Global Journal of Humanities and Social Sciences
eISSN: 2957-3602 pISSN: 2957-3599 *Page No. 15-28*

VOLUME03 ISSUE03,2024
Published 23-03-2024

THE VOCABULARY SIZES AND LEXICAL COLLOCATIONS OF UNIVERSITY LEARNERS IN THAILAND

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ABSTRACT

This study attempts to gain a deeper understanding of Thai EFL university learners' vocabulary sizes and lexical collocations, both receptively and productively, and determine whether there is a significant relationship between them. Two hundred forty-two students majoring in English in the first and fourth years participated in this study. Four measures were used to assess the participants' receptive and productive knowledge of vocabulary sizes and lexical collocations. The data were analysed using descriptive and inferential statistics. The results showed that Thai university learners achieved significantly higher performance on receptive knowledge than productive knowledge, both in the tests of vocabulary sizes and lexical collocations. Besides, the fourth-year learners outperformed the first-year learners in all tests. The analysis of these findings revealed the degrees of learning in both vocabularies and collocations. Like vocabularies, receptive knowledge of collocational knowledge is easier to acquire than productive knowledge. The correlational analysis of the findings also revealed a positive relationship between participants' vocabulary sizes and collocational knowledge. Together, the current results indicate that the gain in Thai university learners' receptive and productive knowledge of lexical collocations fosters their vocabulary sizes and vice versa. Therefore, such findings highlight the roles of lexical collocations in fostering vocabulary learning and growth.

KEYWORDS

Vocabulary sizes; lexical collocations; receptive knowledge; productive knowledge; Thai university learners

INTRODUCTION

The growing body of the second language (L2) research has shown the link between vocabulary knowledge and overall language performance *(Nation, 2013).* Research also demonstrates vocabulary knowledge has always been the essential content of language studies and is the elementary composition of language pronunciation morphology, and has been at the center of language learning regardless of the mother tongue (L1) or second language (L2) acquisition. In this regard, for English-as-a-foreign-language (EFL) learners, building a rich volume of the mental lexicon is essential for developing communicative competence to effectively function in English. Research also demonstrates that vocabulary has always been the integral component of language studies and is the elementary composition of language pronunciation and morphology, and has been at the center of language learning regardless of the mother tongue (L1) or L2 acquisition. However, acquiring an ample size of mental lexicons is a more conscious and demanding process during which language teachers and researchers are getting to recognize the importance of vocabulary learning and are exploring ways of promoting it more effectively

((Daskalovska, 2016; Nation, 2013; Nontasee & Sukying, 2021a, 2021b; Schmitt & González-Fernández, 2019; Sukying, 2018a, 2020).

In vocabulary acquisition, vocabulary knowledge is a complex construct involving multiple word knowledge components *(e.g., Henriksen 1999; Nation 2013; Schmitt 2014)*. Vocabulary sizes are essential in learning and using English for all English skills-as-a-foreign-language (EFL) students and are crucial for fully grasping L2 during the actual learning process *(Mungkonwong, 2017; Wang, 2017)*. Moreover, learners with large vocabularies are more proficient in a wide range of language skills than learners with smaller vocabularies *(Meara, 2000)*. Schmitt *(2008)* stated that vocabulary size was needed to master a second language, and students cannot communicate in a foreign language if they know only a few words. Even though students might know the grammar and sounds of a language well, a lack of vocabulary knowledge meant they still could not communicate *(Beglar, 2010)*. From these perspectives, vocabulary can be regarded as a priority area of language teaching and learning, and tests are needed to monitor learners' progress in vocabulary learning and assess whether their vocabulary knowledge is adequate to meet their communicative needs.

More recently, Al-Masrai and Milton *(2012)* studied 92 Saudi Arabia university learners' vocabulary sizes in their first and fourth years. The findings demonstrated that Saudi Arabia university learners have around 2,000 to 3,000 words when they enter university and graduate with a vocabulary of approximately 5,000 words. In the same way, Alqarni *(2018)* measured forty-five Saudi male students with five years of study as English Language and Translation majors' productive vocabulary knowledge. It was evident that the word-frequency level in all test bands was highly affected by participants' performances. Immediate intervention is required to improve learners' performance and prevent such poor performance among future students.

In the Thai EFL context, it has been shown that, while students learn English from elementary school to university, they still have problems with vocabulary knowledge. It has been argued that these problems link to a lack of vocabulary knowledge *(Supasiraprapa, 2019).* Such studies found that learning a word starts from recognizing the word itself to the ability to use it in context. However, this process is long and incremental; that is, the aspects of vocabulary knowledge are interrelated; in other words, learning vocabulary takes place on a developmental continuum *(Nontasee & Sukying, 2021a, 2021b)*.

Furthermore, a study that examined Thai EFL students' receptive and productive vocabulary size demonstrated that students' receptive vocabulary size was almost double their productive vocabulary size *(Kotchana & Tongpoon-Patanasorn, 2015; Srisawat & Poonpon, 2014)* and low English proficiency *(Noom-ura, 2013)*. Also, Mungkonwong & Wudthayagorn (2017) investigated 484 Thai first-year students in Thailand. The results showed that Thai first-year students had enough vocabulary to cope with essential language use. This size would be sufficient for Thai first-year students to perform basic language skills encountered at a university.

Equally, collocations are an essential component of vocabulary knowledge, particularly in second language vocabulary learning *(e.g., Jeensuk & Sukying, 2021a, 2021b; Phoocharoensil, 2013, 2014; Zhang & Sukying, 2021).* Collocations refer to a group of words that are frequently observed together *(McCarthy & O' Dell, 2017)*. L2 vocabulary research has shown that English collocations are particularly difficult for learners to master *(Nesselhauf, 2003)*. One striking finding is that even reasonably advanced learners struggled with using collocations properly *(Nesselhauf, 2003).* A recent study by ERTÜRK *(2021)* investigated the factors that affect receptive and productive collocational knowledge of tertiary-level EFL learners in Turkey. The findings show that vocabulary and collocational knowledge correlate at both levels. It can be concluded that learners tend to learn a word receptively before they can use it in a written or spoken context.

In the Thai EFL context, learners may acquire receptive collocation knowledge before productive collocation knowledge *(Jeensuk & Sukying, 2021a)*. Furthermore, previous research revealed that learners find lexical collocations more challenging than grammatical collocations *(Boonyasaquan, 2006; Mallikamas & Pongpairoj, 2005; Phoocharoensil, 2013)* and produce more lexical than grammatical miscollocations *(Phoocharoensil, 2013)*. Begagić (*2014*) studied the collocation of productive and receptive knowledge of 40 English learners for the first

and fourth-year levels. It indicated that their receptive knowledge of collocation was higher than their productive knowledge of collocations. Such findings provide additional evidence for the importance of prioritizing collocations in curriculum development to improve learners' collocational competence.

In support of Begagić *(2014)*, Talakoob & Koosha *(2017)* attempted to investigate the differences between Iranian intermediate and advanced EFL learners' receptive and productive collocational knowledge. The results can help language teachers attribute the problems learners have in developing their language proficiency partly to the lack of collocational knowledge. Futuremore, Zhang & Sukying (*2021*) stated that receptive knowledge is more accessible to acquire than productive knowledge of lexical collocations for both first- and fourth-year learners. It suggests that the growth of collocational knowledge depends on the number of encounters with the target words in context.

Overall, while many studies have been conducted on the vocabulary acquisition of EFL learners, our understanding of this area is not still comprehensive, especially in the Thai EFL context. In addition, little is known about the relationship between lexical collocations and vocabulary sizes. Most research has only looked into one specific year or education level of learners' vocabulary knowledge, and this might lead to inadequate evidence to support the continuum of vocabulary learning. Therefore, the current study further investigated the continuum of vocabulary learning in Thai university learners at two different years of education and explored the relationship between Thai EFL university learners' vocabulary sizes and their lexical collocations, both receptively and productively. Specifically, the research addressed the following questions:

1. What is Thai EFL university learners' receptive and productive knowledge of vocabulary sizes?
2. What is Thai EFL university learners' receptive and productive knowledge of lexical collocations?
3. What is the relationship between Thai EFL university learners' vocabulary sizes and receptive and productive knowledge of lexical collocations?

METHODS

Participants and setting

The present study was a quantitative design, and the participants were 242 Thai university students, including 121 first-year and 121 fourth-year English major learners, in a public university in north-eastern Thailand. They were selected to participate in this study using convenience sampling. Participants were chosen because they have learned English for more than ten years and their English proficiencies were mixed. Moreover, this allowed a comparison between learners who had just entered university and those that were ready to graduate after four years of English university studies. Their ages ranged from 18 to 24 of age at the time of data collection.

Participants had four English courses a week with Thai EFL teachers and English native teachers. They used their L1 (Thai language) to communicate with others in school or outside of school, and none of the participants had a study background in English-speaking countries. The participants had not received any specific instruction in the receptive and productive knowledge of collocational knowledge and vocabulary sizes. They had little awareness of collocational competence as an L2 knowledge and competence dimension.

Instruments

Four research instruments were used to measure learners' vocabulary knowledge, including vocabulary sizes and lexical collocations, on receptive and productive dimensions. Specifically, Schmitt & Clapham's (2001) New Vocabulary Levels Test (NVLT) and Read's (1998) Word Associates Test (WAT) were used to measure participants' vocabulary sizes. What's more, lexical collocations were measured using two new tests, Receptive Lexical Collocations Test (RLCT) and Productive Lexical Collocations Test (PLCT), which have been specifically developed for the current study based on Brashi (2009) and Laufer & Nation (1999). The content was assessed by five experts in the area of English education and piloted with 143 English major students to examine the validity and reliability of tests.

The New Vocabulary Levels Test (NVLT)

The New Vocabulary Levels Test assessed receptive knowledge of vocabulary sizes. It was validated by Schmitt and Clapham (2001). This test is easy to manage, score, and analyze and is frequently used to assess vocabulary knowledge. In addition, it has high reliability and validity. The test presents five different frequency levels of items to be tested, including 2,000, 3,000, 5,000, 10,000, and academic words randomized from the University Word List. Within the NVLT, a cluster of vocabulary items comprises six different stimulus words and three different definitions. An example of 5,000-word levels is shown below. The test takers were required to match the definitions on the right with the corresponding words on the left:

1. apparatus
2. compliment __2__ expression of admiration
3. ledge __1__ set of instruments or machinery
4. revenue __4__ money received by the government
5. scrap
6. tile

Word Associates Test (WAT)

The Word Associates Test was developed by Read (1998) to measure productive knowledge of vocabulary sizes. The WAT was selected for the current study as, unlike traditional vocabulary measures, such as word matching, it measures the depth of learners' vocabulary knowledge with appropriate target words. Therefore, this measurement tool is popular among researchers and teachers alike. The WAT is composed of 40 target words, which were used to measure many facets of vocabulary knowledge to assess how well individual learners understand a word. The test battery presented eight stimulus words as options, half of which relate to the target words. The target words included nouns, verbs, or adjectives, and the other half of the choices were distractors. In the current study, the test candidates were presented with eight different options and the target word in the WAT format. The participants were asked to detect four words that connect with the target item. The related words were synonyms, collocates, or a word representing a facet of the connotation of the item. An example is shown below:

Bright

1. clever 2. famous 3. happy 4. shining 1 3 4	5. color 6. hand 7. poem 8. taste 5

Receptive Lexical Collocations Test (RLCT)

The Receptive Lexical Collocations Test measured receptive knowledge of lexical collocations. The specific version of the test used in the current study was based on Brashi (2009) and used a multiple-choice format to assess the learners' ability to perform the matching task. The RLCT used in this study included six types of lexical collocations, including verb + noun, adjective + noun, noun + verb, noun + noun, adverb + adjective, and verb + adverb. The target collocations were chosen from the frequency word list of English, with lexical features of lexical collocation, namely, verb, noun, adverb, and adjective collocations. The test produced 54 items at different levels, including nine items for each type. The test required learners to read the sentence and choose the most appropriate answer. An example is given below:

1. The A generation is the nation's hope for building a happy future.

A. growing B. increased C. raised D. incremental

Productive Lexical Collocations Test (PLCT)

The Productive Lexical Collocations Test was a productive knowledge of lexical collocations test. The test used in the current study employed a gap-filling format and was developed based on Laufer & Nation (1999). The pilot study conducted before the main research also assessed the reliability and validity of this test. The PLCT used the same types of lexical collocations as the RLCT, including verb + noun, adjective + noun, noun + verb, noun + noun, adverb + adjective, and verb + adverb. Sentences containing these collocations were selected from the BNC with minor modifications to better suit the English proficiency level of the participants and the Thai context. The test yielded 54 items in total, with nine items for each type. Participants were asked to read the sentence and fill in the appropriate words on the line according to the given letters. An example is provided below:

1. Academic qualifications are commonly felt to give a person the best chance of success in life.

Data collocation procedure

Four different tests were used to evaluate receptive and productive word knowledge. Due to the COVID-19 pandemic, participants completed the tests via online systems (Google forms). The four tests were administered during a class period, with two tests conducted in the first week and two in the second week. Specifically, the measures of vocabulary sizes were tested in the first week, followed by the measures of lexical collocations in the second week. Participants were given 50 minutes to complete the productive test and 30 minutes for the receptive test.

To ensure that participants did not transfer knowledge from the receptive tests to the productive tests, the productive knowledge tests were given to participants before the tests of receptive knowledge (Laufer & Goldstein, 2004). That is, the receptive knowledge of vocabulary sizes was assessed after assessing productive knowledge of vocabulary sizes, and the same for lexical collocations tests. Thus, the four tests were administered in the following order: 1) Word Associates Test, 2) The New Vocabulary Levels Test, 3) Productive Lexical Collocations Test, and 4) Receptive lexical Collocations Test.

Data analysis

The scores on the four tests were analyzed using the Statistical Package for the Social Sciences (SPSS) (Larson-Hall, 2016). Descriptive statistics were calculated, and t-tests were then used to determine whether test scores were statistically significant (Hayes, 2020). Cronbach's alpha coefficient and Pearson's correlations were also calculated to assess the relationship between performance on the different tests. Cohen's guidelines (1988) were used to estimate the effect size: small, r =0.1 to 0.29; medium, r =0.30 to 0.49; large, r =0.50 to 1.0.

FINDINGS

Thai EFL university learners' vocabulary sizes

As Table 1 shows, the average score for the NVLT in the first-year university learners was 68.8% (SD = 12.28), and the average percentage score for the WAT was 58.7% (SD = 23.73). The mean percentage score for NVLT in the fourth-year university learners was 75.1% (SD = 5.33) and 67.1% (SD = 21.30) for the WAT. Overall, the results showed that participants performed better on the receptive test than on the productive test, indicating that their receptive knowledge of vocabulary sizes was better than their productive knowledge of vocabulary sizes.

Tests	First-year（n=121）		Fourth-year（n=121）		Total	
	Mean	SD	Mean	SD	Mean	SD

NVLT (60)	*R*	41.28 (68.8%)	12.28	45.07 (75.1%)	5.33	86.35 (71.9%)	23.5
WAT (160)	*P*	93.95 (58.7%)	23.73	107.50 (67.1%)	21.30	201.45(62.9%)	9.63
Total		135.23 (63.8%)	74.48	152.57 (76.29%)	88.28	287.80(67.4%)	163.12

Table 1*(Descriptive statistics of the 1st and 4th learners' performance on vocabulary sizes.)*

Note: R=receptive knowledge, P=productive knowledge

The comparison between receptive and productive knowledge of vocabulary sizes for the first- and fourth-year university learners is illustrated in Table 2. The mean scores of receptive and productive knowledge of the first-year university learners on the NVLT and the WAT performance were significantly different (t = 26.44, p < 0.05, Sig. 2-tailed = .000). Similarly, there was also a significant difference between receptive and productive knowledge of the fourth-year university learners on the NVLT and WAT (t = 30.12, p <0.005, Sig. 2-two-tailed = .000). Moreover, the findings showed that the first-year learners those gained 68.8% (SD = 12.28) on receptive knowledge, and 58.7% (SD = 27.73) on productive knowledge of vocabulary sizes, while the fourth-year learners achieved 75.1% (SD = 5.33) on receptive knowledge, and 67.1% (SD = 21.30) on productive knowledge. It can be concluded that the fourth-year students performed significantly better than first-year students on both receptive and productive knowledge measures.

Education levels	**Tests**	**Mean**	**SD**	***t***	**Sig.**
1st year (n=121)	NVLT R	41.28 (68.8%)	12.28	26.44	.000
	WAT P	93.95 (58.7%)	27.73		
4th year (n=121)	NVLT R	45.07 (75.1%)	5.33	30.12	.000
	WAT P	107.50 (67.1%)	21.30		

Table 2 *(Comparison of the 1st and 4th learners' performances on vocabulary sizes.)*

Note:R=receptive knowledge, P=productive knowledge

The comparison of Thai university learners' receptive and productive knowledge of vocabulary sizes is shown in Table 3. Performance on the receptive knowledge of vocabulary sizes was positively different from performance on the productive knowledge of vocabulary sizes (t = 39.19, p < 0.05, Sig. 2-tailed = .000). Moreover, Thai university learners have higher receptive knowledge than productive knowledge of vocabulary sizes. Specifically, participants achieved high performance on receptive knowledge with 72.8% (SD = 9.63) than productive knowledge with 62.9% (SD = 23.5) in vocabulary sizes knowledge. This indicates that Thai university learners better understand receptive knowledge of vocabulary sizes.

Vocabulary sizes	**Mean**	**SD**	***t***	**Sig.**
Receptive knowledge	43.71 (72.8%)	9.63	39.19	.000
Productive knowledge	100.73 (62.9%)	23.50		

Table 3 *(Thai university learners' overall knowledge of vocabulary sizes (n=242).)*

A summary of the mean performance on the receptive and productive knowledge of vocabulary sizes on two tests, the New Vocabulary Levels Test and Word Associates Test, is illustrated in Figure 1. The results showed that Thai university learners, especially first- and fourth-year participants, achieved higher average performance on the receptive measure of vocabulary size (NVLT) than on the productive measure of vocabulary size (WAT). This shows that productive knowledge is more difficult to acquire than receptive knowledge. Also, the fourth-year university learners scored higher than the first-year university learners on each test. Inaddition, overall Thai university learners performed better on the receptive knowledge (NVLT) (72.8%) than on productive knowledge (62.9) (37.2%). This indicates that the learners' vocabulary size knowledge improves over academic years, and learning a word is the result of a long and incremental process.

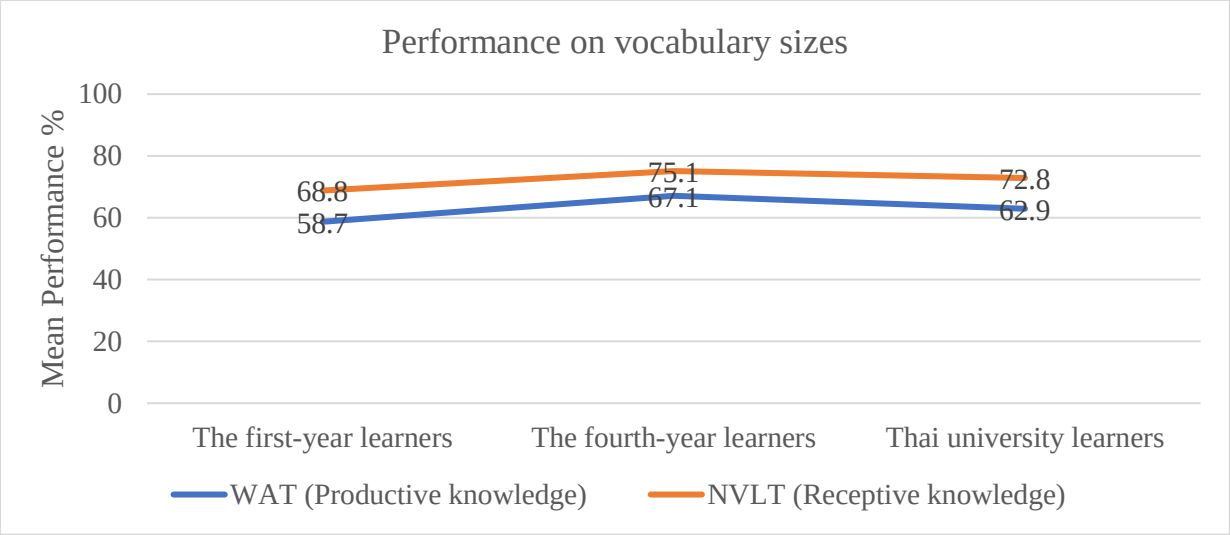

Figure 1 *(A summary of vocabulary sizes performance in Thai university learners.)*

Thai EFL university learners' lexical collocations

Table 4 shows the average score for the Receptive Lexical collocations Test (RLCT), a measure of receptive knowledge of lexical collocations, was 43.5% (SD = 7.98) for the first-year university learners and 74.5% (SD = 5.55) for the fourth-year university learners. The mean performance of the Productive Lexical Collocations Test (PLCT), a measure of productive knowledge of lexical collocations, was 33.8% (SD = 8.10) for the first-year university learners and 63.8% (SD = 9.80) for the fourth-year university learners. Overall, the means suggest that both first- and fourth-year participants performed better on the receptive measure of English collocations, indicated by higher average scores, than on the productive measure of English collocations. This indicates that productive knowledge of lexical collocations is more difficult to acquire than receptive knowledge of lexical collocations.

Tests	**First-year**（n=121）		**Fourth-year**（n=121）		**Total**	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
RLCT *R*	23.51 (43.5%)	7.98	40.23 (74.5%)	5.55	37.35(69.1%)	8.46
PLCT *P*	18.29 (33.8%)	8.10	34.46 (63.8%)	9.80	20.09(37.2%)	8.44
Total	41.8 (38.7%)	7.38	74.9 (69.2%)	8.16	57.44 (53.2)	24.4

Table 4 *(Descriptive statistics of the 1st and 4th learners' performance on lexical collocations.)*

Note: R=receptive knowledge, P=productive knowledge

Moreover, some other examples of collocational mistakes that were probably influenced (though not usually exclusively caused) by the learners' vocabularies are presented in Table 5. One of the factors assumed to affect learners' performance on certain collocations is their vocabulary knowledge, especially vocabulary sizes. That is, as, in other aspects and components of language, learners' vocabularies influence the way they comprehend the collocational relations between words and expressions and the way they collocate words in L2. Due to the limited vocabularies of the participants, they tended to have other rambling words in their minds which aren't typical collocations. Although the examples are just a few cases of vocabularies that may have played a role, they can support the fact of some vocabulary knowledge impact. Hence, the crucial role that vocabulary sizes play in selecting or producing English collocations should not be ignored.

If the role of participants' vocabularies in choosing and producing collocations is probed meticulously, we would observe some possible vocabulary's influence on choosing and making the combinations. Because in a study such as the present one, there was no way of guaranteeing whether first language influences occurred, similarity or approximation was regarded as indications that vocabularies influence was likely. For instance, if for item 7 of our verb + noun collocation in Productive Collocations Test, 'The system will have more than 300 public ac___ Internet points this year', account, accelerate or accept was chosen by some participants. This may be because Thai EFL university learners have smaller vocabulary sizes and cannot produce correct lexical collocations according to the context.

Lexical collocations pattern	**Learner-made collocations**	**Target collocations**
verb + noun	*account* internet	*access* Internet
adjective + noun	*humanity* moments	*humorous* moments
noun + verb	The expert *advanced*…	The expert *advocate*…
noun + noun	transition *percentage*	transition *period*
adverb + adjective	*deadly* hurt	deeply hurt
verb + adverb	behave *different*	behave *differently*

Table 5 *(Some examples of lexical collocation errors in Thai university learners.)*

Table 6 presents a comparison between Thai university learners' receptive and productive knowledge of lexical collocations for the first-year and fourth-year university learners. As Table 6 shows, the mean scores of receptive and productive lexical collocations in the first-year university learners on the Receptive Lexical Collocations Test and the Productive Lexical Collocations Test performance were significantly different ($t = 4.81$, $p < 0.05$, Sig. 2-tailed = .000). Furthermore, there was a significant difference between receptive and productive knowledge of the fourth-year university learners on the Receptive Lexical Collocations Test and Productive Lexical Collocations Test ($t = 5.55$, $p < 0.005$, Sig. 2-two-tailed = .000). Additionally, the results showed that the first-year learners who gained 43.5% (SD = 7.98) in receptive knowledge of lexical collocations and 33.8% (SD = 8.10) in productive knowledge, while the fourth-year learners performed 74.5% (SD = 5.55) in receptive knowledge and 63.8% (SD = 9.80) in productive knowledge. The results revealed that the fourth-year learners performed significantly better than the first-year learners in each test, both receptively and productively.

Lexical collocations	**Mean**	**SD**	***t***	**Sig.**

Receptive knowledge	37.35 (69.1%)	8.46		
Productive knowledge	20.09 (37.2%)	8.44	23.56	.000

Table 6 *(Overall performance on receptive and productive lexical collocations (n=242))*

A summary of overall receptive and productive knowledge of lexical collocations for Thai university learners is presented in Figure 2. Overall, the results showed that participants in both the first year and the fourth year have higher performance on the receptive knowledge of lexical collocations. Specifically, the first-year participants achieved a higher score on the Receptive Lexical collocations Test (43.5%), a measure of receptive knowledge of lexical collocations, than on the Productive Lexical Collocations Test (33.8%), a measure of productive knowledge of lexical collocations. Similarly, the fourth-year university learners performed significantly better on the Receptive Lexical collocations Test (74.5%) than on the Productive Lexical collocations Test (63.8%). Also, overall Thai university learners performed better on the Receptive Lexical collocations Test (69.1%) than on the Productive Lexical collocations Test (37.2%). This indicates that receptive knowledge of lexical collocations is more easily acquired than productive knowledge of lexical collocations. Moreover, the results reveal that fourth-year participants show more advanced collocational competence than first-year students in all tests. It found that the learners' lexical collocations grew significantly as they moved from one education level to another.

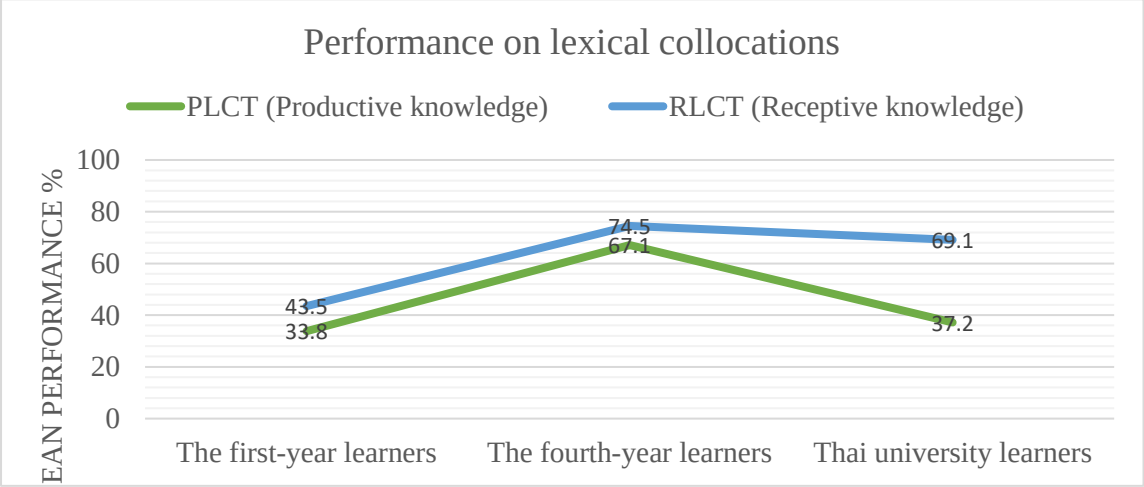

Figure 2 *(A summary of lexical collocations performance in Thai university learners.)*

Relationship between vocabulary sizes and lexical collocations

Table 7 shows that the correlations analysis revealed that the receptive and productive knowledge of vocabulary sizes were positively correlated, as were receptive and productive knowledge of lexical collocations. This indicates that an increase in the receptive knowledge of vocabulary sizes is associated with increased productive knowledge of vocabulary sizes. Similarly, participants who have higher performance on the receptive knowledge of lexical collocations tend to have higher performance on the productive knowledge of lexical collocations, suggesting that receptive knowledge can promote productive vocabulary knowledge. Also, the correlational analysis revealed positive relationships between vocabulary sizes and lexical collocations. This shows that university learners' vocabulary sizes develop following their receptive and productive knowledge of lexical collocations. Participants with large vocabulary sizes tend to have a better mastery of lexical collocations, both receptively and productively.

Types of tests	Tests		NVLT	WAT	RLCT	PLCT
Vocabulary sizes	NVLT	R	1			
	WAT	P	.263**	1		
Lexical	RLCT	R	.258**	.178**	1	
collocations	PLCT	P	.162*	.164*	.175**	1

Table 7 *(Correlation between different types of vocabulary sizes and lexical collocations (Pearson correlation, r))*

Note: R=receptive knowledge, P=productive knowledge

** Correlation is significant at 0.05 level (2-tailed)*

*** Correlation is significant at 0.01 level (2-tailed)*

Table 8 shows that the overall linear relationship between vocabulary sizes and lexical collocations is statistically significant (r = .256). This indicates that an increase in the knowledge of (and number) lexical collocations is related to an increase in knowledge of vocabulary sizes. This supports the claim that vocabulary sizes and lexical collocations are inextricably related and also confirms that vocabulary learning occurs along a developmental continuum.

Types of vocabulary knowledge	vocabulary sizes	lexical collocations
vocabulary sizes	1	
lexical collocations	.256*	1

Table 8 *(Correlation between vocabulary sizes and lexical collocations (Pearson correlation, r))*

** Correlation is significant at 0.05 level (2-tailed)*

DISCUSSION

In response to Research Question 1, the analysis of the findings indicated receptive knowledge of vocabulary sizes was better than productive knowledge among the Thai university participants. In addition, the fourth-year learners achieved higher performance than the first-year learners on both receptive and productive tests of vocabulary sizes. The explanation of the current findings could feasibly be due to the cognitive processing demand. Precisely, productive measures may place a heavier burden on participants than receptive tasks, and productive measures require a higher degree of mastery than receptive measures. This is because the ability to recognize a word was possibly easier acquired than the ability to recall and produce a word (e.g., Laufer & Goldstein, 2004; Nontasee & Sukying, 2021a, 2021b; Sukying, 2017, 2018a; 2018b).

Consistent with previous studies (Alharbi, 2021; Al-Masrai & Milton, 2012; Muhamod et al., 2019; Nontasee & Sukying, 2021a, 2021b; Sukying, 2018a, 2018b), the current findings indicated that receptive knowledge contributes to productive knowledge. Receptive knowledge is often acquired at the primary stage, and then productive knowledge is built on receptive knowledge. Early in learning, the students' word knowledge may not be sufficient to promote their ability to use a word. The ability to recognize words may be easier to acquire than the ability to recall and generate them.

As such, the current findings argue for a gradual or incremental increase in vocabulary sizes in Thai university learners, which is consistent with earlier findings (Gallego & Llach, 2009; Henriksen, 1999; Nontasee & Sukying, 2021a, 2021b; Sukying, 2017; 2018a, 2018b). Fourth-year learners may perform better than first-year learners

on the vocabulary size tests because they have more exposure to learning vocabulary knowledge, which is also in line with previous claims that understanding the aspects of vocabulary knowledge requires sufficient language exposure (e.g., Hayashi & Murphy, 2011; Nontasee & Sukying, 2021a, 2021b).

To address Research Question 2, the results indicated that Thai university learners were better at receptive knowledge of lexical collocations than productive knowledge of lexical collocations. Specifically, the fourth-year university learners showed higher average performance on receptive knowledge and productive knowledge tests than the first-year university participants. The findings indicate that, like vocabulary knowledge, collocational knowledge is incremental and complex. These findings indicate that Thai EFL learners may not know enough about English collocations and may have inadequate exposure to collocations, as collocations are not the main focus of the Thai EFL context. Therefore, learners may not understand the meaning of English collocations in each context and cannot use them appropriately. The results of the current study are consistent with previous studies that second language learners lack collocational knowledge (e.g., Begagić, 2014; Dokchandra, 2019; Jeensuk & Sukying, 2021a 2021b; Shehata, 2008; Zhang & Sukying, 2021).

It is also feasible that receptive knowledge of lexical collocations represents an earlier stage in collocation processing in which such knowledge is not fully developed for productive use and reveals a significant difference in lexical collocation knowledge between first-year and fourth-year Thai university learners. This is perhaps because the fourth-year learners have more experience or exposure to learning English collocations inside and outside the classroom (Jeensuk & Sukying, 2021a, 2021b; Zhang & Sukying, 2021) and that the learner's lexical collocation knowledge gains throughout the academic years. Overall, more extensive exposure to English vocabulary learning seems to enhance the development of collocational knowledge (Zhang & Sukying, 2021).

The correlational analysis of the findings revealed a significantly positive relationship between different aspects of vocabulary knowledge, both receptively and productively. These findings are congruent with the literature that receptive and productive vocabulary knowledge are positively correlated and that this correlation facilitates vocabulary acquisition in a Thai EFL context (Chorbwhan, 2016; Jeensuk & Sukying, 2021b; Nontasee & Sukying, 2021a, 2021b; Sukying, 2017; Zhang & Sukying, 2021). That is to say, receptive vocabulary sizes grow faster than productive vocabulary sizes, which is consistent with vocabulary learning as a continuous incremental process (Nation, 2013; Nontasee & Sukying, 2021a, 2021b).

A moderate positive correlation was also detected between learners' reception of lexical collocations and productive performance. Previous studies have also reported a positive relationship between receptive knowledge and productive knowledge of English collocations (Detdamrongpreecha, 2014; Begagić, 2014; Chorbwhan & McLellan, 2016). That is, when receptive knowledge increases, productive knowledge also increases. This suggests that when learners can identify the meaning of English collocations, they are more likely to produce collocations appropriately.

Furthermore, it was found that Thai university learners' receptive and productive knowledge of lexical collocations significantly correlated with their vocabulary sizes. This indicates that the participants' vocabulary sizes develop following their collocational knowledge. In this regard, the link between vocabulary and collocation knowledge argues that the larger the learners' vocabulary, the more English collocations they can accurately identify and produce (e.g., Bergström, 2008; Kadlekova, 2014). It indicates that learners with a larger size of vocabulary tend to have higher knowledge of collocations than their counterparts.

CONCLUSION

The current study investigates Thai EFL university learners' receptive and productive knowledge of vocabulary sizes, lexical collocations, and the relationship between them. First, the current findings indicated the varying degrees of learning. Specifically, receptive collocational knowledge, like vocabulary knowledge, advances productive collocational knowledge. Likewise, a sentence completion task can deepen understanding of collocations. That is, receptive knowledge of collocations is easier to be acquired than productive knowledge. In

short, productive use of an English collocation may not be founded unless receptive collocational knowledge is fully learned. The current results also highlighted the link between vocabulary sizes and lexical collocations, both receptively and productively. The positive relationship between collocational knowledge and vocabulary sizes indicates that the increase in Thai university learners' receptive and productive collocational knowledge fosters their vocabulary sizes, which, in turn, enhances their collocational knowledge.

Several implications can be drawn from these findings. First, the current study provides resources to assess lexical collocational knowledge for practitioners, test developers, and researchers. The lexical collocational knowledge tests were developed for various types, including verb + noun, adjective + noun, verb + adverb, noun + noun, noun + verb, and adverb + adjective collocations. Given that the battery was shown to be reliable and valid, practitioners, test developers, and researchers should examine how to expand these resources to other research contexts and applications.

Depending on the findings, it should be recognized that complete vocabulary knowledge is not just simply the pronunciation, spelling, and superficial meanings of a word but also includes other aspects of vocabulary knowledge, such as affixes and derived affixes within the word, its written and verbal forms, associative meaning, and so on. Also, collocations should be treated differently according to the specifications of each category and task. Given that students are easily affected by vocabularies in terms of collocations, teachers should make use of this trend in design-related exercises helping students use collocations in the right way.

ACKNOWLEDGEMENTS

We are grateful to the Faculty of Humanities and Social Sciences, Mahasarakham University, for the research. We are also thankful to the participants in this study.

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