereas that of the low-intermediate group was 3,031 word families. The difference in total size between these two groups is not surprising given that the groups were assigned based on language proficiency. The surprise is that there was variation in receptive vocabulary size within the groups themselves, as about 900 word families were a challenge to some students.

In terms of vocabulary size and its relationship with gender, the results of some studies favor male students. A study in Spain measured the vocabulary size of 92 secondary school students (49 females and 43 males) and its relationship with gender (Alonso, 2013). The students had a small vocabulary, roughly 1,000 word families. In

addition, male students had a larger vocabulary than female students. Similarly, another study in the Saudi context investigated vocabulary size among 71 English majors and its relationship with gender (Alqarni, 2019). The Saudi English majors had a vocabulary of 2,872 word families, and male students had a larger vocabulary than female students.

By contrast, a study investigated vocabulary size among Turkish EFL student teachers and its relationship to academic performance and gender (Ozonder, 2016). The sample included 104 undergraduate students (76 females and 28 males). Although the EFL student teachers had a large vocabulary, there was no significant relationship between vocabulary size and academic performance or vocabulary size and gender.

The only study of receptive and productive vocabulary size and its relation to gender and language proficiency in the Omani context was conducted by Al-Busaidi (2007). He developed two vocabulary tests using the most frequent words in the GSL and AWL; the tests were based on test formats used by Nation (2001). The tests were administered to 463 freshmen at Sultan Qaboos University (SQU). Omani students had a small vocabulary, and their passive vocabulary was better than their active vocabulary. Also, there was a significant correlation between vocabulary size and language proficiency, and female students performed better than male students on the GSL. However, there was no significant correlation between the size of students' academic vocabulary and language proficiency, and there were no significant differences between female and male students. Despite the fact that Al-Busaidi's study was concerned with the same issues and variables as the current study, the participants in the former study were taught using the old Omani curriculum *Our World Through English*. To this researcher's best knowledge, no systematic study has investigated receptive vocabulary size and its relationship with language performance and gender in Omani students who have studied under the new curriculum *English for Me*.

In conclusion, studies of receptive vocabulary size and its relationship with gender and language achievement, regardless of context, reveal that EFL students have a moderate to large receptive vocabulary, yet one that is inadequate for reading and listening comprehension. In general, male students have a larger receptive vocabulary than female students. To enrich the literature in the Omani EFL context, this study investigates receptive vocabulary size among Omani EFL learners along with its relationship with language proficiency and gender, as such investigation is lacking.

### 3. Methods

This section sheds light on the research design used in the study. Also, it describes the population and sample. It provides a thorough description of the instrument used to collect the data and discusses issues of validity and reliability. Finally, it describes the procedure used to collect the data.

#### 3.1 Study Design

In this descriptive study, quantitative data were obtained from a vocabulary test. The researcher first measured the receptive vocabulary size of the participants. Then correlations between receptive vocabulary size and language proficiency were assessed. Finally, the researcher examined differences in receptive vocabulary size with respect to gender.

#### 3.2 Population and Sample

The population of the study was all Omani post-basic education graduates who had been accepted at SQU for the 2019–2020 academic year and had studied English for 12 years in a public school. The total population was 2,985 students. The sample was 294 students (183 males and 111 females). The participants were enrolled in six different foundation programs (FPs) for English at the Center for Preparatory Studies (CPS). The participants were enrolled in these programs based on their language proficiency after taking a placement test. In each program, students study English for 7 weeks and then eventually move on to the next program when their grades allow. The distribution of participants across the six language programs by gender is presented in Table 1.



Table 1. Distribution of Participants in Language Programs by Gender

Foundation Program	Gender		<i>n</i>	%
	Male	Female		
1	52	0	52	17.7
2	36	8	44	15
3	41	19	60	20.4
4	29	51	80	27.2
5	14	13	27	9.2
6	11	20	31	10.5
Total	183	111	294	100

As can be seen, there were fewer participants in FP 5 and 6, because the majority of students were second year students, thus, the researcher has to excluded them as the scope of the study was first year students.

### 3.3 Instrument

Data were collected with the VLT Version B. The VLT was originally developed by Paul Nation in 1983. Schmitt, Schmitt, and Clapham (2001) revised the original version of the test and developed it into Version B. The test examines EFL learners' receptive vocabulary knowledge of the most frequent words by level. It starts at the 2,000 level, then moves to the 3,000, 5,000, and 10,000 levels; there is also an academic word level. The 2,000 level examines learners' knowledge of the 2,000 most frequent words taken from the GSL (West, 1953), which was based on 3 million word items. However, the 3,000, 5,000, and 10,000 levels test learners' knowledge of only an additional 1,000 word families per level. In other words, the 3,000 level examines knowledge of the 1,000 third most frequent word families, and so on for the other levels. The academic word level tests learners' knowledge of the 570 most frequent academic words taken from the AWL (Coxhead, 2000). The test consists of 10 clusters, each of which contains six word items to be matched to three definitions (see Appendix A). The total possible score per level is 30, and the total possible score for the whole test is 150. The score for each level is multiplied by the number of word families at that level and divided by 30, and then the totals for each level are summed to get the total receptive vocabulary size.

This test was selected for data collection because of the considerations Schmitt et al. (2001) proposed to overcome the limitations of the original version. First, the definitions are given in the form of words or phrases instead of full sentences. Second, the definitions are short, which minimizes reading time and maximizes the test-taking time in general. Third, the options are written differently from each another, which helps the test taker choose the correct option. Fourth, the target items are selected randomly and organized alphabetically. The options are organized based on their length, which helps to reduce blind guessing. Fifth, the words used in the definitions are more frequent than the target items, which eliminates the possibility that test takers may answer incorrectly because they do not understand the definitions. Sixth, one crucial rule of this test is that knowing a target word means knowing all family members of that word. Thus, the test uses the most frequent member of a word family. Seventh, the orthographic forms of the target items are as different from one another as possible.

Schmitt et al. (2001) examined the validity and reliability of the VLT. To validate the test, the researchers administered the test to native speakers and used item analysis, section profile analysis, and factor analysis. The results showed that the test was valid. As for reliability, Cronbach's alpha for each level was greater than 0.9, which indicates high reliability. For the current study, internal consistency reliability was 0.8 as measured by Cronbach's alpha.

### 3.4 Data Collection Procedure

The researcher had planned to collect data during Week 1 before the participants started studying, yet because of some logistical issues the data were collected during Week 4 according to the following procedure:

1. Permission was obtained from SQU administrators to conduct the study at the university.
2. The researcher contacted the Research Committee at CPS to collect data from students. Official permission was obtained, and a list of program coordinators was provided.
3. The researcher contacted the program coordinators, who contacted instructors asking for volunteers.

4. The researcher met with instructors to discuss and explain the focus of the study as well as the instruments.
5. An informed consent form, which was generated by the Research Committee at CPS, was obtained from the instructors.
6. Instructors obtained consent forms, which were also generated by the Research Committee at CPS, from the participants who agreed to volunteer prior to test administration.
7. Tests were administered for 40 minutes during Week 4 of the fall semester of 2019.
8. The tests were scored by the researcher, and the results were analyzed with SPSS.

**4. Results and Discussion**

This section analyzes the results of the study to answer the three research questions: (1) What is the receptive vocabulary size of Omani post-basic education graduates? (2) Is there any significant relationship between students’ receptive vocabulary size and their language proficiency? and (3) Are there any statistically significant differences in students’ receptive vocabulary size with respect to gender?

*4.1 Research Question 1: What Is the Receptive Vocabulary Size of Omani Post-Basic Education Graduates?*

Omani post-basic graduates' scores on the VLT were analyzed with SPSS. Table 2 shows descriptive statistics for students’ scores: means, standard deviations, and minimum and maximum scores at each level. The total possible score for each level is 30. The minimum score was 0 at all word levels except the 2,000 level. The maximum score was 30, which was also at the 2,000 level ( $M = 15, SD = 7$ ). Total scores decreased as students moved to the next word level, which is expected, as target items are organized by frequency, which increases the difficulty. Students performed poorly at the 10,000 word level ( $M = 3.5, SD = 2.7$ ); scores were narrowly spread, which reflects the fact that students had a limited vocabulary size at this level.

Table 2. Descriptive Statistics for Students’ Scores on the Vocabulary Level Test

Word Level	Min	Max	M	SD
2,000	2	30	15	7
3,000	0	26	9.4	5
5,000	0	18	6.1	3.6
10,000	0	13	3.5	2.7
Academic word level	0	25	7.1	5.1

Total possible score = 30.

Students’ scores were transformed into the number of words known for each level by multiplying the total number of word families at each level by the participant’s score for that level and then dividing by 30. The total vocabulary size for each level was summed to get the total receptive vocabulary size of the participant. Table 3 presents the scale used to interpret participants’ test results.

Table 3. A Scale for Interpreting Students’ Receptive Vocabulary Size

Scale Value	Receptive Vocabulary Size
0–1,856.67	Small
1,857.67–3,714.34	Moderate
3,715.34–5,570	Large

Overall, Omani post-basic education graduates had a small receptive vocabulary. Table 4 presents descriptive statistics for total receptive vocabulary size among Omani post-basic education graduates. The average vocabulary was 1,725 words out of 5,570 words. The smallest was 270 word families, whereas the largest was 3,613 word families.

Table 4. Descriptive Statistics for Total Receptive Vocabulary Size

	<i>n</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
Total receptive vocabulary size	294	270	3,613	1,725	667

Total possible receptive vocabulary size = 5,570.

Moreover, descriptive statistics for students' receptive vocabulary size at each word level are presented in Table 5. Note that all word levels are out of 1,000 except 2,000 (which is out of 2,000) and the academic word level (which is out of 570).

Table 5. Descriptive Statistics for Students' Receptive Vocabulary Size at Each Word Level

Word Level	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
2,000	140	2,000	971	442
3,000	0	870	314	153
5,000	0	600	189	111
10,000	0	430	117	89
Academic word level	0	473	132	95

In addition, Figure 2 shows the total receptive vocabulary size of Omani post-basic education graduates. More than half of the participants had a vocabulary of fewer than 2,000 word families. By contrast, only 3.1% of the participants had a receptive vocabulary of more than 3,000 word families.

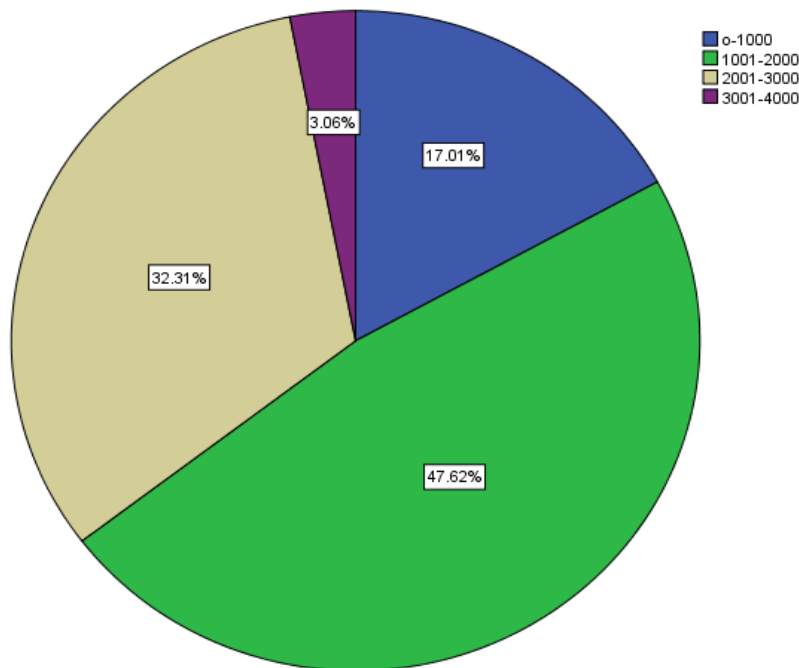


Figure 2. Participants' Receptive Vocabulary Size

In addition, as the participants were university students, it is important to explore their academic vocabulary size to estimate whether they would be able to handle studying at SQU in their first year. Table 6 presents the scale used to interpret students' academic vocabulary size. (As mentioned in the instrument description section, the VLT consists of five levels; 2,000, 3,000, 5,000, 10,000 and academic word level. Thus, it is important to consider that the following results are based on the academic word level only).

Table 6. A Scale for Interpreting Students' Academic Vocabulary Size

Scale Value	Academic Vocabulary Size
0–190	Small
191–380	Moderate
381–570	Large

Table 7 presents participants' academic vocabulary size by college. Overall, the participants had a small academic vocabulary ( $M = 132$ ,  $SD = 94.6$ ); the total size of academic word families was 570 word families. Participants from the College of Medicine and Health Sciences had the largest academic vocabulary ( $M = 251$ ,  $SD = 141$ ), which was considered moderate, whereas those from the College of Agricultural and Marine Sciences had the smallest ( $M = 92$ ,  $SD = 64$ ). The researcher categorized the colleges into science colleges (Medicine and Health Sciences, Nursing, Engineering, Science, and Agricultural and Marine Sciences) and social science colleges (Education, Arts and Social Sciences, Economics and Political Sciences, and Law). Participants from science colleges had a larger academic vocabulary ( $M = 149$ ) than participants from social science colleges ( $M = 132.2$ ).

Table 7. Descriptive Statistics for Participants' Academic Vocabulary Size by College

College	<i>N</i>	<i>M</i>	<i>SD</i>
Education	31	158	111
Medicine and Health Sciences	14	251	141
Science	51	130	72
Engineering	38	146	89
Nursing	10	126	76
Agricultural and Marine Sciences	49	92	64
Arts and Social Sciences	32	123	98
Economics and Political Sciences	35	117	102
Law	34	132	83
Total	294	132	94.6

In short, the average receptive vocabulary size of Omani post-basic education graduates was about 1,725 word families. According to Nation (2006), recognizing the 3,000 most frequent word families enables learners to comprehend 95% of spoken discourse in a radio program. As their receptive vocabulary is smaller than 2,000 word families, the learners in this study will not be able to comprehend 95% of spoken language; however, they will be able to understand around 55% of spoken language. In addition, Nation (2006) asserted that knowing 4,000 word families enables learners to reach 95% coverage of novels and newspapers, whereas knowing the 8,000 to 9,000 most frequent word families enables learners to reach 98% coverage. Yet the results of this study show that students in this sample will not be able to reach this amount of coverage; rather, they will only be able

to cover about 41% of novels and newspaper text. Moreover, Laufer (1992) investigated the vocabulary size needed for reading comprehension. Those findings showed that learners need about 3,000 word families to achieve 56% reading comprehension of a text and 4,000 word families to reach 63% reading comprehension. Also, 5,000 word families are needed to achieve 70% reading comprehension. Learners in this study will be able to comprehend about 32% of a text by reading. Thus, the receptive vocabulary of this sample is considered small.

On the other hand, the MOE has stated that by the end of Grade 12 Omani students should be able to recognize about 6,000 words (Curriculum Framework, 2011). However, the findings of the study revealed that Omani post-basic education graduates could recognize less than 2,000 words which shows that there is a gap between MOE expectations and the findings of the study. Therefore, it is important to examine the causes of this gap. Al-Mahrooqi et al. (2016) analyzed Omani EFL textbooks focusing on vocabulary. Using WordSmith tools, they analyzed lexical items in the textbooks across different grades, from Grade 1 to Grade 12. The data were compared to the GSL (West, 1953), a list of the 2,000 most frequent words, in terms of vocabulary distribution, repetition, and loading. Also, the researchers used a software called RANGE (Heatley, Nation, & Coxhead, 2002) to differentiate between vocabulary found in the GSL and AWL. The results revealed that in general vocabulary loading was not appropriate across grades, as there was inconsistency in the vocabulary introduced at each grade, which meant that the textbooks had not been planned systematically when it comes to vocabulary. Also, in regard to the AWL and GSL, Omani post-basic education textbooks failed to reach the vocabulary coverage of 95%–98% suggested by Nation (2001), as the majority of vocabulary introduced was academic. The researchers concluded that textbook writers should strive for consistency in the type of vocabulary introduced, starting with GSL words in the lower grades and moving to AWL and technical and specialized vocabulary in the upper grades. This would contribute to students' repertoire of vocabulary, as teachers would know which words have already been introduced and which ones must still be taught in later grades.

As vocabulary is considered a core part of language skills and learning, Al-Harrasi (2012) evaluated stories in Omani EFL school textbooks to examine the effectiveness of texts and activities. Stories in *English for Me* contributed positively to learners' imagination, curiosity, as well as language learning. However, some story texts were found too difficult and did not match learners' language level. This finding corresponds with Al-Mahrooqi et al.'s (2016) that there is a mismatch between vocabulary loading and grade level, such that the vocabulary introduced is either too easy or too difficult. Whereas Al-Harrasi (2012) highlighted the difficulty of language used in story texts, Al-Mahrooqi et al. (2015) evaluated FFM textbooks for Grades 1 to 10 and *Engage With English* for Grades 11 and 12. They used an analysis checklist to evaluate the textbooks in terms of authenticity of the text, cognitive engagement, development of high-level thinking skills, challenge, and use of communicative teaching methods. One core finding of the study that contradicted Al-Harrasi's (2012) findings was that the language used in texts was too specific or too easy and thus did not provide learners with any challenge. Learners were able to do activities easily without any difficulty and had no opportunities to explore language input. As findings of both studies were contradicting, there is a need to investigate this area more thoroughly.

As the participants in the present study were newly admitted university students, it was important to examine the size of their academic vocabulary, which was found to be small. Students from the College of Medicine and Health Sciences had the largest academic vocabulary, whereas those from the College of Agricultural and Marine Sciences had the smallest. Also, students from science colleges had a larger academic vocabulary than students from social science colleges. Despite the fact that participants from all colleges need a larger vocabulary, Dang and Webb (2013) asserted that students from medical specializations must have a large vocabulary to comprehend spoken academic discourse, as medical sciences are the most demanding disciplinary, with 13,000 word families, and social sciences is the least demanding, with 5,000 word families.

In sum, the present study found that Omani post-basic education graduates have a small receptive vocabulary, roughly 2,000 word families. Their small vocabulary can be attributed to two main factors. First, the curriculum fails to meet students' needs, consider their proficiency level by grading activities from easy to difficult, and provide them with opportunities to engage independently in learning. When it comes to learning vocabulary itself, the curriculum fails to provide suitable vocabulary loading at each grade, as there is inconsistency in the vocabulary introduced in each grade. This reflects the fact that the creation of curriculum textbooks was not systematic. Also, because the majority of vocabulary in textbooks is formal and academic rather than high frequency, students may be less able to use English for nonacademic purposes. Second, teachers appear to be too narrowly focused on the curriculum, which consequently makes them ignore vital aspects of the teaching process like considering students' proficiency level when planning and teaching. In addition, teachers seem to teach for

assessment rather than to equip students with strategies to learn language independently. Moreover, teachers' tendency to use Arabic in their classes minimizes students' exposure to English. Finally, it appears that teachers' language proficiency also contributes to students' incompetency.

#### 4.2 Research Question 2: Is There Any Significant Relationship Between Students' Receptive Vocabulary Size and Their Language Proficiency?

The relationship between Omani post-basic education graduates' receptive vocabulary size and their language proficiency was investigated with Pearson product-moment correlation coefficients. There was a moderate but significant positive relationship between receptive vocabulary size and language proficiency ( $r = .612, p < .05$ ). Table 8 shows descriptive statistics for participants' total receptive vocabulary size at each Foundation program level. Vocabulary size increased gradually as the Foundation Program Level increased. The participants in FP 5 and 6 had the largest vocabulary, more than 2,000 word families.

Table 8. Descriptive Statistics for Participants' Total Receptive Vocabulary Size by Foundation Program

Foundation Program	<i>n</i>	<i>M</i>	<i>SD</i>
Level 1	52	1,063	375
Level 2	44	1,387	465
Level 3	60	1,721	535
Level 4	80	1,958	578
Level 5	27	2,105	707
Level 6	31	2,388	517

In sum, there was a moderate but significant positive correlation between students' receptive vocabulary size and their language proficiency, as vocabulary size increased as Foundation Program level increased. Students in Foundation Program level 1 had the smallest vocabulary, whereas those in Foundation Program level 5 and 6 had the largest. This finding corresponds with Al-Busaidi's (2007) findings of a significant positive relationship between Omani students' vocabulary size and their language proficiency level.

Specifically, language proficiency includes being competent in the four main language skills, which are reading, listening, speaking, and writing. Previous research shows a significant relationship between reading skill and vocabulary size (Ekey, 2005; Qian, 2002; Laufer, 1992). In addition, Gungor and Yayli (2016) found that knowing 8,000 word families provides learners with 98% vocabulary coverage to understand academic texts. Similarly, Ocampo and McNeill (2019) claimed that was a strong positive relationship between vocabulary size, reading comprehension, and the other reading skills.

Despite the fact that Rashidi and Khosravi's (2010) findings corroborate Gungor and Yayli's (2016) and Ocampo and McNeill's (2019) findings, their study showed that the relationship between vocabulary depth and reading comprehension was stronger than the relationship between reading comprehension and vocabulary size. By contrast, Tan and Goh (2017) found no significant relationship between vocabulary size and reading comprehension, which conflicts with the aforementioned findings.

Regarding listening skills, Staehr (2009) found that vocabulary size contributed up to 46% of the variance in participants' listening comprehension. By contrast, Dabbagh (2016) asserted that vocabulary size contributed only 22% of the variance to the listening comprehension. Despite the contradictions in these findings, both studies highlight the importance of taking the quantity of learners' vocabulary into consideration during planning and teaching.

When it comes to speaking, Hilton (2008) found that vocabulary size contributed positively to speaking, as 78% of disfluency in speaking was attributed to difficulty retrieving or lack of vocabulary. In addition, Koizumi (2005) claimed that vocabulary knowledge predicted up to 60% of participants' speaking skill.

Similarly, Choi (2017) highlighted that the receptive and productive vocabulary knowledge contributed positively to writing skills, the impact of productive vocabulary knowledge was greater than the impact of

receptive vocabulary knowledge. This can be attributed to the fact that writing is basically a productive skill. However, this does not mean that teachers can ignore the impact of receptive vocabulary knowledge; rather, both aspects of knowledge should be taken into consideration to improve learners' writing skills.

#### 4.3 Research Question 3: Are There Any Statistically Significant Differences in Students' Receptive Vocabulary Size With Respect to Gender?

An independent-samples *t* test was used to examine differences in receptive vocabulary size with respect to gender. Table 9 presents means and standard deviations for receptive vocabulary size for males and females. There was a statistically significant difference in receptive vocabulary size between males and females in favor of females,  $t(294) = 5.8$ ,  $p = .01$ . Gender accounted for almost 10% of the variance in total receptive vocabulary size.

Table 9. Means and Standard Deviations for Receptive Vocabulary Size for Males and Females

Group	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>
Males	183	1,564	50	5.8
Females	111	1,989	53	

$p = .01$ .

The finding that females had a larger receptive vocabulary corresponded with other studies (Ozonder, 2016; Al-Busaidi, 2007). However, it contradicted Alonso (2013) and Al-Qarni (2019), who found that male students had a larger receptive vocabulary than females.

This finding can be attributed to the fact that biological differences between females and males enable females to outperform males. For example, females process language using both hemispheres of the brain simultaneously, whereas males use only the left hemisphere (Zaidi, 2010). In addition, according to Brizendine (2007), the hippocampus, which is the center of memory and vocabulary in the brain, is larger in females than males, which means that females have better language processing, retention, and verbal skills (as cited in Uster, 2008). Also, the language center in the female brains has 11% more brain cells than that in the male brains, which contributes to females' better language learning.

Secondly, female students are more motivated to learn language than their male peers (Bećirović, 2017; Iwaniec, 2015). Ambu-Saidi and Al-Mahrooqi (2012) found that female students had greater motivation to learn language compared to male students, which the researchers attributed to their more positive attitudes toward English. Also, the female students tended to use more language learning strategies than male students, such as cognitive, memory, and social strategies, which enabled them to perform better on verbal tasks. Whereas the aforementioned study investigated language learning strategies in general, Catalan (2003) examined gender differences in relation to vocabulary learning strategies specifically. He stated that there was a significant difference in the use metacognitive, memory, social, and cognitive strategies in favor of female students, which corroborated with Ambu-Saidi and Al-Mahrooqi's (2012) findings. The researcher highlighted the importance of taking these gender differences into consideration in the classroom.

In sum, the current study found a significant difference in the receptive vocabulary size of Omani post-basic education graduates in favor of female students. According to previous research, female students outperform male students as a result of differences in the biology of their brains, motivation, attitudes toward L2, and use of vocabulary learning strategies.

## 5. Conclusion

This study was conducted at SQU with 294 Omani new post-basic education graduates (183 males and 111 females) enrolled in FPs at the CPS. Considering the importance of vocabulary in learning any second language, the primary goal of the study was to examine the receptive vocabulary size of these Omani post-basic education graduates. Students' scores on the VLT showed that these Omani post-basic education graduates had a small receptive vocabulary of 1,725 word families. A secondary aim of the study was to investigate the relationship between receptive vocabulary size and language proficiency among these students, which was found to be statistically positive. Finally, this study explored differences in receptive vocabulary size with respect to gender and found statistically significant differences in favor of female students.

## 6. Limitations

A critical limitation of the study is its scope, as it is limited to government post-basic school students. It is thus difficult to generalize the findings of the study to private high school students. Similarly, the participants of the study were SQU first-year students; therefore, generalizing the study findings to students studying at both private and government higher education institutions may be questionable.

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