HACETTEPE ÜNİVERSİTESİ
EĞİTİM BİLİMLERİ ENSTİTÜSÜ

Department of Foreign Language Education
English Language Teaching Program

FACTORS AFFECTING RECEPTIVE AND PRODUCTIVE KNOWLEDGE OF COLLOCATIONS OF TERTIARY LEVEL LEARNERS OF ENGLISH IN TURKEY

Zeynep ÖZDEM ERTÜRK

Ph.D. Dissertation

Ankara, (2021)

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TÜRKİYE'DE ÜNİVERSİTE DÜZEYİNDE İNGİLİZCE ÖĞRENEN ÖĞRENCİLERİN ALGISAL VE ÜRETİMSEL EŞDİZİM BİLGİSİNE ETKİ EDEN FAKTÖRLER

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Abstract

Being an essential component of vocabulary knowledge and contributing to native-like fluency, collocational knowledge deserves to be explored. This study explores the factors that affect receptive and productive collocational knowledge of tertiary level EFL learners in Turkey. For gathering data, two vocabulary knowledge tests (i.e., receptive and productive) and two collocational knowledge tests (i.e., receptive and productive) are employed. In addition, a questionnaire about language exposure and use activities is utilized. First, the correlations between single-word knowledge and collocational knowledge, at both receptive and productive levels are investigated. Second, the effects of five factors (congruency with Turkish, collocational frequency, node word frequency, type of collocation and mutual information scores) on collocational knowledge are examined. Third, the effects of participants' personal language exposure/use and their individual differences (age, gender and year of formal English instruction) on collocational knowledge are inspected. The findings show that vocabulary and collocational knowledge are correlated at both knowledge levels. The participants tend to have higher knowledge of both single-words and collocations at the first 1,000 level than the second and third 1,000 levels. Among the five factors that affect collocational knowledge, congruency with L1 is found to be the best predictor of collocational knowledge. The investigation of questionnaire results suggests that learners tend to have higher knowledge of collocations when they are exposed to more amounts of language input. Overall, the findings suggest that collocational knowledge is affected by and correlated with different factors and the awareness of these factors offers some implications and suggestions.

Keywords: vocabulary knowledge, collocational knowledge, receptive and productive knowledge, congruency, types of collocations, node word frequency, collocational frequency, corpus.

Öz

Kelime bilgisinin önemli bir öğesi olan ve konuşma akıcılığına katkısı olan eşdizim bilgisi araştırma gerektiren bir konudur. Bu çalışma, Türkiye'de üniversite düzeyinde İngilizce'yi yabancı dil olarak öğrenen öğrencilerin algısal ve üretimsel eşdizim bilgilerine etki eden faktörleri araştırmaktadır. Araştırma verileri, algısal ve üretimsel düzeyde iki kelime bilgisi testi ve yine aynı düzeylerde iki eşdizim bilgisi testi uygulanarak toplanmıştır. Bunlara ek olarak, katılımcıların ders dışında dil kullanımı ve dile maruz kalmalarını sağlayan aktiviteler de bir anket vasıtasıyla araştırılmıştır. Öncelikle her iki bilgi düzeyinde de kelime ve eşdizim bilgileri arasındaki ilişkiler araştırılmıştır. Daha sonra, eşdizimin Tükçe'de karşılığı olma durumu, eşdizimin sıklığı, eşdizimdeki isimlerin sıklığı, eşdizim çeşiti ve eşdizimin ne kadar güçlü olduğunu gösteren değerin eşdizim bilgisine etkisi araştırılmıştır. Ek olarak, katılımcıların ders dışı dil kullanım faaliyetlerinin ve yaş, cinsiyet ve kaç yıldır İngilizce öğrendiklerinin eşdizim bilgileri üzerindeki etkisi araştırılmıştır. Bulgular kelime ve eşdizim bilgisi arasında bir korelasyon olduğunu ve İngilizce'de sıklıkla kullanılan kelimelerin ve eşdizimlerin daha çok bilindiğini göstermektedir. Etkisi araştırılan beş faktörden, eşdizimin Türkçe'de karşılığının olması durumunun eşdizim bilgisine en çok etkisi olan faktör olduğu tespit edilmiştir. Anket sonuçlarına göre de ders dışında İngilizce'ye maruz kalma ve dili kullanma faaliyetleri arttıkça eşdizim bilgisinin arttığı saptanmıştır. Sonuç olarak, eşdizim bilgisinin birçok faktörden etkilendiği ve birçok faktörle arasında korelasyon olduğu bulunmuş ve bu faktörler doğrultusunda öneriler sunulmuştur.

Anahtar sözcükler: kelime bilgisi, eşdizim bilgisi, algısal ve üretimsel bilgi, eşdizim örtüşmesi, eşdizim çeşidi, kelime sıklığı, eşdizim sıklığı, derlem.

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Symbols and Abbreviations

COCA: The Corpus of Contemporary American English

EFL: English as a Foreign Language

ELT: English Language Teaching

L2: Second/Foreign language

PVLT: Productive Vocabulary Levels Test

SLA: Second language acquisition

UWL: University Word List

VLT: Vocabulary Levels Test

Chapter 1
Introduction

This chapter presents the background of the study and offers the rationale and empirical reasons for conducting the study. It is done by stating the problem and aim and significance of the study in line with the findings of previous studies in the field. It also outlines the current study by introducing the research questions aimed to be answered in the scope of the study. Additionally, it includes the limitations and assumptions of the study. Finally, it offers brief descriptions of the terms and their abbreviations in order to make them clear in the scope of the study.

Statement of the Problem

There has been an increasing interest in second language vocabulary research over the last two decades (Hirsh, 2012; Ketabi & Shahraki, 2011; Pellicer-Sánchez, 2019). When the history of language teaching is investigated, it is seen that in some language teaching methods, like Audio-Lingual and Grammar Translation methods, the primary aim of teaching and learning a foreign language was just “mastery of structures” and development of vocabulary was seen as “some kind of auxiliary activity” (Nation, 2001, p. xiii). As minor importance was given to vocabulary teaching and learning, vocabulary items were expected to be learnt in decontextualized word lists and the effect of vocabulary teaching and learning did not gain attention by second language acquisition researchers. However, as highlighted by Wilkins (1972) if people do not know the rules of a language, they can express themselves in a limited way. Nevertheless, they cannot communicate without knowing the words of a language. As children start to learn words first and then grammatical rules while acquiring their mother tongues, L2 learners also start to learn words before they learn the rules of the language. Words are seen as the “basic building blocks of the language from which larger units like sentences, paragraphs and whole texts are formed” (Read, 2000, p.1). They are even seen as the “core or heart of language” (Lewis, 1993, p. 89). With the help of these quotations, it is clearly seen that vocabulary is a crucial part of becoming proficient in a second/foreign language (Schmitt, 2010).

After the realization of the importance of vocabulary in the process of acquisition of languages, many studies have been conducted to gauge the number of words known by both native speakers and L2 learners. The studies that show the vocabulary size of native speakers are used for estimating the limits of vocabulary size for learners who want to achieve a native-like proficiency. According to the estimation of Goulden et al. (1990) an average college-educated native English speaker knows 13,200 - 20,700 base words, on average 17,200 base words. Likewise, the study conducted by Zechmeister et al. (1995) reveals similar number of words known by the same group of speakers. Based on word families, their estimation is about 17,000. Furthermore, they compare this number with the number of words known by university freshmen and claim that college graduates know on average 5,000 more word-families than them. On the other hand, according to Nation and Waring's (1997) estimation, college graduates know 20,000 word-families receptively. They predict that these people learn approximately 1,000 more word-families every year. Although the vocabulary size of educated native speakers can change according to the amount and manner they use the language, the average number of word-families they know is between 16,000 and 20,000 (Schmitt, 2010).

Undoubtedly, non-native language learners are not expected to have the same amount of vocabulary size with the native speakers as the quality and quantity of input L1 and L2 learners receive is not equal. Furthermore, a distinction should be made between being "communicatively competent" in a genre and being "native-like" in a genre (Kuiper, 2009). The distinction should be genre specific because none of the native speakers can have a native-like competence and communicative performance in all genres (Schmitt, 2010). It seems that it is not impossible to have communicative competence in some genres for non-native learners. In line with this genre-specific distinction, some researchers mention threshold levels for non-native speakers in terms of different skills. For minimal comprehension of spoken discourse, 2,000 most frequent word families (Nation, 2001) or 3,000 word families (Laufer, 1998) should be known. The most frequent 2,000 or 3,000 words are considered to be known as core vocabulary knowledge (Nation & Waring, 1997; Thornbury, 2002). For reading comprehension, similar threshold levels are also suggested by different researchers. For making reading

enjoyable, at least 5,000 word families are suggested to be known (Hirsh & Nation, 1992). Moreover, for managing to understand texts that are not simplified, it is suggested to know a minimum of 3,000 most frequent word-families. This number corresponds to 5,000 lexical items (Laufer, 1992). In a more recent study, it is estimated that having the receptive knowledge of 8-9,000 word-families is needed for not having the handicap of unknown vocabulary while reading authentic texts in English (Nation, 2006). In contrast, Thornbury (2002) states that familiarity is important and the receptive knowledge of 2,000 most frequent words is sufficient enough for providing the readers with familiarity of nine out of ten words in most texts.

It is seen that when the vocabulary size is a matter of discussion, frequency has a crucial role. It is not only important in the assessment of vocabulary size, but also in the design of materials that are used in and out of the classroom. As it is not possible to teach all the vocabulary items of a language in the classroom because of limited instruction time, cost-benefit analyses should be made for selecting the words to teach (Nation, 2011). In other words, teachers and the material writers have to decide whether it is worth teaching certain vocabulary items in class or not. For practical purposes, high-frequency vocabulary items are usually selected for inclusion in classroom instruction as these items are used frequently by L1 speakers of English in their daily lives. Hence, it seems necessary for L2 English learners to learn them.

Although it is important to know frequently used single vocabulary items in a language, it is not enough for being proficient and fluent language users. The number of words with at least a minimum knowledge of meaning or in other words, vocabulary size, indicates breadth of vocabulary (Nation, 2001). Notwithstanding, for being capable of using vocabulary items efficiently in a spoken or written context, language users or learners need to have more than the minimum knowledge of meaning. They should have the knowledge of various aspects like meaning, pronunciation, spelling, register and frequency, in addition to morphological, syntactic and collocational features (Qian, 1999). The knowledge of these properties is referred as the depth of vocabulary.

One of the constituents of depth aspect and the main interest of this study is collocations. Although there have been different approaches to collocations and it

has been defined differently by those approaches, it is defined as “combinations of words which occur naturally with greater than random frequency” (Lewis, 1997, p. 44). Collocations have a significant role in language proficiency of both L1 speakers and L2 learners. If the speakers of the language do not know with which words to use a word, which means the collocates of a word, they cannot produce sentences in spoken and written contexts. Appropriate use of collocations is widely seen as a vital component of language proficiency (e.g. Cowie, 1998; Ellis, 2001; Ellis & Schmidt, 1997; Hill, 2000; McCarthy, 1984; Sinclair, 1991; Wray, 2002). Knowledge of collocations has an effect on different skills. It affects oral production, reading speed and listening comprehension (Brown, 1974). Moreover, it also improves complexity in not only in spoken, but also in written contexts (Wu, 2010). Especially, when L2 learners want to express something complex, the knowledge of collocations helps them give the central meaning of what they want to say by using less but more effective words. The more they know the relationship between the words, the better they can express themselves with less effort. In addition to complexity, the knowledge of collocations helps to improve accuracy and fluency. When L2 learners acquire considerable amounts of collocations, they improve their successful communication skills by comprehending and producing the language accurately (Wray, 2002). L1 users know a vast amount of prefabricated chunks and those chunks help them to process and produce language with greater speed (Hill, 2000). In listening and reading, those chunks are recognized as units, they are not processed word-by-word. Having ready-made chunks in their mind also helps them to be fluent while speaking and writing as well. They do not think about the collocates of a word while producing the language so they save time and effort. As learners of the language also aim to be accurate and fluent in English, it seems essential for them to have the knowledge of collocations.

Collocations are considered as an important part of vocabulary knowledge and as stated in the previous section, knowledge of collocations is thought to be a prerequisite of native-like proficiency and communicative competence. However, because of some reasons, they are found to be problematic for language learners, especially for foreign language learners. The first problematic point of them for L2 learners is the number of collocations. There are so many collocations in a

language and that creates a problem both for L1 speakers and L2 learners to learn all the collocations of a language. As stated in the previous section, the estimated amount of word-families known by educated L1 speakers of English is approximately 20,000 (see for instance, Goulden et al., 1990, Nation & Waring, 1997, Schmitt, 2010). However, thanks to prefabricated multi-word chunks, the size of native speakers' mental lexicon is assumed to be larger (Lewis, 1997). It indicates that a considerable amount of multi-word units are part of everyday language use. It means a tough task for a non-native language learner to be a fluent language user by having sufficient knowledge of collocations. The second reason of why learning collocations is difficult for non-native learners is the arbitrary nature of collocations. As they have been used for years, they are conventionalized (Wu, 2010). However, there are not any rules to be applied for understanding why some words are or are not used with some other words. Farrokh (2012, p. 57), for example, states that the collocations like "*good chance, high probability, and strong likelihood*" are considered acceptable in some contexts while the collocations like "*strong chance, good probability, and high likelihood"*, are considered unacceptable. Compared to native speakers, non-native language learners, especially EFL learners, do not have the opportunity of being exposed to natural and constant language input for analyzing and grasping the knowledge of collocations. Their primary source of input, course books, do not include many features of natural language (Lewis, 1997). As a result, it becomes more challenging for them to learn collocations.

Another challenging issue about collocations for language learners is the effect of the mother tongue of the learners. When learners do not know the collocates of the words they want to use in L2, they tend to employ their L1 collocational knowledge. With the help of their L1 knowledge, they combine two words together for making L2 collocations. Wu (2010, p. 18) claims that learners tend to translate word for word, "think of words that are definitional equivalents in the L1 and the L2". As a result, they produce awkward combinations due to the lack of knowledge of collocations (El-Dakhs, 2015). From my own experience as an EFL instructor at a university for about fifteen years, I have also witnessed that learners do not judge whether the collocations they use are acceptable in English or not. They construct a sentence in their mind in Turkish and they try to find the

English equivalents of words one by one. If they find two words that have the same meaning, they randomly choose one of them and use it. They even do not want to understand that one of those words is acceptable in a specific context, but not the other. For example, they want to say *do homework* and they think it in Turkish first as *ödev yapmak.* They know two words which mean *yapmak* in English, *do* and *make*. They choose *make* randomly to use with *homework*. When I explain that it is used with *do*, they do not want to understand why *homework* is used with *do*, but not with *make*. If the teachers do not try to raise awareness of collocations, they even do not realize the fact that they have to learn the collocations for accuracy and fluency in English and they go on using their mother tongue as a reference for selecting collocations in English. In addition to their mother tongue's negative impact on production of collocations, their way of processing the language does not seem to be beneficial for realizing collocations. They just focus on learning single-word items and do not wonder the collocates of them. Although, Schmitt (2008) argues that collocations can be learnt incidentally because of their contextualized nature, Wray (2002) claims that it is not the case for adult learners. She thinks that as a result of their cognitive maturity and learning contexts, adult learners concentrate on learning single-words, which hinders the knowledge of collocations.

As well as the problems related to the challenges of learning collocations, there are also some problematic issues related to testing collocational knowledge. L2 learners' knowledge of collocations has been investigated on both receptive (e.g. Gyllstad, 2007, 2009; Keshavarz & Salimi, 2007; Nizonkiza, 2015; Nguyen & Webb, 2017) and productive levels (El-Dakhs, 2015; Fernández & Schmitt, 2015; Nizonkiza, 2012). In these studies, collocational knowledge has been assessed by conducting various tests by adopting different approaches to collocations. However, which is the best way to test collocations is not clear. Since they are complex in nature, there are different types of collocations and each study focus on collocations from a different perspective; it seems really hard to assess the knowledge of collocations. There is not a standardized way of testing them, because there is not a consensus about characterizing this knowledge (Daller et al., 2007). Not only the way it is tested, but also the number of items that are found to represent different types of collocations is unstandardized. For instance, in

some studies 15 (e.g. El-Dakhs, 2015), 20 (e.g. Begagić, 2014) or 40 (e.g. Nizonkiza; 2015) collocations were found to be enough for assessing the knowledge of one type of collocations while in others 30 (e.g. Nguyen & Webb, 2017) for one type of collocation at each frequency level or 50 (e.g. Fernández & Schmitt, 2015) collocations of various kinds were found to be inclusive enough. However, there is not a standardized number of collocations that should be covered in a test of collocations.

Another contradictory issue about collocations is the relation between collocational competence and vocabulary knowledge development. Some researchers (Gyllstad, 2009; Nguyen & Webb, 2017; Mutlu & Kaşlıoğlu, 2016) found a correlation between learners' receptive vocabulary and collocational knowledge. Nonetheless, Bahns and Eldaw (1993) claimed that these two aspects of vocabulary knowledge do not improve concurrently and as a result collocations pose a problem even for advanced level students. However, while investigating the relation of single-words and collocations, factors like students' proficiency levels and lexical frequency should also be taken into consideration as they can have an effect on the results. For example, Nguyen and Webb (2017) state that it is possible for students at beginner levels to learn an acceptable amount of single vocabulary items intentionally, while learning a small amount of collocations. In that case, the correlation between the knowledge of these two units might be low. As a result, the assessment of the relationship between the collocational and vocabulary knowledge and the interpretation of results should be done with caution.

As well as those factors, the effect of mutual information (MI) score on the knowledge of collocations has some contradictory results. "MI is a measure of the strength of association between two words" (Clear 1993, 279). It indicates that the two words are not combined by chance but they have a strong relationship to be used together. In some studies, MI score was not found to correlate with the learner knowledge (e.g. Ellis et al., 2008; Durrant, 2014) while in others, MI and test scores correlated negatively (e.g. Fernández & Schmitt, 2015; Nguyen & Webb, 2017). The findings of the studies related to MI score are contradictory. Although this score is claimed to show how strong the connection between the

words of a collocation, the results of studies that have investigated its effect on collocational knowledge are inconclusive.

In conclusion, all the matters discussed above have been problematic in the studies conducted on collocations and therefore deserve detailed investigation. In order to shed light on the factors that affect collocational competence and on the complexity of this competence, this study is designed.

Aim and Significance of the Study

Based on the discussion above, the study aims at assessing the recognition and recall of verb-noun and adjective-noun collocations at the first three 1,000 word frequency levels and investigating the relationship between the receptive and productive knowledge of single-word items and collocations. Furthermore, it also examines the effects of five intralexical (node word frequency, collocational frequency, MI score, and type of collocation) and interlexical (congruency with L1) factors and aims to find out which factors best predict the receptive and productive collocational knowledge. Moreover, the effects of individual differences in terms of the effect of age, gender, year of English study and language use outside the class are also investigated by selecting the participants from the preparatory, second and fourth year students of a faculty at a state university in Turkey.

To the knowledge of the researcher, this is the first study to investigate the knowledge of both single and multi-word items in a detailed way, because both kinds of knowledge are tested; not only at receptive but also at productive level. Also, it examines both single and multi-word knowledge at three 1,000 levels receptively and productively. As high frequency words in English are proposed to be the most frequent 3,000 word-families (Schmitt & Schmitt, 2014), the single and multi-word items in the receptive and productive tests are selected from the first three 1,000 word frequency levels. Although the earlier Vocabulary Levels Test (VLT) (Nation, 1983; Schmitt et al., 2001) versions start with 2,000 frequency level, the updated VLT includes words from 1,000 level as well. Using the updated version of the test helps to assess the knowledge of single-words and collocations at a higher frequency level. By examining the relationship between the equally frequent single-word and collocational knowledge, the degree of their connection or dependence is also aimed to be found out.

In a similar study, Nguyen and Webb (2017) also investigated the correlation of receptively known single-words and collocations, and the predicting effect of intralexical and interlexical features on collocational knowledge. However, they did not focus on the productive knowledge of these two types of items or participants' individual differences and this study will fill this gap in literature.

As a language instructor, I observed that my students have problems in knowledge of collocations and they usually tend to find the collocate of a word by referring to their mother tongue. I wondered the factors that affect this problematic issue. With the help of this study, I believe that I have found out the possible reasons of this problematic issue and I will utilize the findings to find the best way to support my students in overcoming this problem.

In order to shed light to this problematic issue of vocabulary learning, the following objectives are formulated:

a. To assess the receptive and productive vocabulary knowledge of preparatory, second year and fourth year students at 1,000, 2,000 and 3,000 frequency levels.

b. To compare receptive and productive vocabulary knowledge of participants based on frequency levels.

c. To compare preparatory, second year and fourth year students' receptive and productive vocabulary knowledge.

d. To assess recognition and recall of their verb-noun and adjective-noun collocational knowledge and evaluate the effects of year at university and node word frequency on their knowledge.

e. To investigate the correlation between receptive knowledge of single-words and the collocations and the correlation between productive knowledge of single-words and the collocations.

f. To compare preparatory, second year and fourth year students in terms of their receptive and productive knowledge of verb-noun and adjective-noun collocations.

g. To explore the factors – node word frequency, collocational frequency, type of collocation, MI score, congruency with L1 – and

find out which of them best predict the receptive and productive knowledge of collocations.

h. To investigate whether there is a relationship between age, gender, year of English study and personal language use outside the classroom on learners' receptive and productive knowledge of collocations.

Research Questions

Following the aims and objectives, the questions formulated are as under:

1. What is the receptive vocabulary knowledge of Turkish EFL learners at the 1,000, 2,000 and 3,000 word frequency levels?

   a. Do the frequency levels of words affect Turkish EFL learners' receptive vocabulary knowledge?

   b. Does the year of study at university affect the receptive vocabulary knowledge of Turkish EFL learners?

2. What is the productive vocabulary knowledge of Turkish EFL learners at the 1,000, 2,000 and 3,000 word frequency levels?

   a. Do the frequency levels of words affect Turkish EFL learners' productive vocabulary knowledge?

   b. Does the year of study at university affect the productive vocabulary knowledge of Turkish EFL learners?

3. What is Turkish EFL learners' receptive knowledge of verb-noun and adjective-noun collocations composed of words at the 1,000, 2,000 and 3,000 word frequency levels?

   a. Do the frequency levels of words affect Turkish EFL learners' receptive verb-noun collocational knowledge?

   b. Do the frequency levels of words affect Turkish EFL learners' receptive adjective-noun collocational knowledge?

   c. Does the year of study at university affect their receptive knowledge of verb-noun and adjective-noun collocations?

4. What is Turkish EFL learners' productive knowledge of verb-noun and adjective-noun collocations composed of words at the 1,000, 2,000 and 3,000 word frequency levels?

   a. Do the frequency levels of words affect Turkish EFL learners' productive verb-noun collocational knowledge?

   b. a. Do the frequency levels of words affect Turkish EFL learners' productive adjective-noun collocational knowledge?

   c. Does the year of study at university affect their productive knowledge of verb-noun and adjective-noun collocations?

5. Is there a significant difference between receptive and productive collocational knowledge of preparatory, second and fourth year students?

6. Is there a correlation between;

   a. the receptive vocabulary knowledge of Turkish EFL learners and their receptive knowledge of verb-noun and adjective-noun collocations?

   b. the productive vocabulary knowledge of Turkish EFL learners and their productive knowledge of verb-noun and adjective-noun collocations?

7. Which of the interlexical (congruency) and intralexical (node word frequency, collocational frequency, type of collocation, MI score) factors best predicts receptive and productive collocational knowledge?

8. How do individual differences (age and gender) and the amount of L2 instruction relate to receptive and productive knowledge of collocations?

9. Is there a relationship between the degree of personal language use and receptive and productive knowledge of collocations?

Assumptions

Taking all the procedure into consideration, the present study has the following assumptions.

1. It is assumed that the sample of participants in the study represent the whole population.
2. All of the participants, including the ones in the pilot study, are informed about the aims of the study and each step to be followed to complete the process of the study. In that line, it is assumed that they take part in the study as participants willingly and voluntarily.
3. It is presumed that the participants in the study understand and answer all the test items honestly in order to show their real vocabulary and collocational knowledge levels.
4. It is also assumed that the items in the questionnaire are responded sincerely and honestly by the participants.
5. The tests developed and employed in the data collection process are assumed to be appropriate for the levels of the participants and for the aims of the study. Taking the opinions of the experts, conducting a pilot study and testing the results through statistical analyses, the tests employed in the study are accepted as valid and reliable.
6. The findings of the study are assumed to represent the real vocabulary and collocational knowledge levels of the participants.

Based on these assumptions, the present study was carried out. The results should be evaluated by taking these assumptions into consideration.

Limitations

The present study is designed to investigate the factors that affect the receptive and productive knowledge of collocations in a detailed way to diminish limitations. However, as it is the case in most of the studies, it may still have some limitations. First, the collocations in the present study do not represent the whole collocations of English language because it only focuses on verb-noun and adjective-noun collocations. Other types of collocations are not included because

of the concerns of time and practicality. Also, only single-word items and collocations at the first three 1,000 word frequency levels are included in the present study. Single-words and collocations at lower frequency levels are not included and this may be a limitation for representing the whole collocations of the language.

The number of the questions in each test can be another limitation of the present study. There are 90 questions in each of the vocabulary knowledge tests and 120 questions in each of the collocational knowledge test. As the effects of different factors like congruency with L1 and different types of collocations are aimed to be investigated, the tests include high number of collocations. This may be a distraction for participants and they may find it overwhelming and demotivating.

The third limitation of the present study is that at the receptive level, it just tests the recognition of collocations at sentence level, but comprehension of collocations in listening or reading will not be tested. Also, at the productive level, it does not investigate the participants' performance in free production such as speaking and writing. It just focuses on recalled production. Participants' performance in speaking and writing would give further information about their knowledge of collocations in free production which shows their ability in natural language use.

The fourth limitation is that the current study just makes use of offline tests for investigating receptive and productive knowledge of collocations. However, in addition to offline tests, using online tests or the method of eye-tracking (e.g. Choi, 2016) would also give chance to investigate how learners process collocations. In addition, it would help investigating the relationship between the learning outcomes and different ways of processing collocations. However, because of technical and financial reasons, this study will not employ the method of eye-tracking.

The fifth limitation is related to the number of participants who volunteered to take part in the study. The number of them is limited to 176. The participation of higher number of students would help to have more evidence that reflects the collocational knowledge of the EFL learners at tertiary level. In addition, the study

just focuses on tertiary level students. However, it would be better to include learners at other stages of formal education to provide a wider perspective about the collocational knowledge of Turkish EFL students.

The sixth limitation of the present study is that it just describes the present level of collocational knowledge of the participants as it has a cross-sectional design. However, it would provide more information about different stages of collocational development if it were a longitudinal study. In addition, it is a quantitative study and the findings are evaluated based on statistical analyses. However, the credibility of the research would be increased if the quantitative findings were combined with qualitative results. For example, conducting interviews with the participants about their language use would provide detailed information about their outside-the-class language activities. Nonetheless, it was done by employing a questionnaire because of the concern of time. Definitions of the terms are presented in the next section in order to make the context of the study clear for the readers.

Definitions

The following key terms have been defined to facilitate the understanding of the terms within the context of this study:

Collocations: There are different perspectives for defining collocations and these are explained in the Literature Review part. However, in line with the aims of the current study and the methods employed in it collocations are defined as "strings of words that seem to have a certain mutual expectancy or a greater-than-chance likelihood that they will co-occur in any text" (Nattinger & DeCarrico, 1992, p. 21). In addition to frequency, compositionality is also taken as a criterion as pure idioms are aimed to be excluded in the present study.

Vocabulary Size: Vocabulary size is defined by Gyllstad, Vikaite and Schmitt (2015, p. 276) as "the number of words in a language for which an individual has at least a basic form-meaning mapping knowledge".

Receptive Knowledge: Receptive knowledge of single words and collocations is defined as the recognition of word meaning matching in the present study. For single words this knowledge is tested by matching meaning with the

word and for collocations filling the gaps in sentences with the appropriate collocate of the given node word by choosing from the given options.

Productive Knowledge: Productive knowledge of single words and collocations is defined as recalling the target single words and collocations. For both single words and collocations is knowledge is tested by filling the gaps in sentences with the appropriate word or collocate of the given node word.

Congruency: English collocations will be considered congruent if they have a word-to-word translation equivalent in Turkish. For instance, while *make an effort* is an incongruent collocation, *bad habit* is a congruent collocation for Turkish learners of English.

Mutual Information Score (MI Score): Mutual information is a statistical measure that shows the strength of the relationship between a word and its collocates (Macis & Schmitt, 2017). It shows the strength of the association between the two words.

Chapter 2
Literature Review

This chapter provides the theoretical underpinnings of this study and the relevant research. In the first part of this section, the importance of vocabulary knowledge in language learning is explained, which is followed by the history of vocabulary instruction in language teaching. After that, the word counting units are dealt with. Making the basic concepts related to vocabulary knowledge clear, research based vocabulary size amounts for native and non-native speakers are reported. This is followed by the tests used to measure receptive and productive vocabulary knowledge and studies in which receptive and productive vocabulary is measured. Next, the effects of factors, frequency and year of study at university, on receptive and productive vocabulary knowledge are discussed referring to previous studies. In the second part of this chapter, the notion of collocations are explained according to different approaches to them; namely, frequency-based and phraseological approaches. Following this, the notion of collocation that is followed in the current study is explained. Second, types of collocations are analyzed and the types of collocations under investigation in this study and the reasons of focusing specifically on them are justified. After that, importance of collocations in L2 learning, how to test them, previous studies conducted to test receptive and productive collocational knowledge are discussed. Finally, the effects of factors that are determined to investigate in the scope of this study are evaluated based on the previous studies.

Importance of Vocabulary Knowledge

Vocabulary is an essential part of a language as stated in the introduction part. As stated by Thornbury (2002) “Language emerges first as words, both historically and in terms of the way each of us learned our first and any subsequent languages” (p. 1). In the acquisition of a first language, children start to learn the words first and then they learn the grammatical rules of the language to combine words. Although the largest part of the vocabulary knowledge develops in the childhood period in first language acquisition process, it keeps developing in adult life as well (Read, 2000). People keep learning new words even in their native language throughout their lives. They learn new words or they learn new

meanings of the words they already know. Hence, even in a native language, there is not an end point where people are able to know all the words of the language. This life-long process of vocabulary knowledge development points to the importance of vocabulary knowledge.

For second/foreign language learners, vocabulary learning is assumed to be “a more conscious and demanding process” (Read, 2000, p. 1). Second/foreign language learners realize their lexical gaps when they cannot understand what they read or when they want to express what they have in their minds (Read, 2000). Learners emphasize the importance of vocabulary knowledge by stating that they need to learn more words in order to use the language fluently (Thornbury, 2002). Learners see vocabulary knowledge as a prerequisite for fluent language use and they place more emphasize on vocabulary acquisition than any other areas of language learning (Cortazzi & Jin, 1996). It should also be noted that vocabulary knowledge and language use complement each other. Vocabulary knowledge facilitates language use and in response, language use extends vocabulary knowledge (Nation, 2001). In the end, learners of a language need to have enough vocabulary knowledge to use the language fluently. In response, they improve their vocabulary knowledge. Although low levels of vocabulary knowledge restrict communication remarkably, people can still express themselves in a limited way (Folse, 2004). It shows that even for a limited way of communication, vocabulary knowledge is necessary. Just knowing the rules of a language does not lead to any kind of communication. For communicating comprehensibly, acquisition of adequate vocabulary is regarded as essential (Rivers & Nunan, 1991). When communication breakdowns are regarded, it is also realized that grammatical errors do not result in communication breakdowns, but that is not the case for lexical errors (Gass, 1988). Grammatical errors can be compensated, but if words are not used appropriately in a context, it leads to communication breakdowns.

In his model of speech production, Levelt (1989) lays emphasis on the importance of lexical knowledge by stating that the message in a person’s mind first activates the lexical items. Then, grammatical and phonological rules are triggered with the mediating effect of the lexical items. The message itself does not activate the syntactic rules; it is the lexical items what triggers those rules. It

indicates that people first try to find appropriate lexical items in order to convey the message to the person they communicate with. Then, they activate the rules specific to the lexical items and conduct their sentences accordingly. It should also be stated that knowledge of lexical items is not only essential for production, but also for comprehension. Comprehension also has a great importance in L2 acquisition (Gass & Selinker, 2008). As stated by Gass and Selinker (2008) the input of utterances can be comprehended by using lexical information. Otherwise, comprehension is not possible.

In conclusion, it can be stated that vocabulary knowledge is the basis of any language proficiency and for performing better in reading, writing, listening and speaking, language learners need to have an adequate level of vocabulary knowledge (Caro & Mendinueta, 2017; Richards & Renandya, 2002). It also has a prominent role in communication, both in written and spoken ones (Laufer & Nation, 1999; Maximo, 2000; Nation, 2004; Read, 2000). Moreover, for developing fluency, learners should have enough vocabulary knowledge because fluency development involves what is already known (Nation & Meara, 2020).

History of Vocabulary Instruction in Second/Foreign Language

Vocabulary is a crucial aspect of language for learning a foreign language successfully (Laufer & Nation, 1999; Nation, 2001; Read, 2000; Zimmerman, 1997). Nonetheless, in the history of language teaching, there seems to be varying levels of importance in some methods and approaches given to vocabulary. The perspectives of different methods and approaches to vocabulary are presented here to display the theoretical and pedagogical change in time.

Grammar translation method. At the end of the eighteenth century, this method was introduced (Zimmerman, 1997) and it became the main methodology of language teaching at the beginning of the nineteenth century (Schmitt, 2000). In this methodology, the materials were chosen from classical literature (Zimmerman, 1997) and in a typical lesson, grammar rules were explained explicitly, vocabulary items were presented in isolated lists and translation practice was done from the first language to the target language or vice versa (Schmitt, 2000). The students were expected to analyze the syntactic structure of language and the judgement of language skill was based on this

(Schmitt, 2000; Zimmerman, 1997). However, it did not focus on real language use (Larsen-Freeman & Anderson, 2013). The students were aimed to be prepared to use classical texts in reading and writing (Tan, 2016).

It was found to be reformist in nature as language learning was aimed to be made easier by focusing on sample sentences instead of the whole texts or passages (Howatt, 1984). Nonetheless, it became a method which overemphasized accuracy and exhaustive grammar rules, most of which were perplexing. Also, students were expected to learn bilingual vocabulary lists and language structures which were archaic. The primary aim of those vocabulary lists and structures was to make the students ready to translate long classical passages (Espinosa, 2003; Schmitt, 2000; Zimmerman, 1997).

In terms of importance of vocabulary instruction in Grammar Translation Method, researchers disaccord. Some believe that vocabulary was an essential part of the method (e.g. Coady, 1993, Espinosa, 2003). However, Schmitt (2000) and Zimmerman (1997) asserted that vocabulary instruction was not the primary objective in Grammar Translation Method. Zimmerman (1997) stated that in this method, vocabulary items were selected according to their capacity to exhibit grammatical rules and also direct vocabulary instruction was employed only when it was aimed to explain the grammatical rules with the vocabulary items related to the target rules. Schmitt (2000) also stated that as literary materials were aimed to be read and written, it emphasized obsolete vocabulary. However, the focus was not on vocabulary instruction because it was the students who were expected to learn the vocabulary items on their own by using bilingual word lists. As a result, bilingual dictionary gained importance as a reference tool (Schmitt, 2000).

The reform moment. Grammar translation method was popular until 1920s, although there were many critics about its focus on written language and not prioritizing how it was used in oral communication in the mid-1800s (Zimmerman, 1997). Individual language specialists T. Prendergast, and F. Gouin, started to develop their specific language learning methods (Richards & Rodgers, 1986). Although they could not achieve a lasting impact on language teaching, their way of dealing with vocabulary was important. The acquisition of some terms, especially action verbs, was emphasized by Gouin (Zimmerman, 1997) because he believed that language learning could be promoted by using it to carry out

events of a series of actions (Richards & Rodgers, 1986). He focused on making meaning clear presenting new language items in a context. As he believed in the importance of context, he made use of situations and themes for presenting spoken language (Richards & Rodgers, 1986). As a result, vocabulary items were presented in a semantically related way and he was also interested in teaching verbs and their collocations as well (Zimmerman, 1997).

Another language specialist whose method of language teaching had an important reform in terms of vocabulary instruction was T. Prendergast, because he showed that he was against archaic vocabulary lists (Zimmerman, 1997). As a first language specialist who observed child language and recorded it, he realized that they used "memorized phrases and routines in speaking" (Richards & Rodgers, 1986, p. 5). After that observation, he made a list of frequently used English words (Zimmerman, 1997). He made this frequency list intuitively; he did not base his work on any research or criteria. Although it seems that it was the first step of frequency lists, it did not have an impact on language teaching at that time. However, later research showed that 82% of the words in his list were among the most frequent 500 words on the list of Thorndike-Lorge (Howatt, 1984). Zimmerman (1997) emphasized the importance of his common word list by stating that "… it came at a time when simplicity and everyday language were scorned and before it was normal to think in terms of common words" (p. 7).

Even if the above mentioned reactions had impressive points in terms of language teaching, they did not achieve a long lasting impact. The Reform Movement was established in 1880s with the leadership of Henry Sweet and they emphasized the importance of oral language and phonetics (Zimmerman, 1997). He developed a curriculum and in his curriculum a prominent role was given to phonetics and transcription, rather than vocabulary (Espinosa, 2003). His curriculum was composed of five stages; mechanical, grammatical, idiomatic, literary and archaic stages (Howatt & Widdowson, 2004) and this curriculum was considered to represent the time it was designed (Howatt, 1984). At the first stage, which was mechanical stage, students were expected to work on phonetics and transcription and acquire pronunciation well. Then, at the grammatical stage, it was aimed to teach grammar and basic vocabulary. After gaining basic vocabulary, at the idiomatic stage, the attention was on the depth of vocabulary

knowledge. The last two stages, literary and archaic, were aimed to be achieved at university level and they involved the study of philology (Howatt & Widdowson, 2004; Zimmerman, 1997). Reformists' vocabulary instruction was found to be different from the past as the words focused on were chosen from real life and they were not focused on for the sake of teaching syntactic patterns. Vocabulary items were selected starting from the easy to the difficult ones and isolated vocabulary lists were avoided (Zimmerman, 1997).

The direct method. The direct method was developed by Sauveur and made well-known by Berlitz towards the end of the nineteenth century (Zimmerman, 1997). In this method, it was believed that a second language would be acquired by following the same steps of acquisition of a first language and by avoiding translation to first language (Espinosa, 2003). It was believed that language could be taught by using it actively in the classroom, so teachers were expected to encourage students to use the language directly in the classroom (Richards & Rodgers, 1986). Being exposed to the target language was considered to be essential, so listening was thought to be the primary skill (Schmitt, 2000). In terms of vocabulary instruction, the aim was to teach everyday vocabulary (Zimmerman, 1997) and it was thought to be acquired in a natural way in classroom interaction (Schmitt, 2000). Pictures, objects and physical demonstration were used for teaching concrete words and abstract words were presented by grouping them according to association of ideas (Richards & Rodgers, 1986; Schmitt, 2000; Zimmerman, 1997).

The Direct Method had some problems like other methods. The first problem was that its requirement was to have proficient language teachers, especially to have native teachers or teacher who had native-like pronunciation skills. However, it was not possible all the time (Richards & Rodgers, 1986; Schmitt, 2000). The second problem was that although native language acquisition was imitated in this method, native and target language differences were not taken into consideration. One of the apparent differences was the amount of language exposure. In a classroom environment, language learners have limited amount of exposure and it is not the case in native language acquisition. This difference was not considered in this method (Schmitt, 2000). The third problem of the Direct Method was related its strict avoidance of native language. Some scholars

criticized the method by stating that instead of spending a long period of time for making the meaning clear in the target language, a brief explanation in the mother tongue of the learners would have been more helpful for comprehension (Richards & Rodgers, 1986).

The reading method/situational language teaching. Taking the limited instruction time in the classroom into account, it was reported in 1929 Coleman Report that it was not possible to achieve overall language proficiency. In this report, it was suggested to limit the objective; to teach reading in a foreign language (Schmitt, 2000). At that time, Michael West emphasized the need to improve reading skill by increasing vocabulary knowledge. He criticized that foreign language learners did not even know the basic vocabulary items and recommended using frequency lists for deciding on what words and in which order to teach. He also published "A General Service List of English Words" (Zimmerman, 1997, p.9).

At that time, Situational Language Teaching movement started and the leaders of this movement were British linguists H. E. Palmer and A. S. Hornby. They emphasized the importance of speech and proposed that situation-based activities were important to improve speech (Zimmerman, 1997). Language structures' "*selection, gradation* and *presentation"* were emphasized (Richards & Rodgers, 1986).

For the first time in history of language teaching, one of the language aspects that were considered to be important was vocabulary and they searched stressed the importance of finding scientific ways for selecting vocabulary content of a language course (Zimmerman, 1997). Vocabulary knowledge was also seen as an important component for reading proficiency (Richards & Rodgers, 2014).

The audio-lingual method. The audio-lingual method was also called structural approach and American structural linguists introduced it. The starting point of this method was grammar or structure and language learning was perceived as a process of habit formation. Pronunciation and oral drilling was used. Selection of vocabulary items was based on their "simplicity and familiarity" (Zimmerman, 1997). It was believed that exposure to the language in drills and language habits would enhance vocabulary knowledge (Schmitt, 2000). In other

words, vocabulary was seen as a means to make the drills possible (Richards & Rodgers, 2014), so it was not seen as one of the aims of the language teaching process.

Communicative language teaching (CLT). With the effect of Noam Chomsky, cognitive factors, especially innate abstract rules were supposed to control language, instead of habit formation idea of Behaviorists. In 1972, the notion of communicative competence was also added (Schmitt, 2000). As a result, instead of accuracy, appropriateness gained importance and meaningful communication became the aim of Communicative Language Teaching (Schmitt, 2000; Zimmerman, 1997). In other words, the focus changed from teaching structures to promote communicative proficiency (Espinosa, 2003). However, vocabulary did not gain explicit attention in Communicative Language Teaching and it was expected to improve in the same way as in native language vocabulary development (Espinosa, 2003; Zimmerman, 1997). It was suggested to help vocabulary improvement for use of functional language and other than this CLT did not provide guidance about how to deal with vocabulary (Schmitt, 2000). In addition, while preparing communicative materials, instead of frequency lists, usefulness of words was taken into consideration (Zimmerman, 1997).

The natural approach. The Natural Approach was developed by Krashen and Terrell and they published their book “The Natural Approach” in 1983 (Richards & Rodgers, 2014). They considered their approach similar to other communicative approaches, but The Natural Approach has its own set of principles and stresses the importance of comprehensible input (Zimmerman, 1997). Vocabulary is considered as a crucial aspect of language acquisition process and after beginner level, reading is suggested for improving vocabulary knowledge (Zimmerman, 1997).

Current perspectives to lexical issues. With the start of lexicographical research and corpus studies in 1980s, it was realized that the need to describe language accurately arose. The Collins Birmingham University International Language Database (COBUILD) Project is one of them. It aimed to reflect the actual language use and produced many dictionaries and materials to be used in language courses (Zimmerman, 1997). Sinclair was the editor in chief of the COBUILD Project at that time and he remarked the change in describing language

and in language instruction (Sinclair, 1985). He conducted studies on collocations by following frequency-based approach and it showed that instead of focusing on just one word, researchers started to focus on words that are used together. In addition to Sinclair, Nattinger and DeCarrico (1992) analyzed the data of actual language use by focusing on lexical phrases, not on single word items, as the basis of analysis. It should also be noted that although collocation studies started earlier than these studies, they are the examples to show the new orientation of lexical studies after the start of lexicographic and corpus studies. Earlier studies will be presented in the section related to collocations.

Lexical approach. The representative of lexical approach is Michael Lewis. He published his book "The Lexical Approach-The state of ELT and a way forward" in 1993 and in this book he introduced this approach. In this approach, it is assumed that "language consists of grammaticalised lexis, not lexicalised grammar" (Lewis, 1993, p. vi). It shows vocabulary items are seen as the center to language and it should also be seen as the center of language teaching. The grammar-vocabulary dichotomy is rejected and it is assumed that language is mostly composed of multi-word units. Grammar is seen as assisting lexis. Teaching students how to use language by combining lexical elements and raising their awareness of the importance of this process is seen as central to language teaching process. Syllabus content and sequence is determined by the evidence from discourse analysis and computational linguistics. In short, lexical items, words and word phrases, are thought to be the heart of this approach and the students are expected to communicate by chunking lexical items.

As it can be seen, recent perspectives on lexical issues have differed from the past theories. It has been realized that, instead of limiting vocabulary with single words, multi-word units should be focused on. In order to use language in a creative way, it is not enough just to learn the grammatical rules and the vocabulary items and combine them accordingly. In conclusion, "language production is not a syntactic rule-governed process but is instead the retrieval of larger phrasal units from memory" (Zimmerman, 1993, p. 17).

What is a Word?

In spite of the fact that there has been an increasing emphasis on vocabulary in language teaching recently, the researchers have not reached a consensus on the definition of a word (Daller et al., 2007; Read, 2000; Schmitt, 2000; Nation, 2001; Pignot-Shahov, 2012). They all assert that the definition of "word" depends on the purpose and context of the research. A word has a complex nature it has a number of properties; "orthographic, morphological, phonological, syntactic, semantic, pragmatic" (Almi, 2017, p. 27). McCarthy et al., (2010) describe this multifaceted nature of words as:

> Words are more than mere individual containers with meaning. They exist in a complex matrix which links them to morphemes (prefixes and suffixes), other meanings (synonyms, antonyms), other words (that is, the words that they are likely to occur with or be associated with), grammar patterns, multi-word units (groups of words that are fixed into phrases or idioms). This matrix extends well beyond the sentence to spoken and written texts and it also has both a cognitive and social dimension. (p. VII)

As a result, according to the aim of why a word is expected to be defined, different units of counting are used. Thus, while choosing a unit of counting, it is important to keep the reasons to count in mind and also consider the target group, for whom a word list is prepared as a result of counting. For instance, for deciding on the length a book is or the reading speed of a person in a limited period of time, we count *tokens* (Nation, 2001; Nation & Meara, 2020). Counting tokens is the simplest way to count words, because it is counting "every word form in a spoken or written text and if the same word form occurs more than once, then each occurrence of it is counted" (Nation, 2001, p. 7). Nation and Meara (2020) give the sentence "To be or not to be, that is the question" as an example and state that it contains ten tokens (p. 35). As it can be seen *be* is used twice in the sentence and each occurrence is counted as single items. The second unit of counting words is *types.* Counting the types shows the total number of forms of different words. Contrary to tokens, the same words are not counted if they occur more than once (Read, 2000). As a result, in the example above, there are eight types as *to* and *be* occur twice and only the first occurrence of them is counted. Type is used as

the unit of counting if it is interested in knowing how many words someone uses or knows. For instance, for deciding on the amount of sight vocabulary someone has, it is used as the unit of counting (Nation & Meara, 2020).

When counting issue is related to getting information about vocabulary learning, it is needed to choose a unit of counting that shows the knowledge that the users of the language make use of (Nation & Meara, 2020). Then, the counting unit of *word family* is employed. "A word family consists of a headword, its inflected forms, and its closely related derived forms" (Nation, 2001; 2013). However, as this definition implies, it can be problematic to decide on which words to include in a word family and which not. Nation (2001) states that the knowledge of prefixes and suffixes develops in time and the knowledge of the words in a word family can change from learner to learner. It depends on the researcher and can change according to the aims of the research (Pignot-Shahov, 2012). While being careful about making an assumption that all the words of a word family are known by the learners, it is suggested that a scale of word families is prepared from the easy to difficult ones (Nation, 2013). Nation and Meara (2020) consider that for deciding on which words to include in a word family, "the most conservative way is to count *lemmas*" and they define a lemma as "a set of related words that consists of the stem form and inflected forms that are all the same part of speech" (p. 35). However, there is a problematic point related to using lemmas as a word counting unit. It is about the irregular forms of a headword. It is still under discussion to count irregular forms as different lemmas or not (Pignot-Shahov, 2012; Schmitt, 2010). For instance, it is not clear if *buy* and *bought* should be counted as separate lemmas or as belonging to the same lemma.

For deciding on words for testing receptive and productive knowledge of learners, there are different suggestions. Nation and Meara (2020) consider that for receptive knowledge, the best unit of counting is word family and for productive knowledge, using word type or perhaps lemma is the best. However, Schmitt (2010) favors lemma both for receptive and productive knowledge. In the test that was used in the present study to assess learners' receptive vocabulary knowledge, Webb et al. (2017) used the word family rather than the lemma as the counting unit. They state that the first reason for using the word family as the unit of counting is the assumption that if a word form is known, its unknown forms

might be understood with relatively little effort. They exemplify this by claiming that if a person knows the word *adventure*, then they might be able to understand its unknown forms like *adventurer* or *adventurous* without much effort. Another reason of their preference is the fact that the earlier versions of VLT have employed the word family as the unit of counting words and they have been proved to measure vocabulary knowledge effectively. Thus, they did not find any reason to change the unit of counting in the new version of the test. In the productive vocabulary knowledge test that was designed to be used in the present study, the same words in the receptive vocabulary test were the target words. Thus, as the unit of counting words, word family was also used in the productive vocabulary knowledge test. Although using lemmas was a suggested alternative for a productive test, as the receptive and productive tests were aimed to be parallel, the same unit of counting was employed. Otherwise, using lemmas as the unit of counting in the productive test and the word family in the receptive vocabulary knowledge test would have resulted in a more demanding productive test. In order to avoid it, the same word counting unit was used in both of the tests.

Vocabulary Size of Native and Non-native Speakers of English

Vocabulary size is defined by Gyllstad et al. (2015) as “the number of words in a language for which an individual has at least a basic form-meaning mapping knowledge” (p. 276). One way of deciding on the vocabulary learning goals for non-native speakers is seen as investigating the vocabulary knowledge of native speakers (Nation, 1990, 2006). Knowing the measures of vocabulary size of native speakers of English not only helps teachers to improve their philosophy about vocabulary instruction (Coady & Huckin, 1997), but also helps them analyze which and how many words are needed by second or foreign language learners for particular activities. As stated in the introduction part, there have been several studies attempted to assess the vocabulary size of native speakers such as the ones conducted by Goulden et al. (1990), Zechmeister, et al. (1995), Nation and Waring (1997), Nation (2006), Milton (2010) and Schmitt (2010). The first two of these studies (Goulden et al., 1990 and Zechmeister, et al., 1995) estimate the vocabulary size of college-educated native speakers as an average of 17,000 base words or word families. In a similar way, Nation and Waring (1997) and

Schmitt (2010) estimate that they know an average of 20,000 word families. Reviewing the previous studies on the vocabulary size of native-speakers, Nation (2006) has stated that an average of 20,000 word families, excluding proper names and transparently derived forms, are known by well-educated native speakers.

It does not seem realistic to expect non-native speakers to reach the same amount of vocabulary knowledge. Although the studies on the vocabulary size of native speakers suggest a high number of words for non-native speakers, this is not essentially a short-term goal, but may be useful in the long term (Nation, 2001). As the quality and the quantity of the input for native and non-native speakers are not equal, language learners are not expected to have the same amount of vocabulary size with the native speakers. However, having estimates about the vocabulary size of native speakers, the least number of words that should be known by non-native speakers in reading and listening skills was investigated by some researchers. First of all, these researchers decided on the lexical coverage, which was called as text coverage by Nation (2006) for the comprehension of texts in written and spoken discourse. Text coverage is defined as “the percentage of running words in the text known by the readers” (Nation, 2006, p. 61). The earliest research indicated that 95% of lexical coverage is needed for comprehension in written discourse (Laufer, 1989). Later on, a higher amount of lexical coverage was suggested, 98%. (Hu & Nation, 2000; Laufer & Ravenhorst-Kalovski, 2010; Schmitt et al., 2011). Different threshold levels of lexical coverage were also explained as depending on the aim of the comprehension (Schmitt et al., 2011). Depending on what is meant by comprehension, Laufer & Ravenhorst-Kalovski (2010) found that the threshold level of 98% lexical coverage is necessary for successful comprehension in independent reading while 95% lexical coverage leads to comprehension with some support. In conclusion, the consensus is 98% for comprehension of written texts (Schmitt et al, 2017). The studies on lexical coverage in spoken discourse indicate that the threshold level is 95% (van Zeeland & Schmitt, 2012).

In terms of the number of words that should be known by non-native speakers, studies indicate that for spoken discourse at least 2,000 (Nation, 2001) or 3,000 (Laufer, 1998) word families should be known. For different purposes,

different threshold levels are also suggested in written discourse. For enjoyable reading, 5,000 word families (Hirsh & Nation, 1992), for understanding unsimplified texts, 3,000 word families (or 5,000 lexical items) (Laufer, 1992) and for reading authentic texts, 8,000 or 9,000 word families (Nation, 2006) are needed to be known receptively.

Testing Vocabulary Knowledge

Vocabulary size of language learners is assessed for different purposes. First of all, vocabulary size of language learners can be assessed for the purposes of admission and placement in different language programs (Laufer et al., 2004). In addition, it can be done to obtain data to decide on an appropriate program for a specific group of learners (Laufer & Nation, 1999). In that way, it helps curriculum developers and teachers to choose the most appropriate way to help that group of learners. Moreover, it helps material developers to decide on the most appropriate materials according to the level of the learners. It also helps to decide if the learners have enough vocabulary knowledge for performing a task or to see their vocabulary development (Beglar, 2010). Furthermore, it helps to evaluate if a specific program meets its objectives or not. In addition to these well-known purposes of testing vocabulary size, Abdullah et al. (2013) state that testing vocabulary size can be also used for motivational purposes. Learners' realization of the fact that they are improving their vocabulary knowledge enhances their self-efficacy beliefs. In response, they get more motivated to learn the target language and for achieving this, they study more.

Researchers have developed different tests for testing the vocabulary knowledge of learners with different objectives. Most of them aim at measuring the breadth of vocabulary knowledge at receptive level. In other words, they usually measure the number of words known by learners at receptive level. They are usually used for diagnosing vocabulary knowledge gaps, assessing vocabulary size of test takers or for placement purposes. It should also be noted that although there are different tests to measure English vocabulary, there is not a standardized test that is commonly accepted (Schmitt, 2000). These tests are discussed briefly below in a chronological order.

The first of these tests is Eurocentres Vocabulary Size Test (EVST). It was developed by Meara and Jones (1988). It is a kind of checklist test in which a large number of words are provided and the test takers are expected to check the words they know. It aims to measure receptive vocabulary knowledge. The advantage of this test is to measure a large number of vocabulary items in a short period of time. However, a noticeable problem is the overestimation of the test takers' vocabulary knowledge. They can check the words that they actually do not know. In order to avoid it, imaginary words, which resemble real words, are also included in the test. If test takers check one of those imaginary words, it shows that they overestimate their vocabulary knowledge (Schmitt, 2000). A formula is used in order to compensate the overestimation of vocabulary knowledge. The higher numbers of checks to imaginary words result in decrease in the final score (Uchihara & Clenton, 2020). This test has many updated versions and one of them is V_YesNo (Meara & Miralpeix, 2017). It includes 200 words, 100 of them are imaginary and 100 of them are real words (Uchihara & Clenton, 2020).

The second test that aims at measuring receptive vocabulary size of second/foreign language learners of general or academic English is Vocabulary Levels Test (VLT). The first version of the test was developed by Nation (1983, 1990). It assesses receptive knowledge of single word items at four frequency levels (at 2,000, 3,000, 5,000 and 10,000 levels) and at academic English words (university word level). The frequency levels in the test are based on Thorndike and Lorge's frequency lists and University Word List (Xue & Nation, 1984). Levels 2,000 and 3,000 are assumed to represent high frequency words, university word level one type of specialized vocabulary, level 5,000 the boundary between high and low frequency words and level 10,000 low frequency words. Each level is represented in the test by six clusters of six words. For each cluster, three definitions are given and it is expected from participants to find and write the number of the definitions in front of the correct words in a cluster. The reasons for choosing matching format is to reduce the chance of correct guesses, to mark the test easily and to test a large number of words in a short period of time (Nation, 1983).Two new forms VLT have been written by Schmitt et al. (2001). These forms include ten clusters of six words for each level. It means that the number of items has increased from 18 to 30 per level. In addition to the number of items, in this

version, academic words are selected from Coxhead's (2000) Academic Word List, not from Xue & Nation's (1984) University Word List as in the original version. It is recommended to use this test for placement purposes and determining vocabulary gaps (Schmitt, 2000). An example item from the VLT version 2 can be seen below.

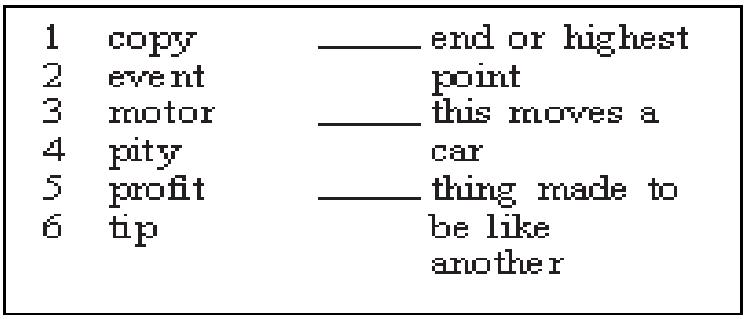

Figure 1. Test items from the VLT (Schmitt et al., 2001).

The third test that was designed to assess aspects of vocabulary that are receptively known is Word Associates Test. It was developed by (Read, 1993) for assessing the vocabulary knowledge of learners at university level by employing a controlled receptive format (Zhang & Koda, 2017). Thus, the stimulus words in the test were chosen from University Word List (Xue & Nation, 1984). This test was seen as one of the first attempts to assess knowledge of collocations and associations (Schmitt, 2000). In the test, a stimulus word is given and it is followed by eight other words. The eight words are given under the first word in two different boxes. Out of those eight words, four of them are given as target associates and the others are as distractors. The test takers are expected to choose the four words that are associates of the stimulus word. There are forty stimulus words given in the test. An example of the questions in this test is given below in Figure 2.

Figure 2. An item from word association test (Read, 1993).

As it can be seen in the given example, some of the target associations have a paradigmatic relationship (in this example, *quick* and *surprising*) and some

of them have a syntagmatic relationship (*sudden change* and *sudden noise*) with the target word (Schmitt, 2000; Zhang & Koda, 2017). If test takers choose all the target associates, it shows that the word is known and if none of the four associates are chosen, and then it means the word is not known. However, if some of the target associates are chosen together with some of the distractors, it is difficult to interpret if the associates are really known or not (Schmitt, 2000).

The forth test in this chronological order is a productive vocabulary test and it is the one that has been employed by many researchers for testing controlled productive vocabulary knowledge. This test was designed by Laufer and Nation (1999) and it has the same overall structure with the VLT (Nation, 1983, 1990). It includes 18 items at each of the 2,000, 3,000, 5,000, University Word List, and 10,000 word levels. The items in the original VLT are used in test version A and the items in the three other versions of the test are from the three parallel versions of the VLT designed by Norbert Schmitt (Laufer & Nation, 1999). In this test, gap filling format is used. A sentence in which some letters of the target word is given and the test takers are expected to write the target word. In order to restrict the usage of other possible words which have a similar meaning, the first letters of the target word are given. An example of the test item in which the target word is *episodes* can be seen below.

The book covers a series of isolated epis_____ from history

(Laufer & Nation, 1999, p. 37).

The format of the test resembles C-tests, but here each target word is given in one sentence, not in a paragraph. Moreover, the number of hints in a C-test is half of the word, but in Productive Vocabulary Levels Test (PVLT), that is not the case. As it is a productive test, the minimum number of letters is aimed to be provided. If provided two letters are not enough for directing the test taker to the target word or they also start other words that are semantically similar, then the third letter is also provided. In the given example above, the target word *episodes* is made up of eight letters and four of the letters are given as cues in the question item. It is not done for providing the half of the letters as in the C-test format, but for limiting other possible answers.

Lex30 is also a productive vocabulary knowledge test and developed by Meara and Fitzpatrick (2000). It is a word association test. In that test, stimulus words are presented in a list and the test takers are asked to write a related word to these stimuli. As target words are not predetermined, any specific word is not expected to be written. As a result, this test claimed to be like a free productive test. In the test, 30 stimulus words are presented and the test takers are asked to write up to four other words that make them think of. The stimulus words are taken from Nation's 1st 1,000 frequency list (Nation, 1984).

VLT was seen as a diagnostic measurement and for proficiency measurement, Vocabulary Size Test (VST) was developed by Nation and Beglar (2007). This test measures written receptive vocabulary size and it has a multiple-choice format. It includes 140 items; 10 items from each of the 10 1,000 word family levels. The frequency levels are based on Nation's BNC word family lists (2006). Although it is a multiple-choice test, Nation and Beglar (2007) claim that test takers should know the meaning of the target word at least moderately in order to find the correct answer because the distractors also include the elements of meaning. This makes the test slightly more challenging than VLT (Schmitt et al., 2001). As a result, they do not think that this test is suitable to EFL learners who know less than 5,000 words. For calculating the score of the test takers, the number of correct answers is multiplied by 100 to find out how many of 14,000 words are known. The following figure shows an item from the test at the 5th 1,000 level.

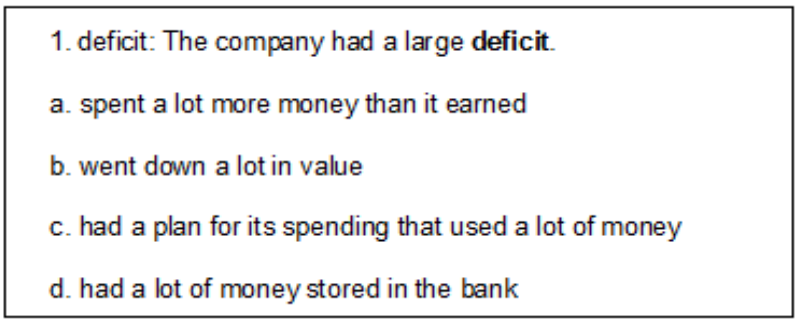

Figure 3. An item from VST (Nation & Beglar, 2007).

The last test to mention here is the Updated VLT (Webb et al., 2017). As its name suggests, it is the updated version of VLT (Nation, 1990; Schmitt et al., 2001). As it is already mentioned, Schmitt et al. (2001) made two differences in

their version; increasing the number of items and using a different frequency list for selecting academic words. However, Webb et al. (2017) has thought that there are two problematic points about the second version of the VLT. The first one is that the frequency list of the second version does not reflect the current vocabulary of the language. The second problematic point for them is that the first two versions of the test do not measure vocabulary knowledge at the first 1,000 word frequency level. They claim that this level accounts for approximately 80% of English. This level should be measured because the words in this level are important for understanding the language. As a result, they have designed an updated version of the test. The words that are to be measured in the test are selected from Nation's (2012) frequency lists. Although this version has also five frequency levels, as in the first two versions, the frequency bands have been changed. This version includes items from 1,000, 2,000, 3,000, 4,000 and 5,000 levels. It aims to measure receptive vocabulary knowledge by employing 10 clusters of six words to be matched with three definitions or synonyms per level. In total, it includes 150 items in all frequency levels. The clusters in the test are also presented as in the following figure.

	boy	rent	report	size	station	thing
how big or small something is						
place buses and trains go to						
young man						

Figure 4. A cluster of items from 1,000 level (Webb et al., 2017).

In the present study, for measuring the receptive vocabulary knowledge of the participants, the Updated VLT (Webb et al., 2017) is used because of some reasons. First of all, the aim of the study is to test the vocabulary knowledge of high frequency words in English and they correspond to the most frequent 3,000 word families (Schmitt & Schmitt, 2014). As a result, the first three 3,000 word frequency levels should be represented in the test. Unlike other versions, this test includes items from the first 1,000 frequency level as well. Although Vocabulary Size Test (Nation & Beglar, 2007) also includes words from the first 1,000 word frequency level, it measures the proficiency of the test-takers at 14 levels. Moreover, there are some criticisms about this test as Nguyen and Nation (2011) and Gyllstad (2012) found some problems with the test. In their study, Nguyen and

Nation (2011) conducted VST and revealed that Vietnamese university students had the knowledge of about 7,000 words in English. They also realized that the participants obtained the highest mean score at 2,000 word frequency level, followed by 1,000, 4,000, 3,000, 5,000, 6,000 and 8,000 levels. For the monolingual version of the same test, Gyllstad (2012) also found similar abnormalities. Although the previous studies show that single words are learnt in relation to their frequency levels (e.g. Read, 1988; Schmitt et al., 2001), the results of those studies were contrasting. In addition, including ten words from each frequency level did not seem to be representing the whole level reliably (Nguyen & Webb, 2017).

Another reason to choose the updated VLT (Webb et al., 2017) is that not only the test itself, but also the word frequency lists it is based on are the most up-to-date ones. Thus, this test is considered to be able to measure the recent vocabulary of the language. As a result, instead of the VST, for assessing the receptive vocabulary knowledge of the participants, the updated VLT (Webb et al., 2017) is administered in the current study.

Testing Receptive and Productive Vocabulary Knowledge

It seems difficult to make a definition of what a word is. Therefore, it is not easy to assess all the facets of word knowledge with only one test because of its "miscellaneous nature" (Pignot-Shahov, 2012, p. 37). As a result, different tests are needed to test different facets of vocabulary knowledge (Bogaards, 2000). Features of different types of validated tests that are commonly used for assessing receptive and productive vocabulary knowledge of test takers have already been mentioned. In this part, previous studies in which these tests have been used are discussed with the results of the studies.

In literature, different tests have been used to test the receptive vocabulary knowledge. Review of literature of the related studies has shown that in these studies mostly validated vocabulary tests have been preferred. The studies are grouped according to the test that was administered for assessing the receptive vocabulary knowledge of the participants.

In one of the related studies, Nurweni and Read (1999) investigated the receptive knowledge of first year non-English majored Indonesian university

students at the first two 1,000 levels of General Service list (West, 1953) and the University Word List (Xue & Nation, 1984). They administered Read's (1998) Words Associates test and a translation test. They found out that the participants had the receptive knowledge of 60% of the first 1,000 level words and 37% of the second 1,000 words. In addition, they also had the receptive knowledge of 30% of the words in the University Word List (Xue & Nation, 1984). In another study, Nguyen and Nation (2011) measured the vocabulary size of 62 Vietnamese third year English majored learners. They used the bilingual version of Nation and Belgar's (2007) Vocabulary Size Test. They found out that the participants had the receptive knowledge of approximately 6,000-7,000 words. Out of 14 word frequency levels in the test, the first two levels had the highest mean scores, but the effect of frequency was not consistent for all levels. Their mean scores for the first three levels were 8.63, 8.69 and 5.92 out of 10, respectively.

In a number of studies which aimed to measure receptive vocabulary knowledge, Schmitt et al.'s VLT (2001) was used (Agustín-Llach & Terrazas-Gallego, 2009; Akbarian, 2010; Hajiyeva, 2014; Stæhr, 2008; Terrazas-Gallego & Agustín-Llach, 2009; Vu & Nguyen, 2019). In the first of these studies, Stæhr (2008) administered Schmitt et al.'s VLT (2001) to assess the receptive vocabulary knowledge of 88 Danish ninth grade students, who had learned English for seven years. Academic words level was not administered in the study. The mean scores of the participants were not given for each level separately, but their overall mean score of the vocabulary test was 49.17 out of 120. The results of the study indicated that the participants had the receptive knowledge of approximately 1,633 out of 4,000 words. Stæhr (2008) stated that the result of the test was alarming because the most of the participants did not master the first band in the test. Terrazas-Gallego and Agustín-Llach also conducted two different studies using VLT to measure the receptive knowledge of their participants in 2009. In the first of these studies (Agustín-Llach & Terrazas-Gallego, 2009), they examined the receptive vocabulary knowledge of sixth graders and its relationship with participants' reading and writing performances. They assessed the receptive vocabulary knowledge of the participants at 1,000 and 2,000 levels. As the VLT did not include the first 1,000 level, they used a non-standardized test to test this level. For the second 1,000 level, VLT was administered. They found out that at

these two frequency levels, the mean scores of the participants were 21.38 and 9.28, respectively. Their second study (Terrazas Gallego & Agustín Llach, 2009) was a longitudinal one with 224 participants. It aimed to find out if the receptive vocabulary knowledge of the participants changed from the 4th to the 7th grade. They also aimed to see in the case of change if it was constant or not. For assessing the receptive vocabulary knowledge, they used the 2,000 word frequency band of VLT (Schmitt et al., 2001). They indicated that the receptive vocabulary knowledge of the participants increased significantly each year, but the difference was not constant. It meant that each year, the participants increased their receptive vocabulary knowledge, but the amount of increase was different for each year. Another study using Schmitt et al.'s (2001) test was conducted by Akbarian (2010) and it investigated the receptive vocabulary knowledge of 112 Iranian non-English majored university students. It was found out that the percentage of participants mastering the 2,000 band was about 23, while just two participants mastered the 3,000 band. It also indicated low levels of receptive vocabulary knowledge of university students. In a similar way, Hajiyeva (2014) investigated the receptive vocabulary knowledge of Azerbaijani first-year English major students using the same test. The results of his study showed that the participants had the knowledge of more vocabulary items at 2,000 level than 3,000 and 5,000 levels. The difference between the levels was significant. Out of 30, the mean scores of the participants at the 2,000, 3,000 and 5,000 levels were 16.8, 11.7 and 7.8, respectively. In terms of mastery of the levels, which was 26 out of 30, the study revealed that only 12% of the participants mastered the 2,000 level, while 4.4% achieved mastery at the 3,000 level and just 1.2% mastered the 5,000 level. The last study to be mentioned here using Schmitt et al.'s (2001) VLT was conducted by Vu & Nguyen (2019). In this study, they measured the receptive vocabulary knowledge of 500 Vietnamese 12th grade high school students. The results indicated that 14% of the participants mastered 2,000 word frequency level, 4.4% mastered 3,000 level, 4.6% mastered academic words, 0.8% mastered 5,000 level and 0.4% mastered 10,000 level. Moreover, they stated that 11 of the participants scored 0 for all word frequency levels. They also observed the effect of frequency on receptive vocabulary knowledge; the number of known words increased when the frequency of the words increased.

After the development of the Updated VLT by Webb et al. (2017), the researchers who considered it to be more up to date and who also aimed to investigate receptive vocabulary knowledge at 1,000 frequency level, preferred to conduct studies using the updated version (Dang, 2020a, 2020b). One of those studies was conducted by Nguyen and Webb (2017). They administered the first three 1,000 levels of the Updated VLT (Webb et al., 2017) to measure the receptive vocabulary knowledge of 100 Vietnamese first year English majored students. They stated that the students mastered only the first 1,000 word frequency level, not the other two levels. However, it should also be noted here that for deciding on the mastery of the levels, they did not refer to the criterion suggested by the developers of the test used in the study. Webb et al.'s (2017) suggestion for mastery of the first three levels was 29 out of 30. Instead, they referred to the criterion suggested by Schmitt et al. (2001), which was 26 out of 30. As a result, they stated that the participants in their study mastered the first 1,000 level. However, the mean score of the participants for that level was 28.07, which meant that they did not master the first 1,000 level as well. In another study, Dang (2020a) aimed to investigate the receptive vocabulary knowledge of high frequency words of non-English majored 66 first-year university students. As the study focused on high-frequency words, the first two 1,000 levels of the updated VLT of Webb et al (2017) was conducted. She found out that nearly 50% of the participants mastered the first 1,000 words and only 20% of them mastered the 2,000 most frequent words. In her second study (Dang, 2020b), she assessed the receptive vocabulary knowledge of 442 non-English majored university students. She interpreted the results by referring to the interpretation criteria suggested by the developers of the test (Webb et al., 2017). They suggested that at 1,000, 2,000 and 3,000 frequency levels, participants should have at least 29 out of 30 correct answers. For the 4,000 and 5,000 word frequency levels, they suggested to have at least 24 out of 30 correct answers. Applying these criteria, the results of her study indicated that the participants did not master any levels of the Updated VLT. She stated that approximately 50% of the participants did not master the receptive knowledge of 1,000 frequency level and nearly 90% of them did not achieve mastery at 2,000 frequency level. Using the same test, Siregar (2020) investigated the receptive vocabulary knowledge of 40 first-year English majored students at an Indonesian university. The results showed that 95% of the participants mastered

the first 1,000 level, 60% mastered the second 1,000 level and 22.5% of the participants mastered the third 1,000 level. However, the cut-off point of mastery was taken as 27 out of 30, not as 29. Applying the suggested cut-off point by the test developers would change the percentages of the participants who mastered each level. The results of another study conducted by Nguyen (2020) indicated better results. It measured the receptive vocabulary knowledge of the 422 high-school students and it was stated that the participants mastered the first two 1,000 word frequency levels. However, they failed to master the other three levels in the study.

The Effect of Frequency on Vocabulary Knowledge

It does not seem possible to learn all the words in a language both for native and non-native speakers of the language because of the vast quantity of vocabulary items the language is composed of. In addition to it, limited instruction time in a language classroom makes it necessary to refer to a criterion for selection of words to be focused on in a teaching environment. As it is claimed by Nation (2011), a cost/benefit analysis is needed to be done for deciding on the inclusion of specific vocabulary items in the syllabus. Teachers or material writers should think whether it is necessary to spend instruction time for any specific vocabulary items or not for using the limited instruction time effectively. As a result, it can be stated that in second/foreign language vocabulary pedagogy, frequency has been a crucial factor that is referred to, especially for the selection of words (Schmitt & Schmitt, 2014; Sinclair & Renouf, 1988; White, 1988). Research has shown that word frequency is an effective factor on the development of single word items (e.g. Read, 1988; Schmitt et al., 2001) because more frequent lexical items are learnt earlier than the less frequent ones (Schmitt, 2010). The reason behind it is that frequent words are used frequently in a language, so they are encountered more often. The high frequency of these encounters gives learners the chance to learn these lexical items better than the ones that are not encountered frequently. Hence, researchers widely accept that frequency has an important role both in receptive and productive vocabulary knowledge (Pignot-Shahov, 2012).

It is stated that high frequency words are learnt earlier than the low frequency words. The question to be asked here is that which frequency bands should be labelled as high frequency words. Traditionally, the most frequent 2,000 word families are accepted as the high frequency words (e.g. Nation, 1990, 2001, 2013; Read, 2000; Schmitt, 2000; Thornbury, 2002). Nation (2013) states that the high frequency words are the first 2,000 word families, mid-frequency words are from the third to ninth 1,000 word families and the low-frequency words are the ones starting from the tenth 1,000 words and onward. He also gives information about the features of these three groups of words. He states that high frequency words include function words and many content words. In the text analysis given in his book, he reports that high frequency words constitute 80% of the running words in the text. According to Nation's (2013) division, mid-frequency words are between the 2,001st and 9,000th words and they are considered to be "generally useful and moderately frequent words" (p. 18). Other two features of mid-frequency words are being general-purpose vocabulary and being the necessary lexical items together with the high frequency words for using English without help from outside (Nation, 2013). It means that if a person knows high and mid-frequency words in English, they can express themselves and understand other people without any help from other people. Schmitt and Schmitt (2014) exemplify the importance of mid-frequency words with the purpose of watching television. They state that for enjoying watching television, listeners need to know 98% of the words and it shows that they need to know mid-frequency words. They also give details about the amount of necessary words and state that for different kinds of movies such as drama, crime and horror, 5,000 word families and for animation and war movies, up to 9,000 or 10,000 word families are needed to be mastered.

Low frequency words, as stated before, are the ones beyond the first 9,000 words. In Nation's (2013) text analysis, they make up nearly 1% of the text. He states that although they are the biggest group of words, just a small amount of running words are made up of low-frequency words. He also says that these words usually include technical terms specific to different areas and are not commonly used. As a result, instead of allocating instruction time to focus on them, they are usually left to learners to learn them on their own by making use of some learning strategies (Nation, 1990; Schmitt & Schmitt, 2014).

This is the traditional way of grouping the words according to their frequency. However, Schmitt and Schmitt (2014) argue that the cut-off points of these groups should be reassessed. They base their claim on some evidence such as the results of previous frequency based studies, amount of vocabulary essential for different kinds of activities, the frequency range of graded readers and pedagogical implications suggested for learning/teaching these groups of words. They propose that high frequency words should include the third 1,000 word families as well and the low frequency words should start from the ninth 1,000 words. They label the words between these two groups as mid-frequency words. Park and Chon (2019) believes that Schmitt and Schmitt's (2014) assessment has a better perspective and they adopt this new range of high frequency words into their study.

There is limited number of studies conducted to test the effect of frequency on vocabulary knowledge. However, all of them do not reflect the research result that vocabulary knowledge develops in accordance with frequency. Aizawa (2006) conducted a study to find out the effect of frequency on 350 Japanese university students using JACET8000 list. His study indicated the effect of frequency for the first four 1,000 levels, but not in the other four 1,000 levels. He claimed that the differences between the fifth to eighth 1,000 levels were too small and as a result they were not statistically significant. It showed that the participants' vocabulary level was so low at those levels that the difference was not observed. Likewise, Brown (2012) tested the effect of frequency on the vocabulary knowledge of 49 non-English majored university students by using a Yes/No test based on Nation's (2006) BNC word lists. He also found the effect of frequency for the first three 1,000 words. While developing the bilingual versions of VST (Nation & Beglar, 2007), the effect of frequency was also investigated in some studies (e.g. Elgort, 2013; Karami, 2012; Nguyen & Nation, 2011). Nguyen and Nation (2011) developed and validated the bilingual version of VST. In their study, they administered the bilingual test to Vietnamese university students and they found out that the mean scores of the participants were the highest at 2,000 level, followed by 1,000, 4,000, 3,000, 5,000, 6,000 and 8,000 levels. Karami (2012) developed and validated the bilingual Persian version of Vocabulary Size test. Although the effect of frequency was observed at the first three 1,000 levels, there

was inconsistency at other levels as in Nguyen and Nation's (2011) study. Karami (2012) claimed that one reason of this inconsistency could be the existence of loanwords. Although Elgort (2013) stated that more frequent words were responded more correctly, in his study, in which he developed the bilingual Russian version of the test, the also observed inconsistencies between the frequency levels, except for the first three 1,000 levels. He also observed that participants used the advantage of cognates at the lower frequency levels. Although Karami (2012) and Elgort (2013) evaluate the existence of cognates or loanwords at lower levels as a reason that avoids the effect of frequency, more evidence is needed to reach a conclusion. Besides, Nguyen and Webb (2017) assert that ten test items at each level may not be enough to assess the frequency levels. As a result, the effect of frequency is not observed in Vocabulary Size Test.

On the other hand, two of the previous studies support the common assumption about the frequency and word knowledge relationship. In the first one, Milton (2006) used Meara and Milton's (2003) X_Lex test to test the vocabulary knowledge of 227 Greek students and found out that the five 1,000 word levels were statistically different. In the second one, Nguyen and Webb (2017) investigated the effect of frequency on the receptive knowledge of 100 Vietnamese first year English majored students using the first three 1,000 levels of the Updated VLT (Webb et al., 2017). They found out that there was an effect of frequency on their participants' receptive vocabulary knowledge. The participants had higher mean scores at the first 1,000 level than the second 1,000 level and their scores at the second 1,000 level were higher than their scores at the third 1,000 level.

As the findings of the earlier research are investigated to see the effect of frequency, it seems that there is a common assumption, but more studies are needed to make a generalization about the effect of frequency. The results of the present study will contribute to literature to shed light on the effect of frequency on vocabulary knowledge.

Notion of Collocations

The term collocation has been defined in varying ways in literature as a result of different approaches adopted by researchers for investigating it. As a linguistic term, Palmer (1931) used it as "units of words that are more than single

words" (as cited in Gyllstad, 2007, p.6). It is also described as "the way words combine in a language to produce natural sounding speech and writing" in Oxford Collocations Dictionary (Lea et al., 2002, p.vii). Different approaches to collocations specified the limitations of word combinations according to their point of view. However, one common point of those approaches towards collocation is thought to refer to "some kind of syntagmatic relation of words" (Nesselhauf, 2005, p. 11). Although according to the paradigmatic relationship of words, "sets of words belong to the same class and can be substituted for one another in a specific grammatical and lexical context", syntagmatic relationship of lexical items is considered to be related to the ability of a word to combine with other words (Brashi, 2009, p. 23).

There have been two main approaches to collocations. The first view is called "phraseological approach" (Durrant, 2014; Gyllstad, 2007; Nesselhauf, 2005) or called "significance oriented approach" (Herbst, 1996, p. 380). The second view is called "frequency-based approach" by some researchers (Durrant, 2014; Gyllstad, 2007; Nesselhauf, 2005) or as "Firthian approach" by some others (Men, 2015, 2018) as Firth is seen as the father of the term collocation, because in linguistic sense he made the term known more widely (Gyllstad, 2007). It was also called "statistically oriented approach" (Herbst, 1996, p. 380), "lexis-oriented tradition" (Ebrahimi-Bazzaz et al., 2014) and as "linguistic approach" (Drábková, 2011, p. 33).

Frequency-based Approach to Collocation

As the name of this approach clearly indicates, according to the frequency-based approach a collocations is defined as "the relationship a lexical item has with items that appear with greater than random probability in its (textual) context" (Hoey, 1991, p. 7). In other words, it is also defined as "sets of words which have a statistical tendency to co-occur in texts" (Durrant, 2014, p. 447). Hence, it can be said that frequency of the co-occurrence of the word combinations is an important criterion for deciding on collocations. The main concern of this approach for following collocations is frequency, not semantics (Drábková, 2011).

As stated in the previous part, this approach is also known as Firthian approach as the linguistic term collocation became known with the pioneering

work of Firth (1951, 1957). For Firth (1951) collocation is “an abstraction at the syntagmatic level, and is not directly concerned with the conceptual or idea approach to the meaning of words.” (p.196). He did not see larger phrasal units as units of meaning, but used the term collocation for defining the meaning of a single item (Drábková, 2011). For example, in the collocation of *dark night*, he claimed that “one of the meanings of *night* is its collocability with *dark*, one of the meanings of *dark* is its collocability with *night* (1957, p.196). However, the meaning of *dark night* as a unit was not his main concern (Drábková, 2011). In addition, by stating “You shall know a word by the company it keeps!” (1957, p.179), he emphasized how it is important to learn the words that collocate with one word to have a complete meaning of that single word item.

Firth’s approach to collocations, which was at the syntagmatic level, not at the old perspective of paradigmatic level (Gitsaki, 1996), led the other researchers and they followed Firth’s ideas in the research of collocations. Following Firth and his studies on collocations, the other important scholars in this tradition are Halliday (1961) and Sinclair (1999). Firth’s notion of collocations motivated Halliday and Sinclair and they started “the early computer based work on collocations” (Lindquist & Levin, 2018, p. 73). Halliday (1961) defines collocations as;

> Collocation is the syntagmatic association of lexical items, quantifiable, textually, as the probability that there will occur, at n removes (a distance of n lexical items) from an item x, the items a, b, c .... Any given item thus enters into a range of collocation, the items with which it is collocated being ranged from more to less probable; and delicacy is increased by the raising of the value of n and by the taking account of the collocation of an item not only with one other but with two, three, or more other items. Items can then be grouped together by range of collocation, according to their overlap of, so to speak, collocational spread. (p. 276)

As it can be seen, instead of focusing on the meaning, Halliday (1961) decides on collocations in terms of the probability of the frequency of their combination with other words. In other words, the probability of their combinations is taken into consideration.

In addition to Halliday (1961), Sinclair is also a scholar who follows a Firthian approach to collocations. Sinclair defines collocations as “the occurrence of two or more words within a short space of each other in a text” (1991, p.170). Sinclair also uses the terms “node” for the word “whose lexical behavior is under examination” (p. 175) and “collocates” for the words that are used with the node word of the collocation. For the span of the words, Jones and Sinclair (1974, p. 21) claim that words can be influenced by node words if they are within the span of four words before or after the node. However, if the collocates and node words are positioned next to each other, their combinations are generally proved to be significant (Gyllstad, 2007).

Sinclair (1991) also mentions two principles for explaining collocations. The first one is “open-choice principle” (p. 109). For completion of a unit, there are a many different options and the only restriction is grammaticality. Sinclair states that this is known as “slot-and-filler” model and slots are filled from lexicon. If constraints are satisfied, the slots are filled with suitable words. He believes that the first principle cannot explain the restrictions alone and the second principle he mentions is “idiom principle” (p. 110). He asserts that there are plenty of prefabricated expressions accessible to users of a language. Although these expressions can be divided into different parts, language users use them as a whole, without realizing its parts. For explaining this simultaneous choice of two words, he gives the example of the phrase *of course.* The two words of this phrase do not reflect the grammatical features of them in that phrase and open-choice principle cannot explain it. These two words are combined together based on idiom principle. Sinclair (1991) also asserts that collocations are combined based on this principle, as collocates can be combined with nodes which are not necessarily used side by side.

Frequency based approach to collocations also makes use of measurements of statistics like MI scores, t-scores or z-scores” to show the high frequency of the word combinations in a large language corpora (Nguyen & Webb, 2017). In t-score and z-score tests it is tested if the probability of two words’ co-occurrence is higher than by coincidence (Durrant & Doherty, 2010). However, MI score shows the extent to which the probability of meeting one word increases when the other word is met (Durrant, 2014). These two statistical analyses differ

from each other because of the logic behind them. Clear (1993) explain it as, between the two words, the strength of association is shown by MI score while the degree of confidence for claiming them an association is indicated by t-score.

Phraseological Approach to Collocation

Russian tradition strongly influenced the phraseological approach to collocations, and the phraseologists from Russia, V. Vinogradov and N. Amosova, mainly represented this tradition (Drábková, 2011). In phraseological approach, collocations are considered to be word combinations in which one of the words does not have its usual meaning or because of the restrictions every word cannot be a part of a combination (Durrant, 2014). Although there have been different points of view among the researchers from phraseological approach, they all agree upon the existence varying fixedness of word combinations (Nesselhauf, 2005). As the varying degree of fixedness is the main criterion in this approach, the word combinations are categorized according to this criterion (Men, 2015). Cowie (1981, 1994), Melʹčuk (1998, 2012), and Howarth (1998a, 1998b) are regarded as the main representatives of phraseological approach to collocations (Drábková, 2011; Men, 2018; Nesselhauf, 2005).

Cowie defines collocations as “co-occurrence of two or more lexical items as realizations of structural elements within a given syntactic pattern” (Cowie, 1978, p.132). Word combinations are divided into two by him as *composites* and *formulae* (Cowie, 1988, 1994). This distinction is based on the pragmatic and syntactic functions and the length of the unit. The word combinations of sentence-length which have primarily pragmatic function are called *formulae* and the units from below the sentence level that primarily have syntactic function are called *composites.* According to Cowie (1994), collocations are considered to be among composites. He also introduces two criteria for making a distinction among composites and indicates that they interact closely. The first one is *semantic transparency/opacity* and seems to be a good indicator of the difference between idioms and collocations. Semantic transparency shows if the meaning of the word combination can be inferred from the meanings of the components that make up the combination (Men, 2015). Men (2018) explains this by giving the examples of *kick the bucket* and *spill the beans* and states that “the semantics of the whole

combination is opaque" (p. 21) because the meaning of the idiom *kick the bucket* is not a sum of the meanings of *kick* and *bucket.* Although this factor can explain the difference between the idioms and collocations, it cannot detect the difference between collocations and free combinations as they are both transparent in meaning. The second criterion is *commutability (or substitutability)*. It is used to refer to the possibility and degree of restriction of the word combinations' elements. Collocations are regarded as the units that allow interchangeability of one of the components on condition that the other component stays the same (Cowie, 1981). In order to exemplify the substitutability of items in a collocation, he states that in the collocation *run a business, a theatre* or *a bus company* may substitute *a business.* On the basis of these two criteria, semantic transparency/opacity and commutability (or substitutability), Cowie (1994) categories word combinations as free combinations, restricted collocations, figurative idioms and pure idioms, emphasizing that these categories should be seen on a continuum. Nesselhauf (2005) summarizes the features of those categories. According to the researcher, in free combinations, replacement of components is at semantic level. The components of combinations are used with their literal meaning. In restricted collocations, replacement of components is probable but there are arbitrarily restricted. Although one of the components is used with non-literal sense, the collocation itself is not opaque. In figurative idioms, replacement of components is frequently impossible. As its name suggests, combinations have figurative sense. However, it is possible to interpret the meaning of the combination making use of the meaning of one of its components. Lastly, in pure idioms, the components cannot be changed and they have figurative sense. Additionally, it is not possible to interpret the meaning of pure idioms by the meaning of its components.

Another representative of phraseological approach is Mel′čuk (1998, 2012). He treats collocations as a part of his Meaning-Text Framework (1998). In this framework, he shows how conceptual representations in a person's mind are turned into semantic representations and from which the person constructs phonetic representation of an utterance through a series of steps. In his framework, he states that phraseological expressions have two types; "free phrases" and "non-free phrases" (Mel′čuk, 2012, p.33). As the meanings of the

terms imply, free phrases are the ones that can be constructed with freedom of selection. It means that keeping the meaning the same and obeying the grammar rules, instead of lexical components of a phrase, their synonyms can be used as well. However, it is not possible to change the words in non-free phrases, as they violate the freedom of selection (Mel′čuk, 1998, 2012). He calls non-free phrases as "phrasemes" (Mel′čuk, 2012, p. 33) or "set phrases" (Mel′čuk, 1998, p. 24) and focuses on them in both of his work. In his earlier work, he divides phrasemes into two as "pragmatic phrasemes" and "semantic phrasemes" and idioms, collocations and quasi-idioms are given as subcategories of semantic phrasemes (Mel′čuk, 1998, p. 30). According to this classification, pragmatic phrasemes are like Cowie's *formulae* and semantic phrasemes are like his *composites* (Gyllstad, 2007). However, in his later work, he categorizes phrasemes according to compositionality on the one hand and lexical vs semantic-lexical constraints (Mel′čuk, 2012, p.42).

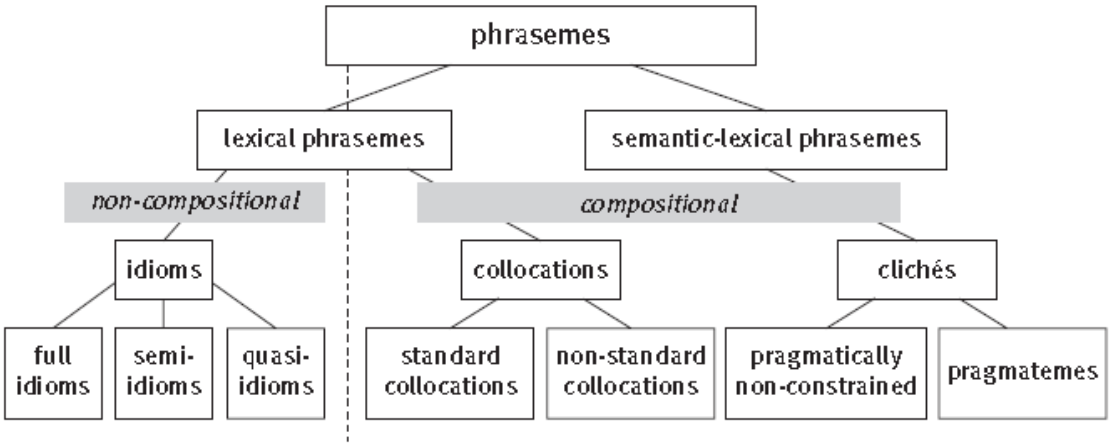

Figure 5. Phraseme typology by Mel′čuk (2012).

As it is seen in the figure above, collocations are seen as a compositional subcategory of lexical phrasemes. Similar to Sinclair's base-collocate distinction for talking about the components of a collocation, he uses the terms "base" for freely selected words/phrases and "collocate" for expressions that are selected related to the base to convey the meaning (Mel′čuk, 2012). He also divides collocations into two as standard and non-standard collocations. In standard collocations, semantic relation can be given with different bases, it defines different collocates and paraphrasing is possible. For example, the meaning "John apologizes to Mary" can be expressed as "John makes (=offers) Mary an

APOLOGY" and "Mary receives an APOLOGY from John" (Mel′čuk, 2012, p. 40). However, in non-standard collocations, base and collocates are restricted and paraphrasing is not possible, as in the examples "leap year" and "black coffee" (Mel′čuk, 2012).

In summary, phraseological approach sees collocations as a kind of word combination, with different degrees of fixedness (Gyllstad, 2007). They attempt to categorize word combinations on a continuum and they do not refer to frequency among the criteria they value while making the categorizations.

Approach Followed in the Present Study

The present study follows an eclectic approach by employing some criteria from the point of frequency-based approach and some from the point of phraseological approach. Referring to frequency-based approach, collocation is defined as "strings of words that seem to have a certain mutual expectancy or a greater-than-chance likelihood that they will co-occur in any text" (Nattinger & DeCarrico, 1992, p. 21). First, the present study follows a frequency-based approach as it aims to investigate L2 learners' collocational knowledge in accordance with their occurrence and co-occurrence frequency. Both for the single-word items and collocations, the starting point is assessing the knowledge of most frequent ones, as frequency is thought to be the most objective measure for investigating collocations (Nguyen & Webb, 2017). Furthermore, Durrant and Schmitt (2009) state that frequency indicates that those collocations are common in the language and use of them results in natural language use. As a result, they claim that collocations constitute a huge and crucial component of formulaic language and ignoring them hinders seeing the big picture (Durrant & Schmitt, 2009).

Although frequency-based approach seems to be an objective way for selecting collocations, Nguyen and Webb (2017) also state its limitation. It is about some "semantic factors that affect learnability of collocations like congruency and transparency" (p. 300). In frequency-based approach, these two factors are not taken into consideration. However, as it is one of the independent variables of the present study, congruency is also controlled; half of the collocations in the study are congruent collocations and half of them are incongruent ones. This is done in

relation to the fact that one aim of the current study is to investigate the effect of congruency with L1 on the knowledge of collocations. In addition to congruency, it is also aimed to control transparency. The collocations that are selected for the study are also checked in terms of transparency of their meaning. Pure idioms are excluded because they are not one of the factors whose effect is aimed to be investigated in the study. If it is not controlled, extra burden of learning them can intervene the results of the study. By controlling the factors of congruency and transparency and using frequency of co-occurrence as the primary criterion, a more objective approach is aimed to be followed.

Classifications of Collocations

Collocations are grouped into different types by reason of different approaches to define them, as it can be seen in the previous section. Nonetheless, in terms of L2 collocation acquisition, two general types, which were based on the syntactic features of the constituents of a collocation, are commonly agreed. The two general types are grammatical and lexical collocations (e.g., Bahns & Eldaw, 1993; Baker, 1992; Benson et al., 1986; Lewis, 2000). A grammatical collocation is defined as “a phrase consisting of a dominant word (noun, adjective, verb) and a preposition or grammatical structure such as an infinitive or clause” (Benson et al., 2010, p. XIX). On the other hand, lexical collocations are the combinations of “two equal lexical components (open class words)” (Lewis, 2000, p. 134).

The most comprehensive classification of grammatical and lexical collocations is found in *The BBI Combinatory Dictionary of English* (Benson et al., 2010, p. XIX-XXXIV). The dictionary offers eight types of grammatical collocations and seven types of lexical collocations. The summary of the types of grammatical and lexical collocations and their examples are given in the table below.

Table 1

Types of Grammatical and Lexical Collocations (adapted from Benson et al., 2010, p. XIX-XXXIV)

Grammatical Collocations:

G1= noun + preposition e.g. *blockade against, apathy towards*

G2= noun + infinitive with to e.g. *They felt* ***a compulsion*** *(an impulse, a need)* ***to do*** *it.*

G3= noun + that clause e.g. *He took* ***an oath that*** *he would do his duty.*

G4= preposition + noun e.g. *in advance, to somebody's advantage*

G5= adjective + preposition e.g. *They were* ***hungry for*** *news.*

G6= adjective + infinitive with to e.g. *She (the girl) is* ***ready to*** *go*

G7= adjective + that clause e.g. *It was* ***nice that*** *he was able to come home for the holidays.*

G8= 19 different verb patterns in English e.g. verb + object+ infinitive without to
e.g. *We* ***let the children go****,*
verb + possessive + gerund e.g. *This fact* ***justifies Bob's coming*** *late.*

Lexical collocations:

L1= verb (which means creation and/or action) + noun/pronoun/prepositional phrase
e.g. *make an impression, apply a principle*

L2= verb (which means eradication and/or nullification) + noun e.g. *lift a blockade, break a code*

L3= adjective + noun e.g. *strong tea, a rough estimate*
noun used attributively + noun e.g. *jet engine, aptitude test*

L4= noun + verb naming an action characteristic of the person or thing designated by the noun
e.g. *alarms go off, blizzards rage*

L5= noun + of + noun e.g. *a bouquet of flowers, an act of violence*

L6= adverb + adjective e.g. *deeply absorbed, strictly accurate*

L7= verb + adverb e.g. *affect deeply, appreciate sincerely*

In the scope of the present study, it is aimed to investigate verb-noun and adjective-noun collocations from the category of lexical collocations. Grammatical collocations are not explored in this study related to practicality issues.

Importance of Learning Collocations

Knowing a language is not such an easy phenomenon that is just related to knowing the meaning of single word items at the lexical level, but it also involves knowing the patterns of collocations used in the language (Laufer & Waldman, 2011; Yule, 2003). A great number of studies conducted to measure language learners' collocational knowledge at the receptive (e.g. Gyllstad, 2007; Nizonkiza, 2015) and productive (e.g. Nesselhauf, 2003; Siyanova & Schmitt, 2008) levels, to analyze the reasons of collocational errors (e.g. Hong et al., 2011; Phoocharoensil, 2014), to explore the factors that affect collocational knowledge

(e.g. Fernández & Schmitt, 2015; Webb & Kagimoto, 2011) or studies focused on teaching or retention of collocational knowledge (e.g. Boers, Dang & Strong, 2016; Pellicer-Sánchez, 2015) all reflect that collocational knowledge caught attention of many researchers as an important component of lexical competence.

Learning collocations of a language is a crucial section of language learning process because of some features of them and contribution in the language production. First of all, learning collocations in a language is important because of their frequency of occurrence in a language. Corpus studies present the frequency of collocations (Nesselhauf, 2005). Lewis (2000) states that in English the most frequent multi-word units are collocations. Similarly, in a study Howarth (1996) found that one in three of the over 5,000 verb-noun combinations in a corpus were collocations. Correspondingly, it is estimated that in up to 70% of the written and spoken language, there are collocations (Hill, 2000). As a consequence, it is important to learn such a frequent language component in order to use the language effectively.

Second, collocations are arbitrary in nature and as a result, it is difficult to predict them (El-Dakhs, 2015). Laufer (1988) uses the term “rulelessness” for stating the arbitrariness of collocations and asserts that it causes a problem for L2 learners in vocabulary learning. Trying to find the words that are used as collocates can result in wrong usages, especially with the effect of their L1 knowledge. Although, the arbitrary nature of collocations seems to cause difficulties for L2 learners in their language learning process, it also indicates that special attention is needed to be paid for learning them because they are an indispensable component of language. Knowledge of them helps L2 learners in different levels of their vocabulary development (Laufer, 1988) and they should be learnt like single word items (El-Dakhs, 2015). Third, related to their arbitrary nature, they are also language specific. It means that L2 learners should know there are not one-to-one correspondence of them in the language they learn (El-Dakhs, 2015). As collocations do not have one-to-one equivalent in all languages, language learners tend to transfer their collocational knowledge from their L1 (Begagić, 2014). Hence, they produce non-existent collocations in L2. This feature of the collocations also leads to the fact that they should be learnt as well as the single word items of a language.

Fourth, as collocations enhance the quality and fluency of the language produced (Laufer & Wladman, 2011), they are important for fluency not only in spoken, but also in written language. For fluent and comprehensible language production, collocational knowledge is a prerequisite (Nation, 2001). Application of this knowledge increases the quality of language production as it facilitates idiomaticity and native-like language use (James, 1998). They are seen as the most important factor that causes to sound natural (Hoey, 2005; Kjellmer, 1990). Insufficiency of this knowledge hinders fluency and reflects people's foreignness (James, 1998).

To sum up, it can be stated that collocations are an inseparable and essential, arbitrary, unpredictable and frequent constituent of a language. Lack of knowledge of collocations causes unnatural production of language. For being a competent and native-like language user, L2 learners need to learn the collocations of their target language.

Tests for Measuring Receptive and Productive Collocational Knowledge

There are a few studies attempted to develop a valid test for assessing collocational knowledge (Nguyen & Webb, 2017). Although the number of validated tests for receptive collocational knowledge is limited, for the productive one it is even less. Five validated tests for assessing receptive collocational knowledge and two for assessing productive collocational knowledge are analyzed here.

The first of the validated tests was developed by Keshavarz and Salimi (2007). They designed a 50-item multiple-choice instrument for the assessment of lexical and grammatical collocational knowledge. The only lexical collocation type tested was verb-noun collocations. The grammatical collocations tested in the study were the combinations of adjectives, nouns and verbs with prepositions. The prepositions in the grammatical collocations and the verbs in the verb-noun collocations were deleted to construct multiple-choice questions. They used the test to explore the relationship between the proficiency levels of participants and their receptive collocational knowledge. The result of their study revealed a positive relationship between participants' proficiency levels and their receptive knowledge of all types of collocations.

The second test to measure receptive collocational knowledge was developed by Jaén (2007). As she thought the adjective-noun collocations were neglected in the previous studies, she developed a 40-item multiple-choice instrument to assess them in her study. The nouns of the test were chosen among the most frequent 1,000 words and their most frequent adjective collocates were chosen from British National Corpus. For choosing the distractors, pseudo-collocates of the target nouns were created and they were also checked from the same corpus. Distractors included one target collocation, two pseudo collocations and "none of these" option. This option was added in order to decrease the effect of guessing.

The third test was developed by Eyckmans (2009) and the test was called Discriminating Collocations Test (DISCO). Both frequency-based and phraseological approaches were adopted for deciding on the target verb-noun collocations. She stated that "In this study collocations are defined as frequently co-occurring Verb + Noun combinations that are different from free Verb + Noun combinations in that there is a restriction on the substitutability of their parts" (p. 142). She chose 40 verbs from the General Service List (West, 1953) and their collocates, nouns, were selected from British National Corpus. For making sure that all of them were collocations, not free verb-noun combinations, she also used another corpus, the Collins COBUILD Bank of English (HarperCollins, 2007). Eventually, she decided on 15 high frequency, 15 medium frequency and 20 low frequency verb-noun collocations. The test had a multiple choice format. Each item included two idiomatic verb-noun combinations and one non-idiomatic distractor.

The other two tests to measure receptive collocational knowledge were designed by Gyllstad (2009). The names of the tests were COLLEX and COLLMATCH. Both of the tests aimed at measuring the receptive knowledge of verb-noun collocations. In the design of COLLEX, the goal was to choose high frequency words that made up the collocations and words were decided to be chosen among the first four 1,000 frequency levels. The frequencies of words were checked from JACET 8000 (Ishikawa et al., 2003) word list and British National Corpus (BNC; Oxford University, 2005). For deciding on the distractors, it was stated that Gyllstad (2009) checked the z-scores to find they are not frequent

in BNC. COLLEX had a forced-choice format; one target verb-noun collocation was presented with two distractors and the test takers were expected to tick the most frequent one or the one used by English native speakers. The distractors were pseudo collocations and the test was made up of 50 items. An item from COLLEX can be seen in Figure 6.

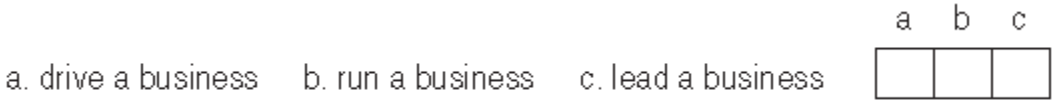

Figure 6. An item from COLLEX (Gyllstad, 2009).

For design of the other test, COLLMATCH, the same procedures were followed for item selection. However, the test format of this test was different from the first one. COLLMATCH had a Yes/No format. The test takers were expected to decide if it is a collocation or not and tick yes or no. It was made up of 100 items, 70 target collocations and 30 pseudo collocations. Gyllstad (2009) used these two tests and a receptive vocabulary knowledge test to find out if the participants' knowledge of vocabulary and collocations were correlated. The results indicated that these two word knowledge aspects were correlated positively.

Nguyen and Webb (2017) criticized these validated receptive collocational knowledge tests based on some features of the tests and their design procedure. First, they stated that none of the tests evaluated the change of collocational knowledge based on different frequency levels. Although Eyckmans (2009) claimed that the collocations were selected from high, medium and low frequency levels, the levels of frequency were not clearly stated. Their second criticism about the previous tests was about the obscurity of their item selection criteria. They asserted that although Gyllstad (2009) and Eyckmans (2009) used statistical measurement from corpus like z-score and frequency, the other two studies Keshavarz and Salimi (2007) and Jaén (2007) failed to clearly prove that their items were selected to represent the collocations. It was interesting to find out that Jaén (2007) had criticized Keshavarz & Salimi (2007) for choosing the items intuitively; she was also criticized by Nguyen and Webb (2017) about the same thing. They claimed that Jaén (2007) did not make use of statistical measurement to be able to choose the items objectively. Third, they stated that the previous studies did not clearly explain their distractor selection criteria. Their last comment

was about the number of items in the previous tests. They thought that except for COLLMATCH, the other tests did not include enough items to represent the collocation knowledge.

As stated before, two productive tests were validated for assessing collocational knowledge. The first one was designed by Jaén (2007). By following the same design procedure, she also developed a 40-item fill-in-the-blank test for measuring adjective-noun collocations productively. By utilizing the two tests she developed, she carried out research by testing the receptive and productive collocational knowledge of 62 English majored students. The results of the study showed that the participants had the receptive knowledge of 46% of the adjective-noun collocations and productive knowledge of about 31% of them. Also, the difference between the two levels of collocational knowledge was statistically significant.

The second productive collocational test, CONTRIX, was designed by Revier (2009). The test included 45 target verb-noun collocations and they were divided into three in terms of transparency as transparent, semi-transparent and non-transparent collocations. It aimed to test the *whole* collocation, the verb, determiner and the noun that constitutes a collocation. The format of the test can be seen in the Figure 7 below. Test takers were expected to choose the correct collocation that best completes the given sentence by evaluating the given verb, determiner and noun. The items in the test were selected from British National Corpus (BNC; Oxford University, 2005) and the nouns were among the first three 1,000 frequency levels. As test-takers were supposed to select accurate collocations, the author felt that people would think it was a receptive test. He stated that to test the productive knowledge, test takers did not need to produce meaning, but they also needed to do grammatical encoding for deciding on the correct collocation.

The quickest way to win a friend's trust is to show that you are able to [ ].	tell	a/an	joke
	take	the	secret
	keep	—	truth

Figure 7. An item from CONTRIX (Revier, 2009).

L2 Learners' Knowledge of Collocations

Collocational knowledge of learners has been researched basically with the help of two types of methodology (Siyanova & Schmitt, 2008). The first group of studies investigated the learner production by analyzing the learner corpora (e.g. Laufer & Waldman, 2011; Macis & Schmitt, 2017; Nesselhauf, 2003; Shin, 2007; Shin & Nation, 2008; Siyanova & Schmitt, 2008). In constrast, the second group of research studies utilized offline tests; different types of receptive and productive tests and questionnaires (e.g. Begagić, 2014; Ebrahimi-Bazzaz et al., 2014; El-Dakhs, 2015; Gaballa & Al-Khayri, 2014; Jaen, 2007; Mutlu & Kaşlıoğlu, 2016; Nizonkiza, 2012, 2013, 2015; Nizonkiza & Van de Poel, 2014, 2016) to find out how and why some types of collocations are known or used.

There have been studies that focused on just (a) the receptive knowledge of collocations, (b) productive knowledge of collocations or (c) both receptive and productive knowledge of collocations. An example of the studies which searched the receptive knowledge of collocations is Nizonkiza's (2015) study. He carried out a study to investigate whether the participants' receptive verb-noun collocational knowledge and their proficiency levels were correlated. The words were selected from Nation's (2006) second, third and fifth frequency levels in addition to Coxhead's (2000) Academic Word List. With ten words from each frequency levels, in total 40 words were selected. After the selection of the words at different frequency levels, their collocates were selected as a next step. The same collocations used in his previous study (2012) were employed in this study as well, but as it tested receptive knowledge, the same sentences were provided with a multiple choice test format. The results of the study showed that there was a statistically significant correlation between the receptive knowledge of verb-noun collocations and proficiency levels of the participants. Moreover, receptive collocational knowledge increased with the frequency of the node words. Collocations with the more frequent node words resulted in more gains.

In the second group of collocation studies, the productive knowledge of collocations was investigated by some researchers (e.g. Ebrahimi-Bazzaz et al., 2014; El-Dakhs, 2015; Nizonkiza, 2012, 2013; Nizonkiza & Van de Poel, 2014, 2016). Before the study on receptive knowledge of collocations (Nizonkiza, 2015),

Nizonkiza (2012) developed a controlled productive knowledge of verb-noun collocations test modeled on Laufer and Nation (1999) and investigated the relationship between language proficiency and knowledge of collocations. He designed a sentence based gap-filling test and found that there was a correlation between the collocational knowledge of the participants and their proficiency levels. It was also found that the more frequent the words, the better they were known by the participants. While moderate gains were observed at beginner and advanced levels, the gains were impressive at the intermediate level. In another study, freshmen' productive knowledge of verb-noun collocations was tested with the same test battery (Nizonkiza et al., 2013). The study showed that the participants only mastered the productive knowledge of collocations whose node words were at 2000 word frequency band. However, they fell below the cut-off point for the other frequency bands. The cut-off point was set as 80% and as there were 10 collocations at each frequency band, knowledge of 8 out of 10 collocations was the threshold of mastery. Although Nizonkiza (2012, 2015) chose the target node words of the collocations from different frequency bands, he did not focus on the frequency of the collocations, and 2,000, 3,000, 5,000 and AWL bands were the levels from which the node words were selected. The most frequent words at 1,000 frequency level were not covered in the collocation tests. Furthermore, the criteria used for the selection of the node words and the distractors were not supplied in details so it is not clear whether the collocates of the nouns were more or less frequent than the node words. In addition, referring to Nation and Beglar (2007), from each frequency band only ten collocations were selected and it is negotiable whether just ten words are enough to fully represent the knowledge of collocations in a frequency of 1000 words.

In addition to these, Nizonkiza and van de Poel (2014, 2016) conducted two studies on the productive knowledge of collocations. In the first one (Nizonkiza & van de Poel, 2014), they investigated the size of productive knowledge of verb-noun and adjective-noun collocations across different proficiency levels. They also compared these two types of collocations in terms of difficulty for deciding what stage would be effective to teach them. The productive knowledge of verb-noun collocations test that was developed by Nizonkiza (2012) was used in this study and a new test was developed for the adjective-noun collocations. The

researchers found out that not only in total collocational knowledge, but also at different frequency levels, verb-noun collocations were easier to learn compared to adjective-noun collocations. They also estimated the size of collocational knowledge for different proficiency levels and suggested some steps for teaching collocations. However, in the second one, Nizonkiza and Van de Poel (2016) investigated the productive knowledge of adverb-verb collocations of PhD candidates. They both measured their free and controlled productive knowledge of collocations. For free productive task, abstracts of 35 papers written by those PhD candidates were analyzed and for controlled task a gap-filling test with 30 target collocations was developed. The findings indicated that free productive knowledge of adverb-verb collocations was problematic for the EFL learners while in controlled setting, they were not found to be so problematic. This study clearly shows the complicated nature of collocations. In a controlled productive setting, the clues given in the context of the sentence help learners detect the collocations. However, in a totally free setting, learners tend to use words together, maybe because of the effect of their L1, without paying attention to whether they are collocations or not.

In another study, Ebrahimi-Bazzaz et al. (2014) investigated the relationship between the productive knowledge of verb-noun collocations of Iranian EFL learners and their year of study by focusing on learners at their first, second, third and fourth years at the university. A C-test was used for assessing their knowledge of verb-noun collocations. The test had a fill-in-the-blanks format, the nouns were given and the verbs were elicited. The results of the study showed that there was a significant difference between the first, the third and the fourth years and between second and fourth years. The researchers commented on the results of the study that there was an effect of implicit learning as the knowledge of collocations increased by years despite the lack of any formal instruction. El-Dakhs (2015) also conducted a study to explore the productive knowledge of verb-noun and adjective-noun collocations of EFL learners at preparatory, second and fourth years of their university education. The productive knowledge of verb-noun collocations was investigated with 15 sentences in which verbs were missing and the Arabic translation of the verbs were given as clue. In addition, adjective-noun collocational knowledge was also investigated with another set of 15 sentences

with the same procedure. The results revealed that there was a statistically significant difference for verb-noun collocations between the preparatory year and the fourth year in favor of the fourth year. For the adjective-noun collocations, the statistically significant difference was between the preparatory year and second and fourth years in favor of the higher levels. Moreover, when the two types of collocations were compared, statistically significant difference was also found for verb-noun collocations at preparatory and fourth years. Overall, the knowledge of verb-noun collocations was significantly higher than the knowledge of adjective-noun collocations. As it can be seen, in both of these studies (Ebrahimi-Bazzaz et al., 2014 and El-Dakhs, 2015), the results showed the effect of year of study on the productive knowledge of collocations.

In addition to studies focusing on receptive or productive knowledge of collocations, there have been some studies which compared receptive and productive knowledge of collocations (e.g. Begagić, 2014; Gaballa & Al-Khayri, 2014; Jaen, 2007; Mutlu & Kaşlıoğlu, 2016). Gaballa and Al-Khayri (2014) conducted a study to examine the advanced English learners' receptive and productive knowledge of collocations. They compared the effects of ESL and EFL environments and gender on knowledge of verb-noun, adjective-noun and verb-preposition collocations. For assessing the productive knowledge of each type of collocation, three gap-filling tests were employed and each test included 16 target collocations. For the verb-noun and adjective-noun colocations, the nouns of the collocations and the initial letters of verbs and adjectives were provided. On the other hand, in the verb-preposition collocations test, the verbs were provided and the participants were expected to fill in the gaps with appropriate prepositions. For this test, the meaning of the collocation was also supplied in parentheses at the end of each sentence. An appropriateness judgement test was used to assess the receptive knowledge of collocations. In addition to the same 48 sentences used in the three productive tests, 27 mismatched collocations were also included in this test as distractors. Also, the collocations in the sentences were underlined and the participants were asked to judge the appropriateness of the collocations. The results of the study revealed that ESL learners outperformed EFL learners and participants had higher scores for receptive test than the productive one. In addition, the participants had better scores for the verb-noun collocations than the

other types of collocations. In another study, receptive and productive knowledge of adjective-noun collocations was also investigated at tertiary level as well. Jaen (2007) conducted a study to test the receptive and productive collocational competence of ESL students at tertiary level. Adjective-noun collocations that are frequently used in English were the target of the study, as they were thought to be an important but neglected type of collocation in the previous studies. The nouns were selected from the most frequent 1000 words and then the adjectives frequently used with those nouns were selected. The selection of the collocations was based on three criteria; 1) being used in a great number of contexts and texts, 2) semantic transparency, 3) being restricted in terms of commutability and/or combinability. As a result of corpus analysis, 80 adjective-noun collocations were selected; half of them were used in the receptive and the other half was used in the productive test. Receptive collocational test was a multiple choice format test in which sentences with the missing collocations were provided. Productive collocational test was a close ended gap-filling test and the participants were asked the target collocations in the gaps. The results of the study showed that, as expected, the participants' receptive knowledge of collocations was significantly higher than their productive knowledge.

Begagić (2014) also conducted a study that focused on year of study. L2 learners' receptive and productive knowledge of verb-noun, adjective-noun and verb-adverb collocations was searched for learners at first and fourth years of university. For gathering the data, three gap-filling productive tests and an appropriateness of judgement receptive test were used. For each type of collocations, there were 20 questions in both receptive and productive tests. The results showed that in both receptive and productive tests, there was a significant difference between the first and fourth year students, in favor of the fourth year students. It was also found that the receptive knowledge of the participants was higher their productive knowledge of collocations. As for the type of collocation, it was found that both groups of participants found verb-adverb collocations more difficult to learn productively than the other two types of collocations.

In Turkish context, a study on collocations was conducted by Mutlu and Kaşlıoğlu (2016) to investigate the relationship between the receptive vocabulary size and receptive and productive knowledge of verb-noun collocations. They

used Vocabulary Size Test (Nation & Beglar, 2007) for assessing the receptive vocabulary size of the participants and COLLMATCH 3 (Gyllstad, 2007) for assessing the receptive knowledge of verb-noun collocations. For the productive collocation test, they designed the productive version of COLLMATCH 3 by providing sentences with target collocations. The verbs in those sentences were given in gaps and the nouns were kept. The participants were asked to fill in the gaps with the verbs of the target collocations by providing the first letters of the verbs as clue. The results of the study revealed that there was a significant positive correlation between the participants' receptive vocabulary size and their receptive and productive knowledge of collocations. Moreover, the participants' receptive knowledge of collocations was significantly higher than their productive knowledge of collocations.

Previous Studies Investigating the Factors that Affect Knowledge of Collocations

To the knowledge of the author, there have been three studies investigating the factors that affect knowledge of collocations. The first of them was conducted by Peters (2015) and investigated the effect of interlexical (congruency) and intralexical (collocate-node relationship and the length of words) factors at the initial stage of form-meaning mapping. Collocate-node relationship was investigated in adjective–noun, verb–noun, phrasal verb–noun collocations. Based on a pre-test 18 collocations, 9 congruent and 9 incongruent, were selected. For each collocation type, there were 6 representatives. For treatment, the participants read a list of the collocations, which also included translations and sample sentences. Following that, they completed four online tests. With form-recall and form-recognition tests, learning gains were measured. The results revealed that the learning difficulty of collocations was affected by all factors. Congruency with L1 facilitated the recall of collocations and it was easier to recall and recognize adjective-noun collocations than the other types. It also showed that receptive vocabulary size and word length of the collocations also affected learning collocations.

In the second study, Fernández and Schmitt (2015) aimed to explore the productive knowledge of 50 collocations which were selected from COCA (Davies,

2008) based on corpus frequency, t-score and MI-score. They also employed a gap-filling format test, but both the node word and its collocate were missing. Moreover, the context of each sentence was given in Spanish and the question with the missing collocations was given. It was found that a substantial number of collocations were known by Spanish EFL learners with the mean score of 28.29 out of 50. It was also found that frequency explained the learners' knowledge of the target collocations slightly better than t-score, but MI-score did not show any significant relation. In addition, they also investigated the effect of individual differences such as age, gender, self-rating of L2 proficiency on productive knowledge of collocations and found no effect of gender and very weak effect of age. However, the correlation between their self-rating of L2 proficiency and productive knowledge of collocation was strong. Moreover, they also evaluated the amount and type of language use outside the classroom such as reading, watching TV or films, listening to music, using social media and visiting an English speaking country. They found that except for listening to music, all the variables were related to knowledge of collocations. Combination of all of the factors, excluding listening to music, explained 31% of knowledge of collocations. As a result, they concluded that the more language input means the better knowledge of collocations.

The third study investigating the factors that affect knowledge of collocations is a very recent study and conducted by Nguyen and Webb (2017). Similar to the present study, they designed a study investigating the factors that affected the receptive knowledge of collocations of nouns at the first three 1000 word frequency level. This study was different from the previous studies as it based the selection of the nouns on different frequency levels, including the first 1000 word band. The selection criteria of the target collocations and distractors of the present study are also based on their study. They focused on verb-noun and adjective-noun collocations and selected 30 collocations of each collocation type at the first three 1,000 word frequency levels. They investigated the effect of receptive vocabulary size, node word frequency, collocational frequency, MI score, congruency and type of collocation on participants' receptive knowledge of collocations. However, they neither focused on productive vocabulary size nor productive knowledge of collocations. Moreover, they did not investigate the effect

of individual differences. The results revealed that for both types of multi-word units, there was a frequency effect on receptive knowledge. Participants had higher scores for high frequency collocations than the lower frequency ones. For the receptive vocabulary size scores, similar results were also found. In addition, receptive knowledge of vocabulary and collocations was correlated positively. The results of the analysis of the factors that affect the receptive knowledge of collocations revealed that node word frequency predicted collocational knowledge the best and MI and the collocational knowledge scores were negatively correlated.

Chapter 3
Methodology

In this section of the dissertation, the methodological procedures of the study are presented. The rationale for the present study and the review of the related studies were provided in the previous two chapters. This chapter describes the research design of the current study including its methodological framework, setting, participants, instruments used for the study, data collection procedures, and the data analysis.

Methodological Framework

A quantitative research design has been adopted in the present study as it is best suited to the aims of the study. Quantitative research involves the analysis of the numeric data (Loewen & Plonsky, 2016). In other words, numerical data are collected and analyzed in order to "describe, explain, predict or control phenomena of interest" (Mills & Gay, 2016, p. 24). Quantitative research adopts a positivist perspective that means through accurate measurement and analysis, it is possible to discover the truth (Loewen & Plonsky, 2016) and the truth is not dependent on the person who examines it, when and how it is examined (Paltridge & Phakiti, 2015). This objectivity regulates the research setting and avoids the possible influence of subjectivity (Paltridge & Phakiti, 2015). This is usually because of the fact that most of the quantitative researchers collect their data by using non-interactive instruments and the numerical data are analyzed systematically with the help of some statistical tools. For analyzing the data obtained in a quantitative research, both descriptive and inferential statistics can be used (Vanderstoep & Johnston, 2009). As it is important to make objective measurement in quantitative research, the validity and the reliability of the instruments are also seen to be essential for meaningful interpretations of the data (Creswell, 2009). Moreover, direct observation is thought to be essential for accepting the claims (Mills & Gay, 2016). Instead of personal interpretations or inferences, something that can be directly observed is used to test a hypothesis or a theory. As quantitative research aims to reach the truth by testing theories and hypotheses, it "follows the confirmatory scientific method" (Johnson & Christensen, 2016, p. 108). It has three steps. First, the researchers state a hypothesis, usually

based on an existing theory. Second, they collect data in order to test the hypothesis and at the last step, the researchers decide to accept or reject the hypothesis according to the results of the data analysis (Johnson & Christensen, 2016). The sample participated in the quantitative research represents the population, and it is possible to make generalizations to the whole population in a quantitative research design.

The current study aims to find out the receptive and productive vocabulary and collocational knowledge of the EFL learners and also the factors that affect their receptive and productive collocational knowledge. In line with the aims of the study, a non-experimental quantitative research design has been adopted. For revealing the knowledge of single word items and collocations, descriptive research method has been employed. It means that the knowledge of the participants has just been assessed without any interpretation; in other words the present situation has been described in their natural setting. In addition, for analyzing the effects of factors on collocational knowledge, correlational research method has been employed in this study. Correlational research aims to reveal if there is a relationship between two or more quantifiable variables or sets of scores, and if there is a relationship between the variables, to what extent they are related (Creswell, 2012; Creswell & Creswell, 2018; Paltridge & Phakiti, 2015). Research setting is not manipulated like in descriptive research. Besides, the type of correlational study design that is employed in the present study is cross-sectional, as the data have been collected at a single point in time. It does not aim to find out the change of the participants' collocational knowledge levels over time, but to take a snapshot of the current level of participant' receptive and productive knowledge and investigate the possible effects on it at a particular time (Paltridge & Phakiti, 2015; Riazi, 2016).

Pilot Study

Aims of the pilot study. All the instruments and the data collection procedures were piloted on 40 volunteers before the main study. The first aim of the pilot study was to test the reliability of the instruments that were planned to be used in the main study. It was important to check their reliability as three of the instruments were newly designed. Another reason of conducting a pilot study was

to check if the items were understandable and if they had any potential problems that can affect the reliability of the study. For example, two of the designed instruments included gap-filling questions in which two letters of the target items were provided. By piloting the tests, any other potential correct answers were also checked. The pilot study also aimed to test the data collection procedure and the planned application order of the instruments. It was planned to apply the productive tests before the receptive ones. The reason of this planning was to avoid memory effect because in the receptive tests the participants see the target items with distractors. However, in the productive tests, they were expected to recall the written forms of target items and write them in the given blanks. The pilot study gave the researcher the chance to gauge the duration of time needed for completing each of the instruments and if the oral and written instructions were clear for the participants. In conclusion, pilot study was an important phase of the study as it was conducted to find out any potential practical problems related to the test batteries and the data collection procedure.

Setting and participants. The pilot study was conducted at a state university in Turkey in the spring semester of 2018-2019 academic year. The pilot and the main studies were conducted at an English-medium faculty. As it is an English-medium faculty, all the students are expected to pass the English proficiency exam before they start education at their departments. If they cannot pass the exam, they have to have intensive English language education at the School of Foreign Languages, for two years at most. After having an extensive English language education for two years, if the students fail the English proficiency exam, they are not allowed to go on their education at this university. The pilot study was conducted with the participation of 40 first and third year students enrolled in the departments of the faculty. When the data were collected, the participants of the pilot study were in the spring term of their first and third years of university education at their departments. Table 2 shows the demographic information of the participants in the pilot study.

Table 2

Demographic Information of the Participants in the Pilot Study

Variables		*N*	%
Age	18	4	10
	19	13	32.5
	20	6	15
	21	14	35
	22	3	7.5
	Total	40	100
Gender	Male	16	40
	Female	24	60
	Total	40	100
Department and Class	Department A - 1st year	10	25
	Department A - 3rd year	9	22.5
	Department B - 1st year	12	30
	Department B - 3rd year	9	22.5
	Total	40	100

The age of the participants in the pilot study displayed a close age band with the mean age of 19.98 (*SD* = 1.18; minimum = 18, maximum = 22). While 16 (40%) of the participants were male, 24 (60%) of them were female. When the departments of the participants were investigated, it was seen that 19 (47.5%) of them were enrolled in the department A and 21 (52.5%) of them were enrolled in the department B. Of the participants enrolled in department A, 10 (25%) out of 19 were freshmen and 9 (22.5%) were juniors. For the students in the department B, 12 (30%) out of 21 were freshmen and 9 of them were juniors. It meant that 22 (55%) freshmen and 18 (45%) juniors participated in the pilot study.

Instruments. Four tests were used in the pilot study for collecting data. The first two of them were a 90-item receptive vocabulary knowledge test and a 90-item productive vocabulary knowledge test. The other two instruments were a 120-item receptive knowledge of collocations and a 120-item productive knowledge of collocations test. Except for the receptive vocabulary knowledge test, the other three tests were specifically designed for the present study. More detailed information on each instrument is presented below.

Receptive vocabulary knowledge test. In order to assess participants' receptive vocabulary knowledge, the Updated VLT (Webb et al., 2017) was used.

It is a similar version of the earlier VLT (Schmitt et al, 2001). Although the earlier versions start with 2,000 word frequency level, the updated VLT also includes words from 1,000 level. The five frequency levels in the new VLT forms are 1,000 (the most frequent 1–1000 word-families), 2,000 (the most frequent 1,001–2,000 word-families), 3,000 (the most frequent 2,001–3,000 word-families), 4,000 (the most frequent 3,001–4000 word-families), and 5,000 (the most frequent 4,001–5,000 word-families).The newer version of the test include 30 randomly selected words at the first five 1,000 frequency bands. Each level includes ten clusters of six words. Test takers are expected to match the given three definitions with three of the six words that are given in one cluster. In other words, three of the words have definitions to be matched with and the other three words are given as distractors in each cluster. When the division of the words in each cluster is analyzed in terms of their word classes, it is seen that each level includes five noun, three verb and two adjective clusters. The relative frequencies of word classes in English were referred to for deciding on this division (Schmitt, 2010). Examples of the updated VLT can be seen in Figure 8.

For the present study, the vocabulary tests of 1,000, 2,000 and 3,000 levels of the updated VLT were decided to be used for assessing the participants' receptive vocabulary knowledge. The reason of choosing the first three frequency levels of the test was that it was aimed to limit the test with the most frequent words. The collocation tests also aimed to investigate if the participants knew the most frequent collocations and as a result, just the first three levels were also included in the vocabulary tests as well. The test has two different forms; Form A and Form B. In the present study, Form B of the Updated VLT was administered.

1,000 word band

Nouns

	choice	computer	garden	photograph	price	week
cost						
picture						
place where things grow outside						

Verbs

	drink	educate	forget	laugh	prepare	suit
get ready						
make a happy sound						
not remember						

Adjectives

	alone	bad	cold	green	loud	main
most important						
not good						
not hot						

Figure 8. Examples of items from the updated VLT (Webb, et al., 2017).

Productive vocabulary knowledge test (PVKT). For assessing the participants' productive knowledge, a productive vocabulary knowledge test was designed. Although, there is PVLT, which was developed by Laufer and Nation (1999), this test was not preferred to be used in the present study for assessing productive knowledge. PVLT includes 18 items at each of the 2,000, 3,000, UWL, 5,000 and 10,000 word frequency bands. As it does not include words from the first 1,000 frequency band, Abdullah et al. (2013) developed PVLT-500. It also includes words at the first 500 word frequency band, but not at 1,000 frequency band. As this study focused on the first three 1,000 word frequency levels and it was aimed to make these two tests parallel by testing the same target words, these tests were not employed in the study. Instead of them, a new test was designed.

Laufer and Nation's (1999) PVLT design was followed for developing the productive vocabulary test. At the first stage of designing PVKT, the target vocabulary items in the receptive vocabulary test were listed. As it was stated earlier, the productive knowledge of the same single-word items was aimed to be assessed in this test. Thus, the target words were listed and then they were presented in sentential context. In their study, Kremmel and Schmitt (2016) compared the two recall formats in which they compared providing sentence context and providing only definition of the word. After conducting the test, they also interviewed the participants to see if the tests reflected the real vocabulary knowledge of the participants. They stated that providing sentence context was a better recall format for reflecting learners' real vocabulary knowledge. Hence, each target words were used in three different sentences in order to create an item pool. For creating the contexts for the sentences, The Corpus of Contemporary American English (COCA) (Davies, 2008) was consulted for ensuring the correct usage of the words in sentences. Then, two experts' opinions were taken for the grammaticality and appropriateness of the sentences. After that, one sentence, which was approved by both of the experts, was chosen for each target word. In other words, the sentences that had 100% interrater reliability were decided to be chosen. At the next stage, those sentences were designed in a gap-filling format by deleting the target word items. In order to avoid varying answers, the first two letters of the target words were provided. At the beginning of the test, an example was also presented for ensuring transparency. After creating the first draft of the test, two different experts' opinions were also obtained to check if there was ambiguity in any of the sentences that could result in incorrect answers. According to the opinions of the experts, corrections were done and the second draft of the test was finalized for piloting. The examples of the productive vocabulary knowledge test items from each of the 1,000 frequency levels are presented in Figure 9 below.

from 1,000 word frequency level
I **ch**_____ my e-mails frequently. My boss usually gets angry if he can't get quick answers to his e-mails.

from 2,000 word frequency level
My son wrote a letter to his grandparents, put it in an **en**_____ and asked me to send it to them.

from 3,000 word frequency level
I don't know exactly, but the **ap**_____ number of the students in the class was twenty-five.

Figure 9. Examples of items from PVKT.

Receptive knowledge of collocations test (RKCT). For investigating participants' receptive collocational knowledge, a test was designed for the present study. Before starting to design the test, it was important to decide what type of collocations would be the focus of this test. After investigating the previous studies on collocations, it was decided to restrict the scope of the present study with verb-noun and adjective-noun collocations because of some reasons. Studies on collocations show that verb-noun collocations are the most frequent and the most important collocation type (Benson et al., 2010; Howarth, 1996; 1998a; Jaén, 2007). Moreover, they are found to be the most problematic collocation type for L2 learners (Bahns & Eldaw, 1993; Cowie, 1992; Howarth, 1998a, 1998b; Koya, 2005; Nesselhauf, 2005). In addition to verb-noun collocations, adjective-noun collocations were aimed to be tested as they are one of the top two-word combinations used by native speakers (Johansson & Hofland, 1989). Adjective-noun collocations are also found to be problematic in terms of L2 collocation performance (Men, 2015). Moreover, verb-noun and adjective-noun collocations are seen as the most challenging combinations (Grant, 2005) and therefore researchers have commonly investigated them (Macis & Schmitt, 2017). As a result, the types of collocations aimed to be measured in receptive and productive collocation tests in the current study were verb-noun and adjective-noun.

The process of the selection of the collocations included two main steps; the first one was searching for the node words among the most frequent English nouns and the second step was selecting their collocates (verbs and adjectives) from the corpus data by adhering to some other criteria. RKCT aimed to measure the knowledge of verb-noun and adjective-noun collocations at the 1,000, 2,000 and 3,000 word frequency levels with a total of 120 items. For the first three 1,000

word frequency levels, Nation's (2017) BNC/COCA lists, which were also used by Nguyen and Webb (2017), were used. For each 1,000 word frequency levels, 20 items for assessing each type of collocations were decided to be included in the test. Although Nation and Beglar (2007) suggest retaining ten words from each frequency band, in this study 20 items were selected for each collocation type because of some reasons. First, according to Schmitt et al. (2001) the number of items that was adequate to represent each word frequency level reliably was 30. Their suggestion was based on the validation analyses of VLT. As 20 items were included for each collocation type in the present study, the total number of collocations at each frequency level, which was 40, represented each level reliably. Second, as this study also aimed to investigate the effect of congruency with L1, half of 20 items at each frequency level was decided to be congruent in Turkish and English and the other half to include incongruent ones. The incongruent ones were just used in English but did not have a one-to-one Turkish equivalent. As a result, 20 items for each kind of collocations were thought to be enough for investigating the effect of congruency. Lastly, while the receptive vocabulary knowledge test included 30 items from each frequency level, to be able to search for the receptive knowledge of collocations in terms of collocation types and congruency, more amount of items from each frequency level was decided to be included in this test. The distribution of the number of questions in terms of collocation type and congruency at each frequency level can be seen in Figure 10.

	Verb-Noun Collocations		Adjective-Noun Collocations		
Frequency Band	Congruent	Incongruent	Congruent	Incongruent	Total
1000	10	10	10	10	40
2000	10	10	10	10	40
3000	10	10	10	10	40
Total	30	30	30	30	120

Figure 10. Distribution of the number of questions in the RKCT.

RKCT was also decided to be designed in a multiple-choice format, which was also preferred by Jaen (2007), Nguyen and Webb (2017), Nizonkiza et al. (2013) and Nizonkiza (2015). Although, Nguyen and Webb (2017) provided just the node words and asked the participants to find the correct collocate of the node word among the four options, in the present study, the node words were decided to be provided in sentential context. As done by Jaen (2007), Nizonkiza et al. (2013) and Nizonkiza (2015), RKCT in the present study was also decided to be

designed by using a multiple-choice format in which sentences with deleted collocates were given with four options. As a result, scoring objectivity was ensured. Although the receptive vocabulary knowledge test was designed in a matching format, it was thought that matching format was not applicable for testing receptive knowledge of collocations since a node word may have more than one correct collocate in the same cluster. Nguyen and Webb (2017) attempted to design the receptive knowledge of collocations test in the matching format but they failed to find appropriate distractors.

The designing process of the test started with the selection of the nouns (node words) of the collocations, based on the assumption that the noun (the node word) determines which verbs and adjectives are used with them (Men, 2015). The nouns were chosen from the first three 1,000 frequency bands of Nation's (2017) lists. Then, the possible collocates, verbs and adjectives, of the nouns in the frequency lists were decided to be analyzed from COCA (Davies, 2008). Instead of British National Corpus (BNC), COCA was taken as a basis in the study, because it was found to be more related to learner language than BNC (Durrant, 2014). Furthermore, it is a large, recent, balanced corpus and includes more than one-billion words. It is claimed that it includes data which are from six different genres.

As the nouns in the word frequency lists had a lot of collocations in the corpus, some selection criteria were to be specified for restricting the selection options of the collocations in accordance with the aims of the study. Referring to Nguyen and Webb (2017), the collocates of the nouns were chosen based on the guidelines provided below:

1. The collocates of the selected nouns would be at the same frequency level with the noun or it would be more frequent. For instance, if the noun was from the second 1,000 level, its collocate would be from the first or second 1,000 levels. However, it would not be from the third 1,000 level. The nouns at the first level would have collocates only at the same level as it is the highest level.

2. In COCA, the collocational frequency of the selected nouns and their collocates would be at least 50. Less frequent collocations were not included.

3. The lowest MI score of target collocations was set as 3.00. MI is a statistical measure that shows the strength of the relationship between a word and its collocates (Macis & Schmitt, 2017). The relationship between two words is considered as a collocation on condition that their MI score is at least 3.00 (Macis & Schmitt, 2017).

In addition to these criteria, the collocations were also analyzed in terms of congruency. In other words, the overlap between Turkish and English form-meaning connection was also considered and as stated before, 10 of the collocations in each word frequency band were congruent and 10 of them are incongruent collocations for each type of collocations. For better analysis, Turkish National Corpus (TNC) (Aksan et al., 2012) and Oxford Collocations Dictionary for Students of English (Lea et al., 2002) were used as reference sources of collocations in Turkish and English. In addition to them, as pure idioms were excluded in this study, Oxford Dictionary of Idioms (Ayto, 2010) was also used as a reference source for detecting the idioms.

After choosing the target verb-noun and adjective-noun collocations based on the selection criteria, the opinions' of seven experts were taken. All the experts had been teaching English for at least 10 years. Additionally, all of them had their PhD degree in English language teaching. The experts analyzed the collocations in terms of congruency and idiomaticness. The ones on which they expressed disagreement were replaced with the new chosen collocations. Then, the experts were requested to analyze the new possible collocations as well. This step was repeated until all the experts agreed on the target collocations. At the next stage, the target collocations were presented in sentential contexts. As it was decided to be a multiple choice test, distractors were also selected for turning those sentences into a test. The selection of distractors also had some criteria, which were also used by Nguyen and Webb (2017) and used in this study with some adaptations:

1. The correct and incorrect collocates were selected from the same frequency level and they had the same part of speech. It was thought that more or less frequent words could stand out among other options by seeming more complicated or easier. Also, without any knowledge of the collocations, a word with a different part of speech could be detected by the participants. For preventing the participants from choosing the correct answers without having the knowledge of the target collocation itself and finding the correct answer with the help of some other clues this criterion was applied.

2. The frequency of the combination of node words and the distractors were less than 10 in COCA.

3. The MI score of the combination of the distractors and given node words was lower than 1.0. As Gyllstad (2005) suggests, it was needed to use pseudo-collocates that would seem a plausible alternative to real collocations. They were the ones that could sound possible for the participants because they were the words that were used in Turkish with those node words.

After adding the distractors to the questions, the experts' opinion was obtained for checking the appropriateness of the contexts of the sentences and the distractors. By making suggested corrections, the RKCT was approved by the experts. At the end of this meticulous and detailed process, the test was ready to be piloted. As it can be seen in Figure 11 below, the node words (nouns) were provided and their collocations (verbs and adjectives) expected to be chosen among the four options.

Everybody can _____ mistakes; it is something normal for human beings. Don't feel sorry for that.

a) cause c) perform
b) do d) make

Don't _____ the bell; use your own keys to open the door. I'm very busy with the housework.

a) play c) steal
b) ring d) push

During the festival, there are a lot of _____ concerts in our city. We have fun without paying any money.

a) cheap c) expensive
b) empty d) free

Figure 11. Examples of the RKCT items.

Productive knowledge of collocations test (PKCT). A test was designed specifically for the present study to measure participants' productive knowledge of collocations. It was also modeled on Laufer and Nation's (1999) Productive VLT, as it was done by some other researchers (e.g. Begagić, 2014; Mutlu & Kaşlıoğlu, 2016; Nizonkiza et al., 2013). The target collocations that were selected for the RKCT were also the target collocations in the productive collocations test. As in the receptive test, at the first stage of designing the PKCT, the target items were listed and they were presented in sentential context. For each target collocation, three different sentences were constructed in order to create an item pool. While creating the contexts in which the target collocations were used, COCA (Davies, 2008) was consulted to ensure the correct usages of the collocations in sentences. After that, two experts who had more than 10-year English teaching experience checked the sentences and one sentence, which was approved by both of the experts, was chosen for each target collocation. As it was done in the design of the productive vocabulary test, at the next stage the selected sentences were designed in a gap-filling format by deleting the target collocates of the node words. In order to avoid varying answers, the first two letters of the target collocates were also provided. For ensuring transparency, at the beginning of the test, an example of how to answer the questions in the test was also provided. After finishing the first draft of the test, two different experts' opinions were also taken to check for ambiguity in any of the sentences they could cause any incorrect answers. Corrections were done according to the opinions' of the experts and the second draft of the test was finalized for piloting. The examples of the PKCT items from each of the 1,000 frequency levels are presented in Figure 12 below.

If you don't want to lose your job, you shouldn't **ma**_____ a mistake any more.

If you **ri**_____ the bell, Martha gets really angry because her baby is sleeping.

It was a **fr**_____ concert. It was good that we didn't pay for it, but it was very crowded.

Figure 12. Examples of the PKCT items.

Data collection procedure. The data were collected during regular class time in the 2nd, 3rd, 4th and 5th weeks of the spring semester of 2018-2019 academic year. In the 2nd and 3rd weeks of the spring semester, the productive tests (PVKT and PKCT) were applied. In the 4th and 5th weeks, the receptive tests (the Updated VLT and RKCT) were administered, respectively. The productive tests were administered before the receptive tests in order to avoid any memory effect. Also, each test was applied in different sessions with one week break in order to avoid the testing burnout. There was not time constraint for completing any of the sessions. The administration of each of the vocabulary tests took at least 40 and at most 60 minutes while the administration of each of the collocation tests took at least 50 and at most 90 minutes. By administering four tests over four sessions, all the data were collected at the end of a month. The participants did not write their real names on their paper. They were asked to use nicknames for ensuring the matching of four instruments of each participant. The sequence of the administration of the tests is shown in Table 3.

Table 3

Data Collection Instruments and Timeline of the Pilot Study

Sessions	Dates	Tests
Session I	February 18th-22nd, 2019 (2nd Week)	PVKT
Session II	February 25th-March 1st, 2019 (3rd Week)	PKCT
Session III	March 4th-8th, 2019 (4th Week)	The Updated VLT
Session IV	March 11th-15th, 2019 (5th Week)	RKCT

Findings of the pilot study. In order to estimate the internal consistency of the tests used in the pilot study, reliability analyses were conducted by calculating Cronbach's Alpha. For the Updated VLT, in the original study just the overall reliability analysis result of the whole test was reported. However, the results of the reliability analyses were not reported for each frequency level. In the original study, Rasch analysis results of person reliability and item reliability estimates of Form B were both reported as .96 in the original study (Webb et al., 2017). According to the authors, Cronbach's alpha is one of the traditional reliability coefficients and it is equivalent to person reliability. Henceforth, in the present study, reliability analyses were conducted by calculating Cronbach's alpha coefficient formula. Reliability analysis results of the receptive vocabulary knowledge test revealed that the overall reliability based on the test's alpha value was .88. The three frequency levels had the alpha values of .70, .72 and .80, respectively. It was seen that the reliability result of whole test was acceptable compared to the result of the original study. Likewise, the subscales of the test had a sufficient level of internal consistency. As a result, it was decided that the test was a suitable instrument to assess the vocabulary knowledge of the participants in the main study receptively.

Reliability analyses for the PVKT showed that it had a Cronbach's alpha value of .93, indicating a high internal consistency. The alpha values for each level were also calculated. The first 1,000 frequency level had the alpha value of .74, while second and third frequency bands had the alpha values of .85 and .89, respectively. As the cut-off value that is considered acceptable is .70 (Pallant, 2010) the alpha values of each frequency band and the overall test had a high internal consistency. Accordingly, it was decided to administer this test to assess the vocabulary knowledge of the participants in the main study productively.

When the results of the reliability analyses of RKCT were investigated, it was seen that the overall test had a high level of internal consistency with a Cronbach's alpha coefficient of .92. Moreover, the subscales of the test; 1,000 frequency level (α=.76), 2,000 frequency level (α=.81) and 3,000 frequency level (α=.82), were also found to have a high level of internal consistency. Consequently, the test proved itself as a reliable instrument to be used in the main study to measure the receptive collocational knowledge of the participants.

The last group of reliability analyses was conducted on the results of the PKCT. The reliability of the whole test on the basis of the test's alpha value was .95. Frequency level based analyses revealed that the alpha value of each frequency level was over .80. The alpha value of the first 1,000 frequency level was .81 and that of the second 1,000 frequency level was .84. The alpha value of the third 1,000 frequency level was even higher than the first two 1,000 frequency levels, it was .90. The reliability analyses results suggested that the test had a high level of internal consistency. Consequently, the test proved itself to be a reliable instrument to measure collocational knowledge in the main study productively.

Pilot study implications for the main study. The results of the pilot study were analyzed in accordance with the aims of it and some implications were drawn for the application of the main study. First of all, the reliability analyses of the updated VLT, PVKT, RKCT and PKCT showed that all of the tests had internal consistency. Second, the analyses of the answers to the gap-filling questions did not result in any problems that caused the participants to find any potential correct answers other than the expected answer. Third, the application order of the instruments showed that it was a good idea to apply the productive tests first, because analyses of the answers did not indicate any memory effect. Fourth, there were not any observed or reported problems in terms of the data collection procedure. It was observed that the oral and written instructions were clear for the participants. The participants only complained about the number of sessions, as they totally took four weeks.

Main Study

Aims of the study. This study aimed at measuring the receptive and productive knowledge of verb-noun and adjective-noun collocations at the first three 1,000 word frequency levels and investigating the relationship between the receptive and productive knowledge of single-word items and knowledge of collocations. For gaining insight, it also examined the extent to which five factors (node word frequency, collocational frequency, MI scores, congruency and type of collocation) predict the receptive and productive knowledge of collocations. Moreover, the effect of individual differences in terms of the effect of exposure to language outside the class and year of study was investigated by selecting the

participants from the preparatory, second and fourth year students at the university.

Following the aims of the study, the research questions formulated are as under:

1. What is the receptive vocabulary knowledge of Turkish EFL learners at the 1,000, 2,000 and 3,000 word frequency levels?

   a. Do the frequency levels of words affect Turkish EFL learners' receptive vocabulary knowledge?

   b. Does the year of study at university affect the receptive vocabulary knowledge of Turkish EFL learners?

2. What is the productive vocabulary knowledge of Turkish EFL learners at the 1,000, 2,000 and 3,000 word frequency levels?

   a. Do the frequency levels of words affect Turkish EFL learners' productive vocabulary knowledge?

   b. Does the year of study at university affect the productive vocabulary knowledge of Turkish EFL learners?

3. What is Turkish EFL learners' receptive knowledge of verb-noun and adjective-noun collocations composed of words at the 1,000, 2,000 and 3,000 word frequency levels?

   a. Do the frequency levels of words affect Turkish EFL learners' receptive verb-noun collocational knowledge?

   b. Do the frequency levels of words affect Turkish EFL learners' receptive adjective-noun collocational knowledge?

   c. Does the year of study at university affect their receptive knowledge of verb-noun and adjective-noun collocations?

4. What is Turkish EFL learners' productive knowledge of verb-noun and adjective-noun collocations composed of words at the 1,000, 2,000 and 3,000 word frequency levels?

   a. Do the frequency levels of words affect Turkish EFL learners' productive verb-noun collocational knowledge?

b. a. Do the frequency levels of words affect Turkish EFL learners' productive adjective-noun collocational knowledge?

c. Does the year of study at university affect their productive knowledge of verb-noun and adjective-noun collocations?

5. Is there a significant difference between receptive and productive collocational knowledge of preparatory, second and fourth year students?
6. Is there a correlation between;

   a. the receptive vocabulary knowledge of Turkish EFL learners and their receptive knowledge of verb-noun and adjective-noun collocations?

   b. the productive vocabulary knowledge of Turkish EFL learners and their productive knowledge of verb-noun and adjective-noun collocations?
7. Which of the interlexical (congruency) and intralexical (node word frequency, collocational frequency, type of collocation, MI score) factors best predicts receptive and productive collocational knowledge?
8. How do individual differences (age and gender) and the amount of L2 instruction relate to receptive and productive knowledge of collocations?
9. Is there a relationship between the degree of personal language use and receptive and productive knowledge of collocations?

Setting and participants. The study was conducted at a state university in Turkey in the spring semester of 2018-2019 academic year. The study was conducted at one faculty. As it is an English-medium faculty, all the students are expected to pass the English proficiency exam before they start education at their departments. If they cannot pass the exam, they have to have intensive English language education at the School of Foreign Languages, for two years at most. After having an extensive English language education for two years, if the students

fail the English proficiency exam, they are not allowed to go on their education at this university.

The participants of the study were selected on the basis of some practical criteria such as geographical proximity, easy accessibility and willingness to volunteer. Therefore, convenience sampling method, one of the non-probability sampling procedures, was employed in the present study for collecting data from the participants. The study was conducted with the participation of 176 preparatory, second and fourth year students enrolled in three departments of the faculty. Instead of including all years of students at the faculty, the participants were selected in one year intervals. The reason behind it was that year of study at university is one of the factors that was aimed to be investigated in this study. Ebrahimi-Bazzaz et al. (2014) also commented on the results of their study in which they also investigated the effect of year at university that language learners need a minimum of two years to improve their knowledge of collocations significantly. Consequently, for finding out the effect of year of study at university precisely, three groups of participants who were at three different academic years of their university education were selected to participate in the study. When the data were collected, the participants of the main study were in the spring term of their second or fourth year of university education at the faculty. For the preparatory year students, it was the spring term of their first year at the university. Table 4 shows the demographic information of the participants in the study.

The mean age of the participants was 21.17 (*SD* = 1.81, minimum = 18; maximum = 27). In terms of gender, the distribution of the participants was approximately equal; there were 92 (52.3%) male and 84 (47.7%) female participants in the study. Of all the participants, 71 (40.3%) were enrolled in the department A, 75 (42.6%) were enrolled in the department B and 30 (17%) were students at the department C. While a total of 119 (67.6%) participants were sophomores (35.2%) and seniors (32.4%), studying at their departments, 57 (32.4%) of them were preparatory year students.

Table 4

Demographic Information of the Participants in the Study

Variables		*N*	%
Age	18	10	5.7
	19	23	13.1
	20	40	22.7
	21	33	18.8
	22	15	8.5
	23	40	22.7
	24	11	6.3
	25	3	1.7
	27	1	.6
	Total	176	100
Gender	Male	92	52.3
	Female	84	47.7
	Total	176	100
Department	Department A	71	40.3
	Department B	75	42.6
	Department C	30	17
	Total	176	100
Class	Prep	57	32.4
	2	62	35.2
	4	57	32.4
	Total	176	100

Instruments. For collecting data for this study, four different tests; receptive vocabulary knowledge test, productive vocabulary knowledge test, receptive knowledge of collocations test and productive knowledge of collocations test were employed. In addition to them, a questionnaire was used for gathering information about participants' language background and language use outside the class. More detailed information about the instruments is given below.

Receptive vocabulary knowledge test. The instrument that was employed in the current study for the purpose of assessing participants' receptive vocabulary knowledge was the one used in the pilot study. It was the Updated VLT developed by Webb et al. (2017) (see Appendix-B). As stated in the instruments part of the pilot study, this test includes vocabulary items at five different frequency bands;

1,000 (the most frequent 1–1,000 word-families), 2,000 (1,001–2,000 word-families), 3,000 (2,001–3,000 word-families), 4,000 (3,001–4,000 word-families), and 5,000 (4,001–5,000 word-families). There are 30 randomly selected target words each of the five frequency levels. In one frequency band there are 10 clusters of six words. For each cluster, which includes six words, three word definitions are given. Test takers are expected to find the three words whose definitions are provided and match them. It is not in a one-to-one matching format, so three of the words are given as distractors to the target words. Each cluster includes the words with the same part of speech. At each word frequency level, five out of ten clusters include nouns, three of them have verbs and two of them contain adjectives as target words and distractors. Table 5 illustrates the distribution of the target words according to their part of speech.

Table 5

Distribution of the Number of Questions According to Part of Speech

Frequency Bands	Nouns	Verbs	Adjectives	Total
1,000	15	9	6	30
2,000	15	9	6	30
3,000	15	9	6	30
Total	45	27	18	90

The whole Updated VLT was not administered in the current study. The first three 1,000 frequency levels were employed in the study not only because of the level of the participants, but also to be in line with the collocation tests. The Updated VLT has A and B forms and in this study 1,000, 2,000 and 3,000 frequency levels of form B was conducted to measure the receptive vocabulary knowledge of the EFL participants. As it is shown in the table above, the test employed in the study was composed of 90 questions, 30 from each frequency band. Out of 90 questions, 45 of the target words were nouns, 27 of them were verbs and 18 of them were adjectives. In each frequency band, the distribution of the number of nouns, verbs and adjectives were 15, 9 and 6, respectively.

In the analysis of the results, each correct answer choice gained 1 point and the incorrect answers got 0. As there were 30 questions in each word frequency band, the maximum score that could be obtained from each frequency band was 30 and the maximum score that could be obtained from the whole test was 90.

Moreover, the percentage of the correct answers of participants was utilized to make a rough evaluation of their receptive vocabulary knowledge at each frequency level. For instance, knowing 15 out of 30 questions at 1,000 frequency level meant that the participant knew approximately 500 words at that level receptively.

After collecting the data for the main study, the reliability analyses were also conducted for evaluating the internal consistency of the instrument. The test had an overall reliability of .91 on Cronbach's alpha. It indicated that the updated VLT had a high level of internal consistency and it meant that it could discriminate learners with different levels of receptive vocabulary knowledge. The reliability analyses results with Cronbach's alpha values of the pilot and main studies are given in the table below.

Table 6

Reliability Analyses of the Updated VLT

	Pilot Study	Main Study
Word Frequency Levels	Cronbach's Alpha	Cronbach's Alpha
1000	.70	.75
2000	.72	.79
3000	.80	.89
Total	.88	.91

Productive vocabulary knowledge test (PVKT). Productive vocabulary knowledge of the participants was assessed by designing a test for the present study. The same test that was used for collecting data in the pilot study was employed in the main study. Therefore, the detailed information about why other productive vocabulary tests were not used in the current study and the test development process are given in the pilot study's instruments part.

Although the PVLT (Laufer & Nation, 1997) was not used in the study, the productive vocabulary test was modeled on PVLT. In this format, one sentential context was presented for each target word. The target words were deleted and the participants were asked to fill the gaps by recalling the target words. In order to avoid varying answers, the first two letters of the target words were presented. As this test was designed to measure the productive knowledge of the target words in the updated VLT, the target words of the two tests were the same. It also included

90 target words from the first three 1,000 frequency levels. In each level, 15 of the target words were nouns, 9 were verbs and 6 of them were adjectives (see Appendix-C for the PVKT).

In the results analysis part, for each correct answer 1 point was given. As there were 30 questions in each word frequency band, the maximum score that could be obtained from each frequency band was 30 and the maximum score that could be obtained from the whole test was 90. Moreover, the percentage of the participants' correct answers was used as a rough evaluation of the productive vocabulary knowledge of the participant at each frequency level. For instance, knowing 10 out of 30 questions at a word frequency level meant that the participant knew approximately 333 words at that level productively.

The reliability analyses of the productive vocabulary knowledge test indicated that it had a high level of internal consistency with the alpha value of .94. The alpha values of the word frequency levels were also over .80, indicating that they were also internally consistent. These results were also in accordance with the results that were gained in the pilot study. The reliability analyses of PVKT on the pilot and main studies are provided in Table 7 below.

Table 7

Reliability Analyses of Productive Vocabulary Knowledge Test

	Pilot Study	Main Study
Word Frequency Levels	Cronbach's alpha	Cronbach's alpha
1000	.74	.80
2000	.85	.86
3000	.89	.87
Total	.93	.94

Receptive knowledge of collocations test (RKCT). A test was designed for the present study with the purpose of assessing participants' receptive knowledge of collocations. As the test was also employed in the pilot study, detailed information about why it was preferred to restrict the area of inquiry with verb-noun and adjective-noun collocations, how the number of items were determined, what kind of criteria were followed for choosing the collocations and the detailed test design process is presented in the instruments part of the pilot study.

This test was designed in a multiple-choice format with four options. In line with the receptive and productive vocabulary tests, this test also included items from the 1,000, 2,000 and 3,000 word frequency levels of Nation's (2017) BNC/COCA lists. In the vocabulary tests, the target single-word items were selected from the lists. Likewise, in this test, the node words of the collocations were chosen from those lists. At each frequency band, there were 20 items for each type of collocations; 20 nouns as collocates of verbs and 20 nouns as collocates of adjectives. It meant that there were 40 collocation items at each frequency band and the total test included 120 questions of collocations. Additionally, as one aim of the study was to assess the effect of congruency with L1, half of the verb-noun and half of the adjective-noun collocations (10 out of 20 collocations) were congruent and the other half was incongruent collocations. Collocations were considered congruent if they had a word-to-word translation equivalent in Turkish. For instance, while *read books* was considered as a congruent collocation, *break promise* was evaluated as an incongruent collocation. In the whole test, 60 out of 120 collocations were congruent and the other half included incongruent collocations.

In each question, the node word of the collocation, the nouns, was provided in a sentential context, but its collocate, the verbs or adjectives, was deleted. The test takers were expected to choose the correct answers that completed the gaps among four options. In other words, they were expected to find the collocates of the given node words (see Appendix-D for the RKCT).

In this test, 1 point was given for each correct answer. As there were 40 questions at each word frequency level, maximum score that could be obtained from each frequency level was 40 and from the whole test, it was 120. The number of correct answers at each frequency band was evaluated as representative of the number of collocations known at the whole level. For example, 20 out of 40 collocations meant that the participant knew approximately 500 collocations receptively at that level.

The reliability analyses of the receptive knowledge of collocations test in the main study again indicated that the overall test had a high level of internal consistency with the Cronbach's Alpha value of .92. The word frequency level also had a good level of internal consistency, with the Cronbach's Alpha values of .75,

.79 and .84, respectively. The reliability analyses results of the test in the pilot and the main studies are given in the table below.

Table 8

Reliability Analyses of Receptive Knowledge of Collocations Test

	Pilot Study	Main Study
Word Frequency Levels	Cronbach's alpha	Cronbach's alpha
1000	.76	.75
2000	.81	.79
3000	.82	.84
Total	.92	.92

Productive knowledge of collocations test (PKCT). For measuring the productive collocational knowledge of the participants, a test was developed in line with the RKCT. The target collocations in the RKCT were also the target collocations in this productive test. This test was also employed in the pilot study. Therefore, detailed information about the test design process can be seen in the instruments part of the pilot study, in this section.

This test was also modeled on Laufer and Nation's (1999) PVLT, like the productive vocabulary knowledge test. It was in a gap-filling test format. The target collocation items were used in sentences and the collocates of the node words were deleted. The first two letters of the target collocates were presented with the purpose of avoiding varying answers. From each frequency band, there were 40 items of collocations in the test, so in the whole test, there were 120 questions. As explained above, half of the collocations were verb-noun (20 in each frequency band) and half of them were adjective-noun collocations. Of the 20 verb-noun collocations, 10 were congruent and 10 were incongruent (see Appendix-E for the PKCT).

In this test, each correct answer was awarded with 1 point and no points were given for the incorrect answers. As there were 40 questions at each word frequency level, maximum score that could be obtained from each frequency level was 40 and from the whole test, it was 120. The number of correct answers at each frequency band was evaluated as representative of the number of collocations known at the whole level. For example, 20 out of 40 collocations meant that approximately 500 collocations were known productively at that level.

After collecting the data in the main study, reliability analyses were conducted. It was found out that not only the overall test, but also each word frequency levels had a high level of internal consistency. Moreover, the reliability analyses results were also in line with the pilot study. The results of reliability analyses of both the pilot and the main studies are shown in Table 9 below.

Table 9

Reliability Analyses of PKCT

	Pilot Study	Main Study
Word Frequency Levels	Cronbach's alpha	Cronbach's alpha
1000	.81	.84
2000	.84	.88
3000	.90	.87
Total	.95	.95

Questionnaire. In addition to the four tests, a questionnaire was also employed in the study to gather information about the participants' language background and language use. For this, Fernández and Schmitt's (2015) *Language Background and Use Questionnaire* was administered. In the first part of the questionnaire, individual differences of the participants, like gender and age, were investigated. In the original questionnaire, there were two more questions in this part and they were not included in the questionnaire used in the present study. The first one aimed to ask participants to make self-evaluation of their proficiency level. The first reason of omitting this question was that it was not aimed to make any calculations according to the self-evaluated proficiency levels in the present study. Second, as Fernández and Schmitt (2015) also stated in their results part that it was not an objective evaluation and it was necessary to treat the results obtained with caution. The second question that was excluded in the present study was the one that asked if the participants were studying English at that moment. As it was known that they were studying English and the answer of the question was not aimed to be assessed as part of this study, it was not also included in the questionnaire employed as an instrument in the present study.

In the second part of the questionnaire, there were questions related to the amount of English input inside and outside the classroom environment. For the inside part, the number of years the participants had studied English was explored

in the questionnaire. For the outside the classroom environment, personal weekly use of English was asked for reading and watching something in English as well as listening to music in English and using English to keep in contact with people via SMS, or social media. For each of the four personal language activities, the participants were asked to choose one of the options which showed how many hours they spent per week, less than one hour, one to two hours or more than two hours. In addition to investigating the amount of input inside and outside the classroom, the questionnaire also had a question aiming to explore the effect of immersion in English-speaking countries. Fernández and Schmitt (2015) indicated that immersion in English speaking countries is the best source of using language intensively and also it is one of the most efficient ways to learn the formulaic languages. Whether the participants had spent three months or more in English-speaking countries was the fifth type of language use investigated in the questionnaire. They were expected to answer this question by choosing yes or no. The questionnaire can be seen in Appendix-F.

The coding of the language use and background questionnaire was done in the following way; *yes* answers to the question which asked if the participants had spent three months or more in English-speaking countries were coded as 1 and the *no* answers were as 0. For the questions which asked the time participants spent per week for pleasure reading in English, or visiting English language websites; watching films, videos or TV in English; listening to music in English and using social media in English to communicate with people coding was done as follows: spending less than one hour for the language activity was coded as 0, one to two hour/s was coded as 1, and more than two hours was coded as 2.

Data collection procedure. The permission of Ethics Commission was applied before starting the data collection process. After the examination process, the study was approved by the commission indicating that the ethical principles of the university were conformed (see Appendix-H) and it could be conducted as it was planned. Furthermore, necessary permission was also granted by the president of the university of the participants. The researcher had appointments with the lecturers who offered courses at the faculty for arranging the timeline for the sessions.

The study was conducted between the 10th and 13th weeks of the spring semester of 2018-2019 academic year. The data were collected throughout the students' regular class time for each department and each year of students (Preparatory year, sophomores and seniors). Before each session, the aims of the study were explained and clarified to the participants. Most importantly, the participants were informed about the fact that participation in the study was voluntary and that their answers would be kept anonymous and confidential. They were also enlightened about the fact that even after they started answering the questions in the test, they could stop answering the questions and leave. Moreover, the number of sessions with the number of tests and questionnaire was also declared to them. After making all the points clear in participants' minds about the data collection process, an official participant consent form was delivered to them. It took them approximately five minutes to read the form, ask questions for clarification and sign it. Only the participants who were voluntary to take part in the study signed the form. Then, the first session started with the administration of the PVKT. It was the 10th week of the spring semester and the first session of the study. The test was conducted face to face and the researcher supervised until the end of the session. Time limit was not set, and it took from 35 to 60 minutes (average 47.5) for all participants to complete the test. The second session of the study was one week later than the first session, the 11th week of the spring term. In this session, productive knowledge of collocations test was administered by following the same administration procedures. As in the first test, no time limit was set and it took the participants from 45 to 80 minutes (average 62.5) to complete answering all the questions in the test. The researcher supervised the participants till the end of the session. The 12th week of the semester was the application week of the third session. In this session, both receptive vocabulary knowledge test and the questionnaire were administered. They were decided to be applied together as it was known from the pilot study that the receptive vocabulary knowledge test was the one whose completion time was the shortest. No time limits were set and the participants completed the test in at least 30 and at most 50 minutes (average 40). On the other hand, the completion of the questionnaire took at most 5 minutes. Lastly, in the fourth session of the data collection process, receptive knowledge of collocations test was employed by following the same test administration procedures. The time spent for completion of the test ranged from

40 to 70 minutes (average 55). The timeline of the sessions and the instruments administered in each session of the study are given in the table below.

Table 10

Data Collection Instruments and Timeline of the Main Study

Sessions	Dates	Tests
Session I	April 15th-19th, 2019 (10th Week)	Productive Vocabulary Knowledge Test
Session II	April 22nd-26th, 2019 (11th Week)	Productive Knowledge of Collocations Test
Session III	April 29th-May3rd, 2019 (12th Week)	Receptive Vocabulary Knowledge Test & Questionnaire
Session IV	May 6th-10th, 2019 (13th Week)	Receptive Knowledge of Collocations Test

Data analysis techniques employed in the study. As this was a quantitative research, the data collected in the study were analyzed quantitatively. For analyzing the quantitative data that will be gathered in the present study, the statistical analysis program IBM SPSS Statistics for Windows, Version 21.0 (2012) was used. Prior to conducting the statistical analyses for each research question, Cronbach's alpha reliability tests were conducted for each vocabulary and collocation tests. After that, outliers, nonlinearity, and normality of data that could affect the variance-covariance among the variables were checked. The tests that were run for each of the research question are given below.

First of all, the first research question aimed to find the receptive vocabulary knowledge of Turkish EFL learners at the 1,000, 2,000 and 3,000 frequency bands. It was evaluated by running descriptive statistical analyses. The mean and standard deviations of scores of the participants' (preparatory year, second year and fourth year students) receptive vocabulary test at the first three 1,000 frequency bands were given with minimum and maximum scores. The second aim of the first research question was to investigate if participants' receptive vocabulary knowledge changed according to word frequency levels. In other words, it aimed to reveal if there was a statistically significant difference between

the three word frequency levels of the receptive vocabulary test results. A one-way repeated measures ANOVA test was conducted to compare the mean scores on the receptive vocabulary test at the three word frequency bands, as the receptive vocabulary knowledge of Turkish EFL learners was assessed at three different levels. In addition, the third aim of the first research question was to investigate the effect of year of study at university on the participants' receptive knowledge of vocabulary. A one-way between-groups multivariate analysis of variance (one-way MANOVA) test was performed to investigate the effect of year of study at university on receptive vocabulary knowledge of Turkish EFL university students.

The second research question explored the same points in the first research question, but for the productive vocabulary knowledge of the participants. As a result, the same tests were also conducted for finding out the issues related to the productive vocabulary knowledge of the participants.

The third research question aimed to reveal some important points related to participants' receptive knowledge of collocations. The first aim of the third research question was to find out Turkish EFL learners' receptive knowledge of verb-noun and adjective-noun collocations composed of words taken from the first three 1,000 frequency bands. It was found by running descriptive statistical analyses. The mean and standard deviations of scores of the participants' (preparatory year, second year and fourth year students) receptive knowledge of collocations test at 1,000, 2,000 and 3,000 word frequency levels were given with minimum and maximum scores. The second aim of this research question was to find out the effect of frequency of the words on participants' receptive knowledge of two types of collocations. One-way repeated measures ANOVA tests were conducted in order to reveal the effect of frequency of the words on receptively known verb-noun and adjective-noun collocations. The last aim of this research question was to discover the effect of year of study at university on the receptive knowledge of these two types of collocations. In order to find the answer of this research question, a one-way between-groups multivariate analysis of variance (one-way MANOVA) test was performed.

The fourth research question aimed to investigate the same issues in the third research question, but on productive knowledge of collocations. Henceforth, the same tests were utilized in the fourth research question.

The fifth research question investigated the difference between three groups of participants in terms of productive and receptive knowledge of two types of collocations. This research question was answered by conducting a one-way between-groups multivariate analysis of variance (one-way MANOVA) test.

The sixth research question examined the relationship between vocabulary knowledge and knowledge of collocations at receptive and productive levels separately. For answering this research question Pearson product-moment correlation coefficient tests were conducted both for receptive and productive relations.

The first aim of the seventh research question was to discover the predictive effects of congruency with L1, collocational frequency, node word frequency, type of collocations and their MI scores on receptive knowledge of collocations and find out the best predictor. The second aim of this research question was to investigate the predictive effect of these factors on productive collocational knowledge and detect the best predictor. For finding out the predictive effects of those factors on receptive and productive collocational knowledge and detecting the best predictors, multiple linear regression analyses were conducted.

The objective of the eighth research question was to find out how age, gender and amount of L2 instruction relate to receptive and productive collocational knowledge. The relationship between age, amount of L2 instruction and the two levels of collocational knowledge was examined by conducting Pearson correlation analysis. However, the relationship between gender and two levels of collocational knowledge was not investigated by running correlation analysis as gender was a discrete, dichotomous variable. Instead, it was investigated by conducting independent-samples t-tests.

The last research question aimed to discover the relationship between the amount of personal language use and exposure outside the classroom and receptive and productive knowledge of collocations. The activities searched as personal language use were reading, listening, watching and social networking by using English. In addition to them visiting an English-speaking country for more than three months was also investigated as a sign of personal language exposure.

The relationship between reading, watching, listening, social networking and the two levels of collocational knowledge were investigated by running Kendall's tau b correlation analysis as the answers of these variables were ranked in three discrete options. On the other hand, the effect of living in an English-speaking country was investigated by conducting point-biserial correlation analysis as it was a discrete, dichotomous variable.

Chapter 4
Findings

The aim of the current study was principally to explore the factors that affect the receptive and productive collocational knowledge of tertiary level EFL learners in Turkey. The data collection processes in this study involved the quantitative method. The data obtained from the participants of the study were analyzed in order to answer the research questions of the study. In this part of the dissertation, findings from the quantitative analysis are reported. The results are provided for each research question in separate sections.

Findings for Research Question 1

The first research question aims to find out three points related to the receptive vocabulary knowledge of Turkish EFL learners. First of all, the receptive vocabulary knowledge of the participants at 1,000, 2,000 and 3,000 word frequency levels is to be found out. Then, it is aimed to reveal if there is a statistically significant difference across the three frequency levels. The last purpose of the first research question is to investigate if the year of study at university has an effect on the receptive vocabulary knowledge of the Turkish EFL learners. The answers of each part of the first research question will be given in the following sections.

Research Question 1: What is the receptive vocabulary knowledge of Turkish EFL learners at the 1,000, 2,000 and 3,000 word frequency levels?. The first aim of the first research question of the study is to reveal the receptive vocabulary knowledge of the participants at the three word frequency levels. As mentioned in Chapter 3, the first three levels of the Updated VLT by Webb et al. (2017) were administered in order to find out the receptive vocabulary knowledge of the participants at the first three 1,000 word frequency levels. The receptive vocabulary knowledge of participants from preparatory, second and fourth year students was found by running descriptive statistics. Table 1 shows the results of the Updated VLT with the minimum and maximum scores, mean and standard deviations for three groups of participants at three word frequency levels. In the test, there were 30 words at each level to assess the receptive vocabulary knowledge of the participants and as a result, the maximum score that could be

obtained for each level was 30 and as there were three word frequency levels, the maximum score that could be obtained from the total test was 90.

The receptive vocabulary test scores of the participants revealed that at the first 1,000 level, on average, the participants knew approximately 27 out of 30 words. It meant that on average they knew 900 out of 1,000 words at the first level. However, at the second and third 1,000 word frequency levels, on average they had the receptive knowledge of approximately 23 and 17 words, respectively. In addition, the results of descriptive statistics also revealed that the number of the words that participants knew decreased as the frequency level decreased. They had the receptive knowledge of more words at the 1,000 word frequency than at the second and third 1,000 word frequency levels. In the whole receptive vocabulary knowledge test, the participants knew approximately 67 out of 90 words which meant they knew approximately 2,233 out of 3,000 words.

Table 11

Receptive Vocabulary Test Results

	N		1,000	2,000	3,000	Total
Prep. Year	57	*Max.*	30	30	27	85
		Min.	22	11	3	40
		M	25.96	21	14.53	61.49
		SD	1.93	4.29	5.95	10.89
2nd Year	62	*Max.*	30	30	30	90
		Min.	21	9	2	35
		M	26.56	21.76	15.79	64.11
		SD	2.23	4.74	6.59	12.09
4th Year	57	*Max.*	30	30	30	90
		Min.	24	19	11	58
		M	27.77	24.95	21.7	74.42
		SD	1.48	2.98	4.61	7.99
Total	176	*Max.*	30	30	30	90
		Min.	21	9	2	35
		M	26.76	22.55	17.3	66.6
		SD	2.05	4.41	6.55	11.83

The results were also evaluated in terms of mastery of each level. Although Schmitt et al. (2001) stated that for the mastery of a level in the VLT, the test takers should have at least 26 correct answers, the authors of the updated version of the test, Webb et al (2017), indicated that it should be at least 29 out of 30

correct answers per level at the first three 1,000 word frequency levels. As in the current study, the Updated VLT was conducted for assessing the receptive vocabulary knowledge of the participants; the criterion of Webb et al. (2017) was employed to decide on the mastery of each level in the test. Applying this criterion, the results indicated that the participants as a whole group did not reach mastery at any of the three levels. None of the preparatory, second and fourth year groups also mastered any of the levels as well.

The data were evaluated for each student and it was realized that just 22% of the participants could master the first 1,000 word frequency level. The percentages of the participants that mastered the second and third 1,000 word frequency levels were 11% and 2%, respectively. The distribution of the participants who mastered the receptive vocabulary knowledge at each level is given according to their year at university in Figure 13 below.

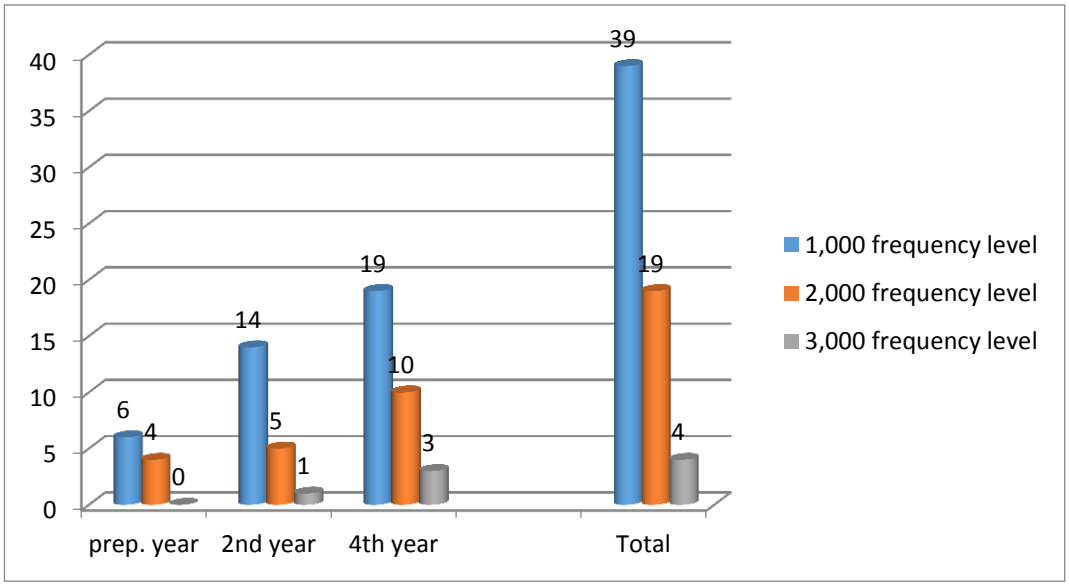

Figure 13. Number of participants mastering the levels in receptive vocabulary test.

When the scores of the preparatory year participants were analyzed, it was seen that on average they had the receptive knowledge of around 26 words at the 1,000 word frequency level. In other words, they had the receptive knowledge of about 867 items out of 1,000 words at the first level. At the second and third levels, it was found out that on average they knew 21 and 15 words at each level, respectively. At all three levels, preparatory year students knew approximately 2,033 out of 3,000 words. When the results of the receptive vocabulary test results

of the participants from the preparatory year were analyzed through the three word frequency levels, it was also found that their mean scores decreased when the frequency of the words decreased as well. They had the mean score of 25.96 at the 1,000 word frequency level, 21 at the 2,000 level and 14.53 at the 3,000 level. Moreover, in contrast to the first two frequency levels, none of the participants from preparatory year could reach the maximum score at the 3,000 word frequency level. It meant that none of the participants from the preparatory year could answer all the questions correctly at this level.

The scores of the second year participants showed that at least one participant could reach the maximum score at all the word frequency levels. At the 1,000 level, their mean score was 26.56 (*SD* = 2.2). Their scores at 2,000 word frequency level was lower than the first level, with the mean score of 21.76 (*SD* = 4.7) and at the 3,000 level, they had lower scores than the second level with the mean score 15.79 (*SD* = 6.6). In other words, on average they had the receptive knowledge of nearly 733 and 533 single word items at the second and third frequency levels, respectively. When the results of the all three frequency levels were evaluated together, it was found that on average, they approximately knew 2,133 words out of 3,000 items in the whole test.

Fourth year students had the highest mean scores of all participants at all three word frequency levels. Furthermore, in line with the results of the second year students, they could also reach the maximum score of 30 at all levels. Their mean score 27.77 revealed that they receptively knew 933 single word items at the 1,000 word frequency level and their small standard deviation indicated that the group was homogeneous in terms of their receptive vocabulary knowledge at this level (*SD* = 1.48). Although they could not meet the threshold level at the 1,000 frequency level, it was close to it. On the other hand, at the 2,000 word frequency level, their mean score was 24.95 (*SD* = 2.98). It suggested that they knew 833 items out of 1,000 words at this level. At the 3,000 level, they knew about 17 single word items on average and again they could not reach the threshold level at the 3,000 word frequency level. In the whole test, on average, they knew 2,467 out of 3,000 words receptively.

When the scores of the all participants were compared, it was found out that fourth year students knew more single word items receptively than preparatory

and second year students and second year students knew more words than the preparatory year students at all three 1,000 word frequency levels (4^{th} year > 2^{nd} year > preparatory year). This indicated the possible effect of year of study on receptive vocabulary knowledge. On the other hand, when the receptive knowledge of vocabulary of the participants was compared in terms of word frequency levels, the possible effect of frequency could be seen. At the 1,000 frequency level, preparatory, second and fourth year students knew more words receptively than at 2,000 word frequency level and at the 2,000 level, they knew more words receptively than the 3,000 frequency level (3,000 < 2,000 < 1,000). In order to see if the possible effects of year of study and frequency of words on the receptive vocabulary knowledge were statistically significant, further analyses were conducted and their results are presented in the following sections.

Research Question 1.1: Do the frequency levels of words affect Turkish EFL learners' receptive vocabulary knowledge?. The second aim of the first research question is to reveal if there is a statistically significant difference between the three word frequency levels of the receptive vocabulary test results. As the receptive vocabulary knowledge of the Turkish EFL learners was assessed at three different levels, a one-way repeated measures ANOVA was conducted to compare the mean scores on the receptive vocabulary test at 1,000, 2,000 and 3,000 word frequency levels. The means and standard deviations are presented in Table 11. The results of the one-way repeated measures ANOVA indicated that there was a significant effect for word frequency level, using Wilks' Lambda = .26, $F(2, 174) = 247.65$, $p < .05$, with a large effect size ($\eta_p^2 = .74$). After finding statistically significant difference in the results of the three levels of the receptive vocabulary test, post-hoc analyses were conducted to find out at which levels the mean scores were statistically significant than the others. The results of the post-hoc tests using Bonferroni adjustment indicated that the participants had significantly higher receptive knowledge of words at the first 1,000 frequency band ($M = 26.76$, $SD = 2.05$) than at the 2,000 frequency band ($M = 22.55$, $SD = 4.41$), which was significantly higher than at the 3,000 frequency band ($M = 17.3$, $SD = 6.55$, 1K > 2K > 3K). These results showed that there was an effect of frequency on the receptive vocabulary knowledge of Turkish EFL learners. They had the receptive knowledge of more single word items if the words were more frequently

used in English. Table 12 illustrates the pairwise comparison results of the post-hoc tests.

Table 12

Post-Hoc Analyses Results of Repeated Measures ANOVA (RVKT)

	1,000 vs. 2,000	2,000 vs. 3,000	1,000 vs. 3,000
MD	4.21*	5.25*	9.46*
SE	.26	.30	.42
p	.000	.000	.000

Note. MD = Mean Difference; SE = Standard Error; p = Significance; * The mean difference is significant at the .05 level.

Research Question 1.2: Does the year of study at university affect the receptive vocabulary knowledge of Turkish EFL learners?. Descriptive statistics of the results of the receptive vocabulary test were given as the answer of the first research question. Although the preparatory, second and fourth year students' mean scores at receptive vocabulary test were discussed according to different word frequency levels, the results were not evaluated in terms of group difference. The third aim of the first research question is to find the effect of year of study at university on receptive vocabulary knowledge at the first, second and third 1,000 frequency bands. The purpose of this research question is to detect if there is a statistically significant difference between the groups in terms of their receptive vocabulary knowledge at three word frequency levels.

A one-way between-groups multivariate analysis of variance (one-way MANOVA) was performed to investigate the effect of year of study at university on receptive vocabulary knowledge of Turkish university students. The receptive vocabulary test results at the first, second and third 1,000 frequency bands were the three continuous dependent variables and the categorical independent variable was the year of study at university; preparatory, second and fourth year. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, multicollinearity and homogeneity of variance-covariance matrices, with no serious violations noted. Firstly, normality tests were conducted. The results of the Kolmogorov-Smirnov test revealed that the receptive vocabulary test results of the participants from preparatory year followed a normal distribution, at 1,000 frequency level ($D(57) = .14$, $p = .08$), at 2,000 level ($D(57) = .08$, $p = .2$) and 3,000 level ($D(57) = .08$, $p = .2$). The results of the second year

students also normally distributed at 1,000 level ($D(62) = .12$, $p = .02$), at 2,000 level ($D(62) = .09$, $p = .2$) and at 3,000 level ($D(62) = .1$, $p = .19$). In line with the first two groups, the fourth year students' receptive vocabulary test results also normally distributed at 1,000 level ($D(57) = 14$, $p = .007$), at 2,000 level ($D(57) = .1$, $p = .18$) and at 3,000 level (D(57) = .9, p = .2). Then, linearity was assessed by generating scatterplots between the three word frequency levels for each group of participants. The plots did not show any evidence of non-linearity, therefore this assumption was also satisfied. Next, univariate and multivariate outliers were checked. Mahalanobis distance score was generated from multiple regression analyses in order to detect multivariate outliers among variables. Mahalanobis distance score was compared to a chi-square distribution with the same degrees of freedom. Degrees of freedom correspond to the number of variables that are grouped together to calculate the Mahalanobis distance. In the current analyses, there were three degrees of freedom, receptive vocabulary scores at 1,000, 2,000 and 3,000 word frequency levels, which equated to a critical Chi-square value of 11.58 (at $\alpha = .001$). The test did not reveal any cases that had a distance score exceeding this critical value. Another assumption of MANOVA, multicollinearity, was checked to see if the dependent variables in the study were only moderately correlated or not. The dependent variables in a study are to be only moderately correlated in MANOVA. Multicollinearity refers to highly correlated variables and it shows that one of the dependent variables in the study is made up of the subscales of another dependent variable (Pallant, 2010). In the current analyses, multicollinearity was tested by running Correlation tests. The results showed that the assumption of multicollinearity was not violated. The correlations between the first and second frequency levels [$r = .64$, $n = 176$], the first and the third levels [$r = .57$, $n = 176$], and the second and the third levels [$r = .72$, $n = 176$] were acceptable as none of them were up around .8 or .9 (Pallant, 2010). As for the last assumption of MANOVA, homogeneity of variance and co-variance matrices was checked. The test that was used to check them is Box's M Test of Equality of Matrices, which was generated as part of MANOVA output. The result of the Box's M test (34.98) was significant ($p = .001$), and it indicated that the assumption of homogeneity of variance and co-variance matrices was violated. As the significance value was not larger than .001 and the sample size of the groups was

not equal, instead of Wilks' Lambda, Pillai's Trace was decided to be used to evaluate multivariate significance (Tabachnick & Fidell, 2014).

The results of the one-way between-groups multivariate analysis of variance that was conducted to investigate the effect of year of study at university on receptive vocabulary knowledge indicated that there was a statistically significant difference between the preparatory, second and fourth year university students' receptive vocabulary knowledge at the first, second and third 1,000, frequency bands: Pillai's Trace = .24, $F(6, 170) = 7.89$, $p < .001$. The multivariate effect size was estimated at .121, which implied that 12.1% of the variance in the dependent variable could be explained by the difference in participants' year of study at university.

In advance of conducting a series of ANOVA tests, the assumption which was checked for all dependent variables was homogeneity of variance. This assumption was satisfied based on a series of Levene's *F* tests ($p > .05$). A series of one-way ANOVA tests on each of the three dependent variables was conducted as follow-up tests to the MANOVA. The results of the one-way ANOVA tests revealed that the dependent variables, receptive vocabulary knowledge at 1,000 word frequency level ($F(2, 173) = 13.09$, $p = .00$, $\eta_p^2 = .13$), 2,000 word frequency level ($F(2, 173) = 14.97$, $p = .00$, $\eta_p^2 = .15$) and 3,000 word frequency level ($F(2, 173) = 24.99$, $p = .00$, $\eta_p^2 = .22$) could reach statistical significance.

Finally, a series of post-hoc analyses using Bonferroni adjustment were performed to examine individual mean difference comparisons across three levels of year of study at university and three word frequency bands. The results revealed that the difference between the preparatory and second year students' receptive vocabulary knowledge was not statistically significant at any of the three frequency bands. Although the biggest difference between these two groups was at the third 1,000 frequency level ($MD = 1.26$, $SE = 1.06$), it was not big enough to reach statistically significant difference. On the other hand, the mean scores of fourth year students' receptive vocabulary knowledge were significantly higher than the mean scores of preparatory year students' receptive vocabulary knowledge, at all three word frequency levels ($p < .05$). Furthermore, there were statistically significant mean differences between the second year and fourth year students' receptive vocabulary knowledge at all three word frequency levels as

well (p < .05). For the groups whose mean difference could reach a statistically significant difference (4th vs. Prep. and 4th vs. 2nd), the trend of the difference across the three word frequency levels was linear. That is, on average, the biggest difference between the groups was at the third 1,000 frequency band and the least difference was at the first 1,000 frequency band (*MD* at 3,000 > *MD* at 2,000 > *MD* at 1,000). Post-hoc analyses results are displayed in the table below.

Table 13

Post-Hoc Analyses (Bonferroni) Results of Receptive Vocabulary Test

		2nd vs. Prep.	4th vs. 2nd	4th vs. Prep.
1,000	*MD*	.60	1.21*	1.81*
	SE	.35	.35	.36
	p	.091	.001	.000
2,000	*MD*	.76	3.19*	3.95*
	SE	.75	.75	.77
	p	.315	.000	.000
3,000	*MD*	1.26	5.91*	7.18*
	SE	1.07	1.07	1.09
	p	.237	.000	.000

Note. MD = Mean Difference; SE = Standard Error; p = Significance; * The mean difference is significant at the .05 level.

Findings for Research Question 2

Investigating Turkish EFL learners' knowledge of productive vocabulary is the aim of the second research question. First of all, the productive vocabulary knowledge of the participants at the first, second and third 1,000 word frequency bands is aimed to be revealed. Then, it is aimed to find out if the three frequency bands have a significant effect on knowledge levels of productive vocabulary. The last purpose of the second research question is to investigate if the year of study at university has an effect on the productive vocabulary knowledge of the Turkish EFL learners. The answers of each part of the second research question will be given in the following sections.

Research Question 2: What is the productive vocabulary knowledge of Turkish EFL learners at the 1,000, 2,000 and 3,000 word frequency levels?. The productive vocabulary knowledge of the participants from preparatory, second and fourth year students was investigated at the first, second and third 1,000 frequency bands with the intention of answering the second research question. As

it was mentioned in Chapter 3, productive version of the first three levels of the Updated VLT by Webb et al. (2017) was designed, piloted and administered by the researcher. In this version, 30 target words from the original test at each level were the target words as well. At each 1,000 frequency levels, 30 sentences were provided and the test takers were expected to write the target words in blanks in each sentence. As a result, in line with the receptive version, in the productive version there were 30 words at each level to assess the productive vocabulary knowledge of the participants. The maximum score that could be obtained for each level was 30 and the highest score that could be obtained from the total test was 90. The productive vocabulary knowledge of participants from preparatory, second and fourth year students was found by running descriptive statistics. Table 14 shows the results of the PVKT with the minimum and maximum scores, mean and standard deviations for three groups of participants at three word frequency levels.

Table 14

PVKT Results

	N		1,000	2,000	3,000	Total
Prep. Year	57	*Max.*	30	23	11	59
		Min.	12	4	1	21
		M	20.35	11.61	5.79	37.75
		SD	4.32	4.73	2.66	9.95
2nd Year	62	*Max.*	29	28	24	81
		Min.	15	7	1	28
		M	22.94	15.31	9.89	48.13
		SD	3.74	4.87	4.36	11.71
4th Year	57	*Max.*	30	28	25	81
		Min.	19	9	2	30
		M	25.88	19.95	15.09	60.91
		SD	2.16	4.56	5.66	11.64
Total	176	*Max.*	30	28	25	81
		Min.	12	4	1	21
		M	23.05	15.61	10.24	48.91
		SD	4.16	5.78	5.77	14.51

The participants' results on PVKT revealed that on average, they had the productive knowledge of 23 out of 30 words at the 1,000 word frequency band. It indicated that, at this level, out of 1,000 words, on average they had the productive knowledge of approximately 767 words. In contrast to the first band, as the frequency of the words decreased, the productive knowledge of them decreased

as well at the other two levels. The participants had the productive knowledge of approximately 16 and 10 words on average at the 2,000 and 3,000 frequency bands, respectively. It revealed that at the 2,000 level they knew about 533 out of 1,000 words productively on average and at the 3,000 level, the number of productively known words decreased to about 333 words. In the whole test (PVKT), the participants knew approximately 49 out of 90 words on average, which meant they knew about 1,633 out of 3,000 words, productively.

The results were also evaluated in terms of mastery of each level. In the present study, the productive test was developed by the researcher, but it had the same format of PVLT (Laufer & Nation, 1999), gap-filling in a sentential context. As a result, for deciding on the mastery of the levels, Laufer and Nation's (1999) criterion were applied. They stated that for the mastery of each level, the test takers should know at least 85% or 90% of the words at each level. As the mastery of the levels was strictly evaluated in the receptive vocabulary test, in the productive one, 90% criteria was decided to be employed. There were 30 vocabulary items at each level, the participants who knew at least 27 of them were evaluated as having the mastery of the level. Applying this criterion, the results indicated that the participants as a whole group did not reach mastery at any of the three levels in the productive vocabulary test. None of the preparatory, second and fourth year groups also mastered any of the levels as well. The data were also evaluated for each student and it was realized that just 21% of the participants could master the 1,000 frequency band in the PVKT. Just four participants mastered the second 1,000 frequency level and none of the participants had the mastery of the third 1,000 level. The distribution of the participants who mastered the productive vocabulary knowledge at each level is given according to their year at university in the figure below.

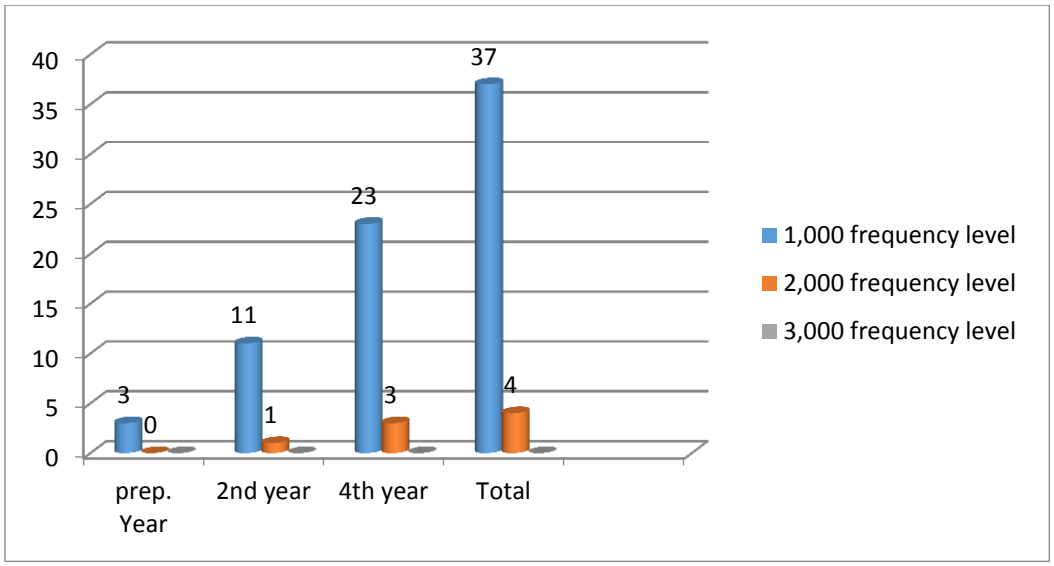

Figure 14. Number of participants mastering the levels in PVKT

The analysis of the PVKT results of the preparatory year students revealed that they had the productive knowledge of more single-word items at 1,000 word frequency level than the other two levels. At the 1,000 word frequency band, almost 20 of 30 single-word items were known by them as a group productively. It meant that at this level they knew nearly 667 of 1,000 words productively. However, at the 2,000 and 3,000 frequency levels, the number of the words they knew productively decreased in a linear way. At the 2,000 level, they could know approximately 12 out of 30 words on average, which meant approximately 400 out of 1,000 single word items. At the 3,000 level on average they had the productive knowledge of about 6 out of 30 words and it meant 200 words at this level. The results of the whole productive vocabulary test showed that on average they could use approximately 38 out of 90 words correctly in written production.

Descriptive statistics results of the PVKT revealed that the mean scores of the second year students were higher than the results of the preparatory year students. They also knew more words productively at the 1,000 level than the 2,000 and 3,000 frequency bands. Second year students had the productive knowledge of approximately 23 and 15 out of 30 words on average at the first and second frequency bands, respectively. It showed that at the first level, they knew approximately 767 words and at the second frequency level, they knew about 500 words on average. Moreover, the number of words they knew productively at the second word frequency level was also higher than the words they knew

productively at the third word frequency level. They could have the productive knowledge of approximately 10 words at the third frequency level, which meant 333 out of 1,000 single word items on average. Evaluation of the whole PVKT showed that the number of productively known words by second year students was also higher than the number of words that were productively known by the preparatory year students. Second year students knew nearly 48 out of 90 words productively and it indicated that on average they had the productive knowledge of about 1,600 out of 3,000 words at the first three word frequency levels.

Fourth year students had the highest mean scores at all word frequency levels among all participants in the PVKT. In line with the results of the preparatory and second year students, fourth year students also had the highest mean score at the first frequency band and their mean score at the second frequency band was higher than their mean score at the third frequency band. Furthermore, they could reach the maximum score only at the first frequency level. At this level, their mean score 25.88 indicated that they knew approximately 867 out of 1,000 single word items on average productively. The small value standard deviation also implied the homogeneity of the group in terms of their productive vocabulary knowledge scores at this level (*SD* = 2.16). At the second word frequency level, they knew on average about 20 words productively and it meant 667 out of 1,000 single word items. In addition, their lowest mean score was at the third frequency level (*M* = 15.09) and it meant that they knew half of the words at this level productively. In the whole test, they had the highest mean score among all the participants. They knew approximately 61 words productively on average, which can be interpreted as 2,033 out of 3,000 single word items.

When the scores of the three groups of participants were compared, it was found out that fourth year students knew more single word items productively than preparatory and second year students and second year students knew more words than the preparatory year students at all three word frequency levels (4^{th} year > 2^{nd} year > preparatory year). This indicated the possible effect of year of study at university on productive vocabulary knowledge. Moreover, when participants' productive vocabulary knowledge was compared in terms of word frequency levels, the possible effect of frequency could be seen. At the 1,000 frequency level, preparatory, second and fourth year students knew more words

productively than at 2,000 frequency band and at the 2,000 band, they knew more words productively than the 3,000 frequency band (3,000 < 2,000 < 1,000). In order to see if the possible effects of year of study and frequency of words on the productive vocabulary knowledge were statistically significant, further analyses were carried out and their findings will be investigated in the following sections.

Research Question 2.1: Do the frequency levels of words affect Turkish EFL learners' productive vocabulary knowledge?. The second aim of the second research question is to find out if there is a statistically significant difference among the three word frequency bands of the PVKT results. In other words, it is aimed to see if the participants know the words at a frequency level better than the words at other frequency levels. In order to find answer of this research question, a one-way repeated measures ANOVA test was conducted to compare the mean scores on the PVKT at the first, second and third 1,000 frequency levels.

The results of the one-way repeated measures ANOVA indicated that there was a significant effect for word frequency level, using Wilks' Lambda = .10, $F(2, 174) = 821.11$, $p < .05$, with a large effect size ($\eta_p^2 = .90$). After finding statistically significant difference in the results of the three bands of the PVKT, post-hoc analyses were conducted to find out at which levels the mean scores were statistically significant than the others. The results of the post-hoc tests using the Bonferroni correction revealed that participants' productive knowledge of single-word items at the first frequency band ($M = 23.05$, $SD = 4.16$) was significantly higher than the second frequency band ($M = 15.61$, $SD = 5.78$), which was significantly higher than the third frequency band ($M = 10.24$, $SD = 5.77$, 1K > 2K > 3K). The pairwise comparison results of the post-hoc tests are given in Table 15. These results showed that there was a clear effect of frequency on the productive vocabulary knowledge of Turkish EFL learners. They had the productive knowledge of more single word items if the words were more frequently used in English.

Table 15

Post-Hoc Analyses Results of Repeated Measures ANOVA (PVKT)

	1,000 vs. 2,000	1,000 vs. 3,000	2,000 vs. 3,000
MD	7.43*	12.8*	5.36*
SE	.28	.32	.25
p	.000	.000	.000

Note. MD = Mean Difference; SE = Standard Error; p = Significance; * The mean difference is significant at the .05 level.

Research Question 2.2: Does the year of study at university affect the productive vocabulary knowledge of Turkish EFL learners?. The third aim of the second research question is to find out if the year of study at university has an effect on productive vocabulary knowledge at the first three 1,000 frequency bands. Although the descriptive statistics results of the preparatory, second and fourth year students' productive vocabulary test were discussed in the first section of the second research question, the effect of year of study was not investigated there. The purpose of this section of the second research question is to detect if there is a statistically significant difference between any of the three groups of participants in terms of their productive vocabulary knowledge at the three word frequency levels.

The effect of year of study at university on the three word frequency levels of the participants' productive vocabulary knowledge, a one-way MANOVA test was performed. The three continuous dependent variables in the one-way MANOVA test were the productive vocabulary test results at the first, second and third 1,000 frequency bands and the year of study at university (preparatory, second and fourth year) was the categorical independent variable. Before running the one-way MANOVA test, preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, multicollinearity and homogeneity of variance-covariance matrices, with no serious violations noted. First of all, normality assumptions were checked. The results of the Kolmogorov-Smirnov test indicated that the productive vocabulary test results of the participants from preparatory year followed a normal distribution, at 1,000 frequency level ($D(57) = .08$, $p = .2$), at 2,000 level ($D(57) = .13$, $p = .02$) and 3,000 level ($D(57) = .10$, $p = .2$). The productive vocabulary test results of the second year students also normally distributed at 1,000 level ($D(62) = .09$, $p =$

.02), at 2,000 level ($D(62) = .09$, $p = .2$) and at 3,000 level ($D(62) = .09$, $p = .2$). In line with the first two groups, the fourth year students' productive vocabulary test results also normally distributed at 1,000 level ($D(57) = .13$, $p = .015$), at 2,000 level ($D(57) = .1$, $p = .2$) and at 3,000 level ($D(57) = .07$, $p = .2$). The second assumption that was checked was linearity and it was assessed by generating scatterplots between the three word frequency levels for each group of participants. The plots did not show any evidence of non-linearity, therefore this assumption was also satisfied. Next, univariate and multivariate outliers were checked. Mahalanobis distance score was generated from multiple regression analyses in order to detect multivariate outliers among variables. Mahalanobis distance score was compared to a chi-square distribution with the same degrees of freedom. Degrees of freedom corresponds to the number of variables that are grouped together to calculate the Mahalanobis distance. In the current analyses, there were three degrees of freedom, productive vocabulary scores at 1,000, 2,000 and 3,000 word frequency levels, which equated to a critical Chi-square value of 12.74 (at $\alpha = .001$). The test did not reveal any cases that had a distance score exceeding this critical value. Another assumption of MANOVA was multicollinearity and in order to check it correlation analyses were conducted. The results of the correlation test showed that the assumption of multicollinearity was not violated as the correlation of none of the productive tests at the three frequency levels were up around .8 or .9 (Pallant, 2001). The correlations between the first and second frequency levels [$r = .77$, $n = 176$], the first and the third levels [$r = .69$, $n = 176$], and the second and the third levels [$r = .63$, $n = 176$] were acceptable for conducting the MANOVA test. Finally, the homogeneity of variance and co-variance matrices was checked as the last assumption of MANOVA. Box's M Test of Equality of Matrices was referred to check the homogeneity of variance and co-variance matrices. The result of this test (116.38) was significant ($p < .001$) and it indicated that this assumption was violated. As the sample size of the groups was not equal and the significance value of the Box's M Test was not larger than .001, instead of Wilks' Lambda, Pillai's Trace was decided to be referred to evaluate multivariate significance (Tabachnick & Fidell, 2014).

After testing all the assumptions, a one-way between-groups MANOVA was conducted in order to investigate the effect of year of study on productive

vocabulary knowledge of the tertiary level EFL students. The results of the test revealed that at the 1,000, 2,000 and 3,000 word frequency levels, there was a significant difference between the preparatory, second and fourth year university students' productive vocabulary size: Pillai's Trace = .439, $F(6, 170) = 16.14$, $p < .001$. The multivariate effect size was estimated at .220, which implies that 22% of the variance in the canonically derived dependent variable was accounted for by year of study at university.

The homogeneity of variance assumption was tested for all dependent variables before running a series of ANOVA's. A series of Levene's *F* tests were considered to satisfy the homogeneity of variance assumption, even though two of the Levene's *F* tests were statistically significant ($p > .05$). Although the Levene's *F* test results of 1,000 and 3,000 frequency levels were not homogeneous, an examination of the standard deviations (see Table 14) showed that none of the largest standard deviations were more than four times the size of the corresponding smallest, suggesting that the ANOVA would be robust in this case (Howell, 2010). As follow-up tests to the MANOVA, a series of one-way ANOVA's was conducted on each of the three dependent variables. As results of the one-way ANOVA tests, it was found that all the dependent variables, productive vocabulary knowledge at 1,000 word frequency level ($F(2, 173) = 34.86$, $p = .00$, $\eta_p^2 = .28$), 2,000 word frequency level ($F(2, 173) = 44.4$, $p = .00$, $\eta_p^2 = .33$) and 3,000 word frequency level ($F(2, 173) = 63.82$, $p = .00$, $\eta_p^2 = .42$) could reach statistical significance.

After finding statistically significant difference between the frequency levels, a series of post-hoc analyses (Bonferroni) were performed in order to analyze individual mean difference comparisons across all three levels of year of study at university and all three word frequency levels. The results of the post-hoc analyses indicated that second year students had significantly higher scores than preparatory year students at all three frequency levels of the PVKT ($p < .05$). Furthermore, the fourth year students had significantly higher scores than both the preparatory and the second year students at all three frequency bands of PVKT ($p < .05$). The findings of the post-hoc analyses are illustrated in Table 16. The results indicated the effect of year of study at the first three 1,000 frequency bands among all groups (2^{nd} vs. Prep., 4^{th} vs. 2^{nd} and 4th vs. Prep.). It showed that the

higher their grade was at university, the better they could know the words productively.

Table 16

Post-Hoc Analyses (Bonferroni) Results of PVKT

		2nd vs. Prep.	4th vs. 2nd	4th vs. Prep.
1,000	*MD*	2.58*	2.94*	5.53*
	SE	.65	.65	.66
	p	.00	.00	.00
2,000	*MD*	3.69*	4.64*	8.33*
	SE	.87	.69	.89
	p	.00	.00	.00
3,000	*MD*	4.1*	5.2*	9.3*
	SE	.81	.81	.83
	p	.00	.00	.00

Note. MD = Mean Difference; SE = Standard Error; p = Significance; * The mean difference is significant at the .05 level.

Findings for Research Question 3

The third research question aims to reveal some important points related to participants' receptive knowledge of collocations. The first aim of the third research question is to examine Turkish EFL learners' receptive knowledge of verb-noun and adjective-noun collocations composed of words from the first, second and third frequency bands. The second aim of this research question is to find out if the frequency of the node words affects the participants' receptive knowledge of these two types of collocations. The last aim of this research question is to discover if the year of study at university affect the receptive knowledge of collocations. The answers of each sub-section of the third research question are given in different sections below.

Research Question 3: What is Turkish EFL learners' receptive knowledge of verb-noun and adjective-noun collocations composed of words at the 1,000, 2,000 and 3,000 word frequency levels?. As stated above, the first aim of the third research question is to reveal Turkish EFL learners' receptive knowledge of verb-noun and adjective-noun collocations composed of words from the first three 1,000 frequency bands. Receptive knowledge of collocations test, which included 20 items for each type of collocation at each

frequency band, was applied in order to measure the receptive collocational knowledge of the participants. In total, 60 verb-noun and 60 adjective-noun collocations were tested in the whole test. The first section of the third research question was answered by conducting descriptive statistical analyses.

Descriptive statistical analyses results revealed that the participants knew approximately 60% of the verb-noun and 55% of the adjective-noun collocations on average at all three 1,000 levels receptively. None of the participants could find all the items of two types of collocations correctly in the whole test. However, the maximum correct answer for the noun combinations with verbs was greater than that of noun combinations with adjectives, which was in line with the participants' mean scores in verb-noun and adjective-noun combinations at each frequency bands. When participants' scores were investigated at each frequency band, it was found out that the more frequent the node word of the collocation, the more collocations were known receptively by the participants. At the first 1,000 frequency band, on average, the participants knew 75% of the verb-noun and 60% of the adjective-noun collocations receptively. They could reach the maximum score at the adjective-noun collocations, while they could answer at most 19 of the verb-noun collocations correctly. At this level, the participant/s who got the lowest score/s could answer 40% of the verb-noun and 20% of the adjective-noun combinations correctly. At the 2,000 word frequency level, participants knew on average, 65% of verb-noun and 60% of adjective-noun collocations receptively. In line with the results of the first frequency band, at the second frequency band, at least one participant could reach the maximum score at the collocations with adjectives, while the best score of the collocations with verbs was 19. When the lowest scores at this band were compared, it was seen that the participant who had the lowest score for the verb-noun collocations knew 25% of them, while the participant who had the lowest score for the adjective-noun collocations knew 20% of them. Although the minimum scores of adjective-noun collocations were the same at the first two frequency bands, for the other type of collocations, the percentage of the minimum correct answers decreased from 60% to 25%. In addition, they had the lowest mean scores of both types of collocations at the third 1,000 frequency band and their mean scores for two groups of collocations were approximately the same. On average, they could find approximately 9 out of 20

collocations of both kinds and it meant they knew 45% of the collocations correctly. Contrary to the first two word frequency levels, at this level, at least one of the participants could answer all the verb-noun collocations correctly, while the maximum score at the adjective-noun collocations was 17. They also had the lowest minimum scores at this level when compared to the first two levels. At least one of the participants could find only 1 correct combination of nouns with verbs and 2 noun combinations with adjectives correctly.

Receptive collocations test results were also analyzed according to participants' year of study at university. At 1,000 word frequency level, on average, preparatory and second year students could answer approximately 70% of the verb-noun collocations correctly, while fourth year students managed to find approximately 80% of the noun combinations with verbs correctly. None of the participants of the three groups could answer all of the verb-noun collocations correctly. The participants who had the minimum scores among preparatory and second year students could answer 40% of the questions correctly, while fourth year students could answer at least 55% of the verb-noun collocations correctly. Moreover, at this frequency band, all three groups of participants had higher mean scores for noun combinations with verbs than the ones with adjectives. For preparatory year students, it was approximately 15% and for the other two groups of participants, it was approximately 10% lower than their achievement at verb-noun collocations scores at this level. None of the participants from preparatory and fourth years could find all of the adjective-noun collocations at this level, but at least one participant could achieve it from the second year students. However, the lowest minimum score, which was 4, also belonged to the same group, second year students.

At the second 1,000 frequency band, the mean scores of all groups of participants were lower than their mean scores at the first 1,000 level, for both types of collocations. Fourth year students' achievement was better than second year students' achievement and their achievement was better than preparatory year student's in both types of collocations at the second frequency band. The mean score of the preparatory year students showed that on average, they knew about 55% and 50% of the verb-noun and adjective-noun collocations, respectively. As stated above, the mean score of the second year students was

better than that of preparatory year students and the percentage of their correct answers for verb-noun collocations was approximately 65% and it was 60% for adjective-noun collocations. Furthermore, fourth year students had better mean scores for both types of collocations than the other two groups of participants. Their mean scores indicated that they knew about 75% of the collocations of nouns with verbs and 65% of the noun collocations with adjectives receptively. As in the first frequency level, at this level it was the second year students who could reach the highest score, 20 and the lowest minimum score, which was 4, for adjective-noun collocations. Second and fourth year students had the highest maximum score, which was 19, and again second year students had the lowest minimum score in items of verb-noun collocations. Relatively high standard deviation of second year students could explain the reason of their highest and lowest scores. It seemed that the group was not homogeneous in terms of their receptive collocational knowledge at this level. Descriptive analyses results of the RKCT are provided in the table below.

Table 17

RKCT Results

	N		1000		2000		3000		TOTAL	
			V-N	Adj-N	V-N	Adj-N	V-N	Adj-N	V-N	Adj-N
Prep. Year	57	*Max.*	18	16	15	15	19	15	47	41
		Min.	8	7	6	5	1	3	21	17
		M	13.68	11.28	10.5	9.72	6.89	8.14	31.07	29.14
		SD	2.3	2.19	1.95	1.9	3.82	2.91	6.35	5.59
2nd Year	62	*Max.*	19	20	19	20	20	17	57	55
		Min.	8	4	5	4	1	2	22	12
		M	13.87	12.35	12.82	12.06	9.29	9.19	35.98	33.6
		SD	2.75	2.8	3.3	3.41	4.15	3.84	9.25	8.5
4th Year	57	*Max.*	19	19	19	17	16	15	53	48
		Min.	11	10	9	8	7	6	30	26
		M	16.37	13.65	14.56	12.82	11.42	10.19	42.35	36.67
		SD	1.83	1.95	2.13	2.21	2.47	2.26	5.51	5.31
Total	176	*Max.*	19	20	19	20	20	17	57	55
		Min.	8	4	5	4	1	2	21	12
		M	14.62	12.43	12.63	11.55	9.2	9.18	36.45	33.15
		SD	2.62	2.52	3.03	2.93	3.99	3.19	8.56	7.32

Research Question 3.1: Do the frequency levels of words affect Turkish EFL learners' receptive verb-noun collocational knowledge?. The aim of this section of the third research question is to reveal if the scores of participants change significantly according to the three word frequency bands of the receptive verb-noun collocations test results. It means it is aimed to find out if the node word frequency of the target collocations affects the amount of receptively known verb-noun collocations. For answering this research question, a one-way repeated measures ANOVA test was conducted to compare the mean scores on the receptive verb-noun collocations test at the first three 1,000 word frequency bands. Before conducting the one-way repeated measures ANOVA test, preliminary assumption testing was conducted to check normality and sphericity, without any serious violations noted (Pallant, 2010). The results of the one-way repeated measures ANOVA indicated that there was a significant effect for node word frequency level, using Wilks' Lambda = .25, $F(2, 174) = 267.65$, $p < .05$, with a large effect size ($\eta_p^2 = .76$). It showed that frequency band of nouns of the collocations was a factor that affected the amount of receptively known collocations. After finding statistically significant difference in the results of the three levels of the receptive verb-noun collocations test, post-hoc analyses were conducted to find out at which levels the mean scores were significantly higher than the others. The results of the post-hoc tests using the Bonferroni correction revealed that receptive knowledge of verb-noun collocations at 1,000 node-word frequency level ($M = 14.62$, $SD = 2.62$) was significantly higher than at the second 1,000 node-word frequency band ($M = 12.63$, $SD = 3.03$), which was significantly higher than at the third 1,000 node-word frequency band ($M = 9.2$, $SD = 3.9$, 1K > 2K > 3K). In Table 18, the pairwise comparison results of the post-hoc tests are given. These results points out the effect of node word frequency on receptive verb-noun collocational knowledge of the participants. They had more receptive knowledge of noun combinations with verbs if the node words of the collocations were more frequently used in English.

Table 18

Post-Hoc Analyses Results of Repeated Measures ANOVA (Receptive Verb-Noun Collocations Test)

	1,000 vs. 2,000	2,000 vs. 3,000	1,000 vs. 3,000
MD	1.98*	3.43*	5.42*
SE	.17	.21	.23
p	.00	.00	.00

Note. MD = Mean Difference; SE = Standard Error; p = Significance; * The mean difference is significant at the .05 level.

Research Question 3.2: Do the frequency levels of words affect Turkish EFL learners' receptive adjective-noun collocational knowledge?. In this section of the third research question, it is aimed to investigate if node word frequency has an effect on participants' receptive knowledge of adjective-noun collocations. In other words, the aim of this section is to search if there is a statistically significant difference between the receptive knowledge of adjective-noun collocations whose node words are from the first three 1,000 word frequency bands. In order to answer this research question, a one-way repeated measures ANOVA test was conducted to compare the mean scores of the participants on the receptive adjective-noun collocations test at 1,000, 2,000 and 3,000 word frequency levels. Before conducting the one-way repeated measures ANOVA, preliminary assumption testing was conducted to check normality and sphericity, with no serious violations noted. One-way repeated measures ANOVA results showed that there was a significant effect for node word frequency level, using Wilks' Lambda = .43, $F(2, 174) = 116.24$, $p < .05$, with a large effect size ($\eta_p^2 = .57$). The results indicated that participants' receptive knowledge of this collocation type was affected by the node word frequency of the collocations. After finding statistically significant difference in the results, post-hoc analyses were conducted in order to detect at which frequency levels participants' mean scores were significantly higher. Post-hoc results using the Bonferroni correction showed that the amount of receptively known noun combinations with adjectives at 1,000 node word frequency level ($M = 12.43$, $SD = 2.52$) was significantly higher than at the second node word frequency band ($M = 11.55$, $SD = 2.93$), which was significantly higher than at the third node word frequency band ($M = 9.18$, $SD = 3.19$, 1K > 2K > 3K). In Table 19, the pairwise comparison results of the post-hoc tests are given. The results indicate that node word frequency has an effect on participants'

receptive knowledge of adjective-noun collocations. They knew more noun combinations with adjectives receptively, in line with the results of noun combinations with verbs, if the nouns in collocations were used more frequently in English.

Table 19

Post-Hoc Analyses Results of Repeated Measures ANOVA (Receptive Knowledge of Adjective-Noun Collocations Test)

	1,000 vs. 2,000	2,000 vs. 3,000	1,000 vs. 3,000
MD	.86*	2.36*	3.25*
SE	.19	.21	.22
p	.00	.00	.00

Note. MD = Mean Difference; SE = Standard Error; p = Significance; * The mean difference is significant at the .05 level.

Research Question 3.3: Does the year of study at university affect their receptive knowledge of verb-noun and adjective-noun collocations?. The last aim of the third research question is to reveal if the year of study at university has an effect on receptive knowledge of verb-noun and adjective-noun collocations at the first, second and third 1,000 frequency bands. Although, the preparatory, second and fourth year students' receptive knowledge of collocations test results were analyzed in the first section of the third research question, the effect of year of study at university was not investigated there. In this section of the third research question, it is aimed to be found out if there is a statistically significant difference between the results of preparatory, second and fourth year students' receptive knowledge of verb-noun and adjective-noun collocations tests at the three frequency bands.

In order to find the answer of this research question, a one-way between-groups multivariate analysis of variance (one-way MANOVA) test was performed. The six continuous dependent variables in the test were the receptive verb-noun collocations test results at the first three 1,000, frequency bands and the receptive adjective-noun collocations test results at these bands. The categorical independent variable of the one-way MANOVA test was the year of study (preparatory, second and fourth year). Before running the one-way MANOVA test, preliminary assumption testing was conducted to check for normality, linearity,

univariate and multivariate outliers, multicollinearity and homogeneity of variance-covariance matrices, with no serious violations noted. The first assumption that was checked was normality. The results of Shapiro-Wilk test showed that the receptive verb-noun collocations test results of the participants from preparatory year followed a normal distribution, at 1,000 word frequency level ($D(57) = .97$, $p = .1$), at 2,000 level ($D(57) = .97$, $p = .12$) and 3,000 level ($D(57) = .94$, $p = .08$). For the second year students, the receptive verb-noun collocations test results also had a normal distribution at the 1,000 word frequency level ($D(62) = .97$, $p = .08$), at 2,000 level ($D(62) = .98$, $p = .33$) and 3,000 level ($D(62) = .97$, $p = .13$). The receptive verb-noun collocations test results of the fourth year participants followed a normal distribution as well, at 1,000 word frequency level ($D(57) = .94$, $p = .07$), at 2,000 level ($D(57) = .97$, $p = .19$) and 3,000 level ($D(57) = .96$, $p = .06$). In addition to the verb-noun collocation test results, normality was also checked for the receptive knowledge of adjective-noun collocations test results. The results of Shapiro-Wilk test indicated that for adjective-noun combinations, the RKCT test results of the participants from preparatory year followed a normal distribution, at 1,000 word frequency level ($D(57) = .94$, $p = .06$), at 2,000 level ($D(57) = .96$, $p = .09$) and 3,000 level ($D(57) = .97$, $p = .18$). For the second year students, the receptive adjective-noun collocations test results also had a normal distribution at the 1,000 word frequency level ($D(62) = .95$, $p = .07$), at 2,000 level ($D(62) = .98$, $p = .54$) and 3,000 level ($D(62) = .97$, $p = .16$). The receptive adjective-noun collocations test results of the fourth year participants followed a normal distribution as well, at 1,000 word frequency level ($D(57) = .97$, $p = .1$), at 2,000 level ($D(57) = .95$, $p = .07$) and 3,000 level ($D(57) = .97$, $p = .12$).

After normality, the second assumption that was checked was linearity. It was checked by generating scatterplots between the collocation types at three frequency bands for three groups of participants. The scatterplots did not show any evidence of non-linearity, indicating that this assumption was not violated. The next assumptions to be checked were univariate and multivariate outliers. In order to detect the outliers among variables, Mahalanobis distance score was generated from the multiple regression analyses. This score was compared to a chi-square distribution with the same degrees of freedom. In the current analysis, there were six degrees of freedom; receptive verb-noun collocations at 1,000, 2,000 and

3,000 word frequency levels and receptive adjective-noun collocations at 1,000, 2,000 and 3,000 word frequency levels, which equated to a critical Chi-square value of 22.28 (at α = .00). The test did not show any cases that had a distance score exceeding this critical value. Multicollinearity was another assumption of MANOVA and it was checked by conducting correlation analyses. Correlation analyses results indicated that this assumption was not violated, because the correlation of none of the tests were up around .8 or .9 (Pallant, 2010). The results of the correlation analyses are given in Table 20.

Table 20

Pearson Product-moment Correlations between Levels of RKCT

	1	2	3	4	5	6
1. RCT_1000_V-N	1.00					
2. RCT_2000_V-N	.67	1.00				
3. RCT_3000_V-N	.62	.68	1.00			
4. RCT_1000_Adj-N	.52	.53	.62	1.00		
5. RCT_2000_Adj-N	.42	.58	.60	.52	1.00	
6. RCT_3000_Adj-N	.48	.52	.68	.50	.56	1.00

The last assumption of MANOVA that was checked was the homogeneity of variance and co-variance matrices. In order to check it, Box's M Test of Equality of Matrices, which was given as the result of MANOVA test, was referred to. The result of this test (132.00) was significant ($p < .001$) and it indicated that this assumption was violated. As the sample size of the groups was not equal and the significance value of the Box's M Test was not larger than .001, instead of Wilks' Lambda, Pillai's Trace was decided to be referred to evaluate multivariate significance (Tabachnick & Fidell, 2014).

After conducting tests for checking assumptions and noting no serious violations, a one-way MANOVA test was run in order to explore if the year of study had an effect on the receptive knowledge of verb-noun and adjective-noun collocations of the tertiary level EFL students. The results of the test indicated that at all frequency bands, there was a significant difference between the preparatory, second and fourth year university students' receptive knowledge of both types of collocations: Pillai's Trace = .467, $F(6, 168) = 8.59$, $p < .001$. The multivariate effect size was estimated at .23, which implies that 23% of the variance in the

canonically derived dependent variable was accounted for by year of study at university.

As follow-up tests to MANOVA, a series of one-way ANOVA's was planned to be conducted on each dependent variables, for finding out which of the six dependent variables could reach statistical significance. Before running the ANOVA's, the homogeneity of variance assumption was tested for all dependent variables. A series of Levene's *F* tests were considered to satisfy the homogeneity of variance assumption, even though three of the Levene's *F* tests were statistically significant ($p > .05$). Levene's *F* test results of both collocation types at 2,000 frequency level and adjective-noun collocations at 3,000 frequency level were not homogeneous. As a result, the standard deviations (see Table 17) of those tests were examined and it was seen that none of the largest standard deviations were more than four times the size of the corresponding smallest. It suggested that the ANOVA would be robust in this case (Howell, 2010). After this examination, a series of one-way ANOVA's was run on each of the six dependent variables. The results of the one-way ANOVA tests showed that the dependent variables, receptive knowledge of verb-noun collocations at 1,000 word frequency level ($F(2, 173) = 23.71$, $p = .00$, $\eta_p^2 = .22$), 2,000 word frequency level ($F(2, 173) = 36.37$, $p = .00$, $\eta_p^2 = .30$) and 3,000 word frequency level ($F(2, 173) = 22.84$, $p = .00$, $\eta_p^2 = .21$) could reach statistical significance. Moreover, the dependent variables, receptive knowledge of adjective-noun collocations at 1,000 word frequency level ($F(2, 173) = 14.47$, $p = .00$, $\eta_p^2 = .14$), 2,000 word frequency level ($F(2, 173) = 21.46$, $p = .00$, $\eta_p^2 = .20$) and 3,000 word frequency level ($F(2, 173) = 6.25$, $p = .002$, $\eta_p^2 = .07$) could reach statistical significance.

Ensuring that the difference between the frequency bands was statistically significant, a series of post-hoc analyses (Bonferroni) were performed in order to analyze individual mean difference comparisons across all three levels of year of study and all verb-noun and adjective-noun collocations at three word frequency levels. The results of the post-hoc analyses indicated that at 1,000 word frequency level in receptive knowledge of verb-noun collocations, there was a statistically significant difference between second year students and fourth year students ($MD = 2.5$, $SE = .43$, $p = .00$) and between fourth year and preparatory year students ($MD = 2.68$, $SE = .44$, $p = .00$). However, there was not any significant difference

between second year and preparatory year students (*MD* = .19, *SE* = .43, *p* = 1.00). On the other hand, at this level in receptive knowledge of adjective-noun collocations, there was a significant difference between all levels of year of study; between second year and preparatory year students (*MD* = 1.07, *SE* = .43, *p* = .42), fourth year and second year students (*MD* = 1.29, *SE* = .43, *p* = .009), and fourth year and preparatory year students (*MD* = 2.37, *SE* = .44, *p* = .00).

At 2,000 word frequency level, it was found out that there was a statistically significant difference between all three levels of year of study in the results of receptive knowledge of verb-noun collocations test ($p < .05$); between second year and preparatory year students (*MD* = 2.33, *SE* = .47), fourth year and second year students (*MD* = 1.74, *SE* = .47), and fourth year and preparatory year students (*MD* = 4.07, *SE* = .48). At the same word frequency level, statistically significant difference was observed between second year and preparatory year students (*MD* = 2.35, *SE* = .49), and fourth year and preparatory year students (*MD* = 3.11, *SE* = .5) in receptive knowledge of adjective-noun collocations test results (*p* = .00). Nevertheless, the difference between the fourth year and second year students' receptive knowledge of adjective-noun collocations test results at 2,000 word frequency level was not statistically significant (*MD* = .76, *SE* = .49, *p* = .357).

In receptive knowledge of verb-noun collocations test results of the participants at 3,000 word frequency level, statistically significant difference was found out between all three levels of year of study ($p < .05$); between second year and preparatory year students (*MD* = 2.4, *SE* = .66), fourth year and second year students (*MD* = 2.13, *SE* = .66), and fourth year and preparatory year students (*MD* = 4.53, *SE* = .67). In terms of the receptive knowledge of adjective-noun collocations test results of the participants at the same level, only the difference between fourth year and preparatory year students was statistically significant (*MD* = 2.05, *SE* = .58, *p* = .002). However, the differences between second year and preparatory year students and fourth and second year students were not statistically significant. Post-hoc analyses results of the receptive knowledge of collocations test in terms of year of study are presented in the table below.

Table 21

Post-Hoc Analyses (Bonferroni) Results of RKCT

Collocation Type	Frequency Level		2nd vs. Prep.	4th vs. 2nd	4th vs. Prep.
Verb-Noun	1,000	*MD*	.19	2.5*	2.68*
		SE	.43	.43	.44
		p	1.0	.00	.00
	2,000	*MD*	2.33*	1.74*	4.07*
		SE	.47	.47	.48
		p	.00	.00	.00
	3,000	*MD*	2.4*	2.13*	4.53*
		SE	.66	.66	.67
		p	.00	.00	.00
Adjective-Noun	1,000	*MD*	1.07*	1.29*	2.37*
		SE	.43	.43	.44
		p	.04	.01	.00
	2,000	*MD*	2.35*	.76	3.11*
		SE	.49	.49	.5
		p	.00	.36	.00
	3,000	*MD*	1.05	1	2.05*
		SE	.57	.57	.58
		p	.2	.24	.00

Note. MD = Mean Difference; SE = Standard Error; p = Significance; * The mean difference is significant at the .05 level.

To sum up the results of the post-hoc analyses, it is possible to state that in RKCT results for verb-noun collocations, except for the difference between second and preparatory year participants at the first 1,000 word frequency level, the differences between all three groups were statistically significant. Moreover, in RKCT results for adjective-noun collocations, there were significant differences between all three groups, except for the differences between the fourth and second year students at 1,000 and 2,000 frequency bands and the difference between second and preparatory year students at the first 1,000 frequency band.

Findings for Research Question 4

The fourth research question aims to reveal some important points related to the participants' productive knowledge of collocations. The first aim of the fourth research question is to find out Turkish EFL learners' productive knowledge of

both types of collocations composed of words from the first three frequency bands. The second aim of this research question is to reveal whether the participants' productive knowledge of collocations is affected by the frequency of the nouns which are combined with verbs and adjectives to make the collocations. The last aim of this research question is to find out if the year of study affects the productive knowledge of both types of collocations. The answers of each sub-section of the fourth research question are given in different sections below.

Research Question 4: What is Turkish EFL learners' productive knowledge of verb-noun and adjective-noun collocations composed of words at the 1,000, 2,000 and 3,000 word frequency levels?. As it was explained before, the first aim of the fourth research question is to find out tertiary level Turkish EFL learners' productive knowledge of verb and adjective combinations with nouns from the first three 1,000 word frequency bands. The test employed to assess participants' productive knowledge of collocations included 60 items for each type of collocations in total (20 verb+noun and 20 adjective+noun combinations at each level). Descriptive statistical analyses were conducted for answering the first section of the fourth research question.

The results of descriptive statistics indicated that in the whole test, out of 120 questions, one participant could find 101 of the collocations correctly. This number was the maximum score obtained while the lowest score was 17. The mean score of the whole test was 56.41. When the scores for the types of collocations were investigated, it was seen that on average, the participants could find the correct answers of approximately 53% of the verb-noun collocations and 41% of the adjective-noun collocations productively. Out of 60 verb-noun collocations, the lowest achiever/s could know just the 18% of the collocations, while the highest achiever/s could find approximately 87% of the collocations correctly. Contrary to the results of RKCT, in the whole productive test, the maximum number of the correct answers for noun combinations with adjectives was slightly higher than that of verb-noun combinations. The participant/s who had the highest score for the adjective-noun collocations could use approximately 90% of them correctly. However, the minimum score obtained in PKCT for adjective-noun combinations was lower than that of verb-noun combinations, it was just 8%. When the scores of the participants were examined with regard to frequency

levels, both for verb-noun and adjective-noun collocations, it was found out that the more frequent the node word of the collocations, the more collocations were known by the participants productively. This was also in line with the results of the RKCT. While the participants in the study could use productively on average 66.5% of the verb-noun collocations, whose node words were at 1,000 word frequency level, they could use approximately 52% of adjective-noun combinations productively at the same frequency band. At the second 1,000 frequency level, their productive knowledge of verb-noun collocations decreased to approximately 55% and their productive knowledge of adjective-noun collocations to nearly 41%. The percentage of the mean score at the third frequency band diminished to 37% for verb-noun collocations and to approximately 30% for adjective-noun collocations at the third frequency band.

As it can be noticed in the table 22, the results of PKCT were also examined according to the year of study of the participants. In the whole PKCT, the mean score of preparatory year students was 46.8. Besides, second and fourth year students' mean scores were approximately 56 and 66.5, respectively. Investigation of participants' mean scores indicated that the fourth year students had higher mean score than second year students and they had higher score than the preparatory year students in the whole test. The mean scores of the participants also increased with the year of study at university for both types of collocations at each level of word frequency.

Table 22

PKCT Results

	N		1000		2000		3000		TOTAL	
			V-N	Adj-N	V-N	Adj-N	V-N	Adj-N	V-N	Adj-N
Prep. Year	57	*Max.*	19	19	18	13	16	12	45	42
		Min.	3	2	4	1	1	0	11	6
		M	12.47	9.5	8.9	6.05	5.35	4.63	26.7	20.18
		SD	2.56	3.62	3.16	3.39	3.33	2.7	7.4	8
2nd Year	62	*Max.*	19	20	19	20	15	14	47	54
		Min.	7	1	0	0	1	0	11	5
		M	12.9	10.06	11.74	8.27	7.1	5.95	31.74	24.28
		SD	2.95	4.04	3.75	5	3.36	2.97	9.01	11
4th Year	57	*Max.*	19	17	18	19	19	15	52	48
		Min.	8	6	8	3	3	1	20	12
		M	14.68	11.54	12.56	10.39	9.74	7.54	36.98	29.47
		SD	2.15	2.54	2.46	3.04	3.68	3.35	7.13	7.69
Total	176	*Max.*	19	20	19	20	19	15	52	54
		Min.	3	1	0	0	1	0	11	5
		M	13.3	10.36	11.08	8.24	7.4	6.04	31.85	24.64
		SD	2.74	3.56	3.5	4.29	3.9	3.2	8.9	9.8

At 1,000 word frequency level, on average, preparatory year students could answer approximately 62% of the verb-noun collocation questions and 47.5% of the adjective-noun collocation questions correctly. For both types of collocations, none of the participants at the preparatory year could answer all of the questions correctly. Minimum score they got from the verb-noun collocations was 3 while it was 2 for the adjective-noun collocations. At this frequency band, second year students could answer on average 64.5% of the verb-noun collocations and approximately 50% of the adjective-noun collocations correctly. One of the second year students could answer all of the adjective-noun collocations correctly at this level and 3 of the participants could answer 19 of the verb-noun collocations correctly. In addition to that, the lowest score for verb-noun collocations was 7 and it was only 1 for adjective-noun collocations. When the scores of the fourth year students were investigated, it was seen that on average they could know 73.4% of verb-noun and 57.7% of adjective-noun collocations correctly in the PKCT. Although none of the participants could reach the maximum score for both types of collocations, their minimum scores were higher than the preparatory and second

year students. It was 8 for verb-noun and 6 for adjective-noun collocations. It can be observed in the results of the participants at 1,000 word frequency level that the mean scores of all three groups for verb-noun collocations were higher than their mean scores for adjective-noun collocations. Additionally, the mean scores of second year students were higher than preparatory year students and fourth year students' mean scores were higher than second year students for both types of collocations at the first frequency band.

At 2,000 word frequency band, preparatory year students' mean score for both types of collocations was 14.95 in total. It meant that they knew 44.5% of the verb-noun collocations and approximately 30% of the adjective-noun collocations correctly. The maximum score they could reach decreased compared to the first 1,000 frequency band; it was 18 for verb-noun and 13 for adjective-noun collocations at this level. PKCT results for the second year students showed that their mean score was 20.01 at this level. When their results were analyzed in terms of collocation types, it was found out that they had the productive knowledge of about 59% of verb-noun and approximately 41% of adjective-noun collocations, on average. They could reach the maximum score for the adjective-noun collocations and the minimum score for both types of collocations. However, relatively high standard deviation of the adjective-noun collocations indicated that the group was not homogenous in terms of their productive knowledge of adjective-noun collocations (*SD* = 4.98). Lastly, the results of the fourth year students were investigated at this level and it was observed that their mean score for this level was 22.95. It was higher than the first two groups of participants. On average, they knew around 63% of verb-noun and 52% of adjective-noun collocations, productively. The highest scores they reached were close to the maximum score for both types of collocations; it was 18 for verb-noun and 19 for adjective-noun collocations. Moreover, the lowest scores they obtained for both types of collocations were higher than 2. All three groups of participants had higher mean scores for verb-noun than for adjective-noun collocations and fourth year students achieved better results than the other two groups, while the second year students had better scores than the preparatory year students for both types of collocations. These findings were in line with the results the participants obtained at the first word frequency band.

At the 3,000 frequency band, preparatory year students reached lower scores than the first two 1,000 frequency bands. Their mean score was 9.98 out of 40 at 3,000 frequency level. They could answer, on average, approximately 27% of 20 verb-noun and about 23% of 20 adjective-noun collocations correctly, at this level. They could not reach the maximum score for any of the collocation types. At this level, second year students' scores were also lower than their performance at the other two frequency bands. Out of 40 items of collocations, they reached the mean score of 13.05 at this level. Deeper analyses showed that on average, they answered 35.5% of verb-noun and approximately 30% of adjective-noun collocations correctly. Their maximum score, which was 19 or 20 in the first two 1,000 frequency levels, decreased to 15 for verb-noun and to 14 for adjective-noun collocations. Furthermore, fourth year students also had similar results. Their results at this band were also lower than the scores they obtained at the first two 1,000 frequency bands. At this level, their mean score was 17.28. The percentage of their correct answers for verb-noun collocations was 48.7 and that of adjective-noun collocations was 37.7, on average. Their maximum score was 19 for verb-noun and 15 for adjective-noun combinations. Similar to the findings of the first two frequency bands, at this level, the mean scores of the participants for verb-noun collocations were higher than that of adjective-noun collocations and the more year of study meant the more scores at both collocation type tests.

When the results of the whole test were evaluated in terms of collocation types, it was realized that adjective-noun combinations were known productively less than verb-noun combinations for all three groups of year of study at university. First of all, in the whole productive knowledge of collocations test, preparatory year students knew, on average, 44.5% of 60 verb-noun and approximately 34% of 60 adjective-noun collocations, productively. Compared to them, second year students had higher mean scores for both types of collocations. On average, they had the productive knowledge of about 53% of verb-noun and about nearly 40% of adjective-noun collocations, in the whole test. Moreover, fourth year students had higher mean scores for both types of collocations than preparatory year and second year students. They could answer on average, about 62% of the verb-noun collocation questions and approximately 49% of the questions about the adjective-noun collocations correctly. To sum up, it can be said that the more

frequent the node word of the collocation, the better the mean scores of the participants. In addition, the more years spent at university meant again the better scores for both types of collocations. It was also revealed that participants' mean scores for verb-noun collocations were better than their mean scores for adjective-noun collocations. It should be noted that although descriptive statistical analyses results indicated the effect of year of study and node word frequency, detailed analyses, which show if these differences are statistically significant or not, will be presented in the other sections of this research question.

Research Question 4.1: Do the frequency levels of words affect Turkish EFL learners' productive verb-noun collocational knowledge?. The aim of this section of the fourth research question is to discover whether there is a statistically significant difference among the three word frequency levels of the productive verb-noun collocations test results. In other words, it is aimed to find out whether the node word frequency of verb-noun collocations affects participants' productive knowledge of those collocations. For finding the answer of this research question, a one-way repeated measures ANOVA test was conducted to compare the mean scores of the participants on the productive knowledge of verb-noun collocations test at the three frequency bands. Before conducting the one-way repeated measures ANOVA, preliminary assumption testing was conducted to check normality and sphericity, with no serious violations noted. The results of the test indicated a significant effect for node word frequency level, using Wilks' Lambda = .21, $F(2, 174) = 338.3$, $p < .05$, with a large effect size ($\eta_p^2 = .8$). It meant that node word's frequency band was a factor that affected the productive knowledge of the verb-noun collocations.

It was seen that the frequency levels of the node words of the verb-noun collocations had an effect on productive knowledge of those collocations and for finding at which levels the mean scores of the participants were significantly higher than the others, post-hoc analyses were conducted. The results of the post-hoc tests using the Bonferroni correction revealed that productive knowledge of verb-noun collocations at 1,000 node word frequency level ($M = 13.34$, $SD = 2.74$) was significantly higher than at the 2,000 node word frequency level ($M = 11.08$, $SD = 3.54$), which was significantly higher than at the 3,000 node word frequency level ($M = 7.39$, $SD = 3.87$, 1K > 2K > 3K). In Table 23, the pairwise comparison results

of the post-hoc tests are presented. These results points out the effect of node word frequency on productive knowledge of verb-noun collocations of the participants. They could produce more verb-noun collocations if the node words of the collocations were more frequently used in English.

Table 23

Post-Hoc Analyses Results of Repeated Measures ANOVA (Productive Verb-Noun Collocations Test)

	1,000 vs. 2,000	2,000 vs. 3,000	1,000 vs. 3,000
MD	2.26*	3.69*	5.95*
SE	.21	.23	.23
p	.000	.000	.000

Note. MD = Mean Difference; SE = Standard Error; p = Significance; * The mean difference is significant at the .05 level.

Research Question 4.2: Do the frequency levels of words affect Turkish EFL learners' productive adjective-noun collocational knowledge?. In this section of the fourth research question, it is aimed to find out if the node word frequency of the adjective-noun collocations has an effect on the productive knowledge of these collocations. It means that this section of the fourth research question investigates if there is a statistically significant difference among the mean scores of the productive adjective-noun collocations whose node words are from the first three frequency bands. A one-way repeated measures ANOVA was conducted in order to find the answer of this research question. With the help of it, the mean scores of the participants on the productive adjective-noun collocations test at the three 1,000 word frequency levels were compared. Before conducting the one-way repeated measures ANOVA, preliminary assumption testing was conducted to check normality and sphericity, with no serious violations noted. The results of the one-way repeated measures ANOVA revealed that there was a significant effect for node word frequency level, using Wilks' Lambda = .33, $F(2, 174) = 178.78$, $p < .05$, with a large effect size ($\eta_p^2 = .67$). The results revealed that the productive knowledge of the adjective-noun collocations of the participants was affected by the node word frequency of the collocations. However, it did not give specifically at which frequency level the productive knowledge of the adjective-noun collocations reached statistically significant difference. In order to detect at which frequency levels participants' mean scores were significantly

higher, post-hoc analyses were conducted. Post-hoc results using the Bonferroni correction indicated that productive knowledge of adjective-noun collocations at 1,000 node word frequency level (*M* = 10.36, *SD* = 3.56) was significantly higher than at 2,000 node word frequency band (*M* = 8.24, *SD* = 4.29), which was significantly higher than at 3,000 node word frequency band (*M* = 6.04, *SD* = 3.23, 1K > 2K > 3K). In Table 24, the pairwise comparison results of the post-hoc tests are provided. The results indicate that node word frequency has an effect on participants' productive knowledge of adjective-noun collocations. The participants knew more adjective-noun collocations, in line with the results of the productive verb-noun collocations, if the node word of the collocation was used more frequently in English.

Table 24

Post-Hoc Analyses Results of Repeated Measures ANOVA (Productive Knowledge of Adjective-Noun Collocations Test)

	1,000 vs. 2,000	2,000 vs. 3,000	1,000 vs. 3,000
MD	2.12*	2.2*	4.32*
SE	.23	.24	.23
p	.000	.000	.000

Note. MD = Mean Difference; SE = Standard Error; p = Significance; * The mean difference is significant at the .05 level.

Research Question 4.3: Does the year of study at university affect their productive knowledge of verb-noun and adjective-noun collocations?. The aim of this section of the fourth research question is to find out if the year of study at university has an effect on the productive knowledge of verb-noun and adjective-noun collocations at the first three word frequency bands. The results of the productive knowledge of collocations test were analyzed according to the year of study of the participants in the first section of the fourth research question. However, in that section it was not investigated if the year of study had an effect on participants' productive knowledge of collocations. Here, it is aimed to find out if there is a statistically significant difference between the results of preparatory, second and fourth year students' productive knowledge of verb-noun and adjective-noun collocations tests at the three 1,000 word frequency bands.

In order to answer this research question, a one-way between-groups multivariate analysis of variance (one-way MANOVA) test was conducted. There were six continuous dependent variables in the one-way MANOVA test and they were the productive verb-noun collocations test results at the three frequency bands and the productive adjective-noun collocations test results at the three frequency bands. The categorical independent variable of the one-way MANOVA test was the year of study (preparatory, second and fourth year). Before running the one-way MANOVA test, preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, multicollinearity and homogeneity of variance-covariance matrices, with no serious violations noted.

The first assumption that was checked was normality. The results of both Kolmogorov-Smirnov and Shapiro-Wilk tests are displayed in Table 25. When the table is examined, it can be seen that some of the variables violated the assumption of normality according to the results of the two normality tests.

Table 25

Tests of Normality (PKCT)

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PCT_1000_Verb-Noun	.116	176	.000	.977	176	.005
PCT_1000_Adj-Noun	.083	176	.005	.988	176	.141
PCT_2000_Verb-Noun	.108	176	.000	.980	176	.012
PCT_2000_Adj-Noun	.080	176	.008	.977	176	.005
PCT_3000_Verb-Noun	.112	176	.000	.963	176	.000
PCT_3000_Adj-Noun	.089	176	.002	.973	176	.002

a. Lilliefors Significance Correction

However, as it is stated by Pallant (2010), the violation of normality is quite common in larger samples and histograms or normal probability plots (normal Q-Q plots) can be viewed to see the real shape of the distribution. To make sure that the data were normally distributed, the normal Q-Q plots of each variable were analyzed. The results of these analyses revealed that the tests used in the present study had a normal distribution with perfect or reasonably straight lines. The findings for each variable can be seen in the following figures.

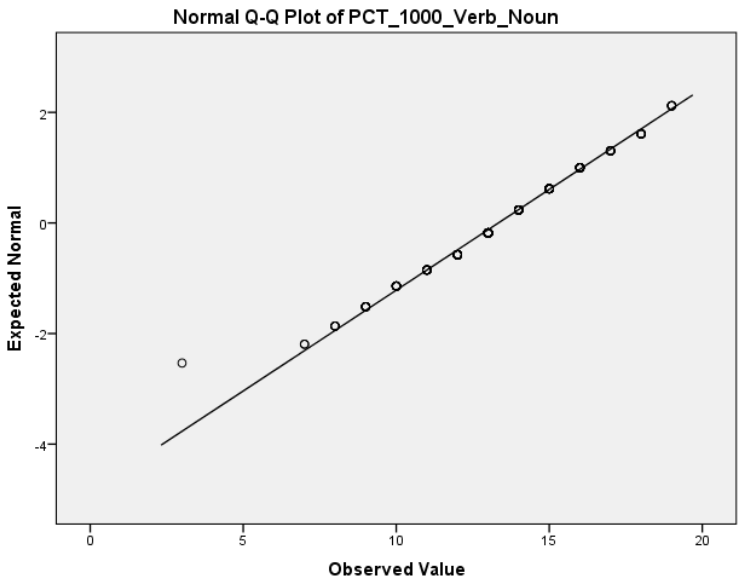

Figure 15. Normal Q-Q plot of PKCT for verb-noun collocations at 1,000 frequency band.

In Figure 15, the normal Q-Q plot of productive knowledge of verb-noun collocations test at 1,000 frequency band is displayed. In Figure 16, the normal Q-Q plot of productive knowledge of adjective-noun collocations test at 1,000 frequency band is given. Both of the figures show that the points fall along a straight line, which provide evidence for a uniform distribution.

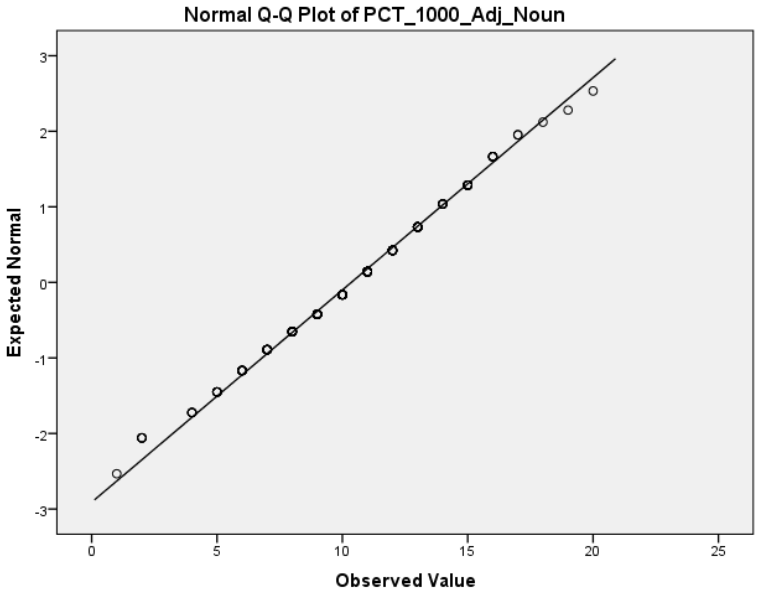

Figure 16. Normal Q-Q plot of PKCT for adjective-noun collocations at 1,000 frequency band.

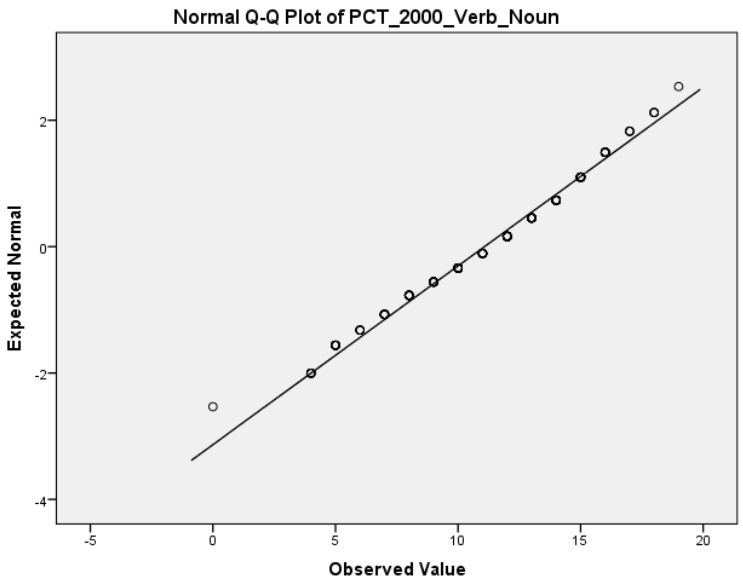

Figure 17. Normal Q-Q plot of PKCT for verb-noun collocations test at 2,000 frequency band.

In Figure 17 and 18, the normal Q-Q plot of productive knowledge of verb-noun and adjective-noun collocations test at 2,000 frequency band are displayed, respectively. Although some minor deviations appear, both of the figures show that the points fall along a straight line, which provide evidence for a uniform distribution.

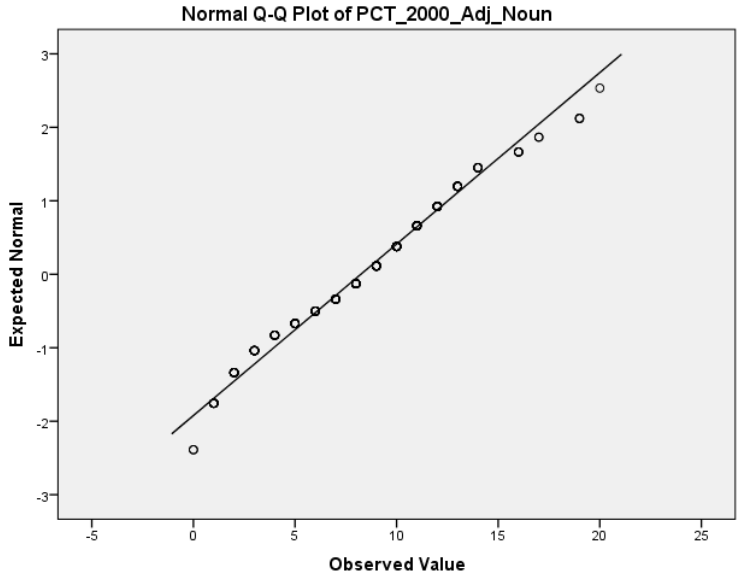

Figure 18. Normal Q-Q plot of PKCT for adjective-noun collocations test at 2,000 frequency band.

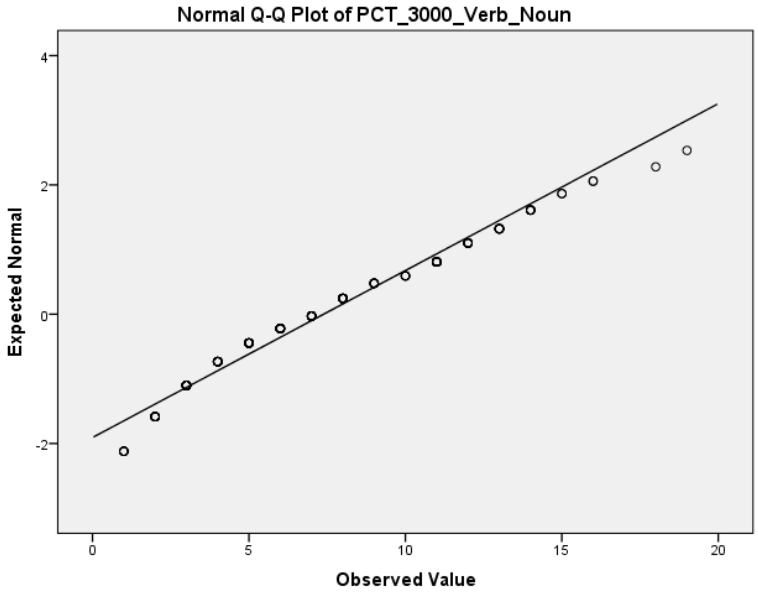

Figure 19. Normal Q-Q plot of PKCT for verb-noun collocations test at 3,000 frequency band.

Figure 19 shows the normal Q-Q plot of productive knowledge of verb-noun collocations test at 3,000 frequency band. As it demonstrates, the points fall along a straight line in the Q-Q plot and it indicates that these data also has a normal distribution.

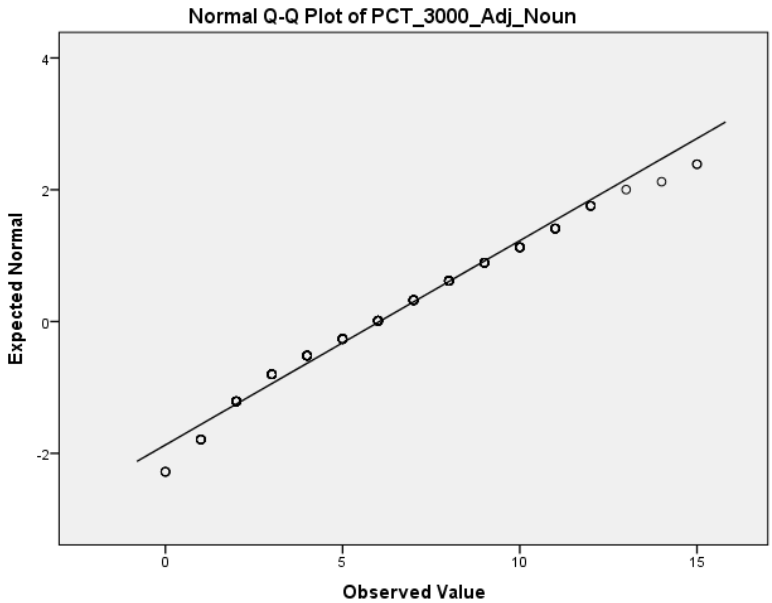

Figure 20. Normal Q-Q plot of PKCT for adjective-noun collocations test at 3,000 frequency band.

The normal Q-Q plot of productive knowledge of adjective-noun collocations test at 3,000 frequency band is displayed in Figure 20. It also shows that all of the points lie quite close to the line indicating, that the data represent a normal distribution.

The second assumption that was checked before conducting the one-way MANOVA test was linearity. By generating scatterplots between the collocation types at the three word frequency levels for the three groups of participants, linearity was checked. Any evidence of non-linearity was not detected, indicating that this assumption was also satisfied.

After linearity, univariate and multivariate outliers were checked. Mahalanobis distance score was generated from the multiple regression analyses in order to find out the outliers among variables. This score was compared to a chi-square distribution with the same degrees of freedom. In the current analysis, there were six degrees of freedom; productive verb-noun collocations at three frequency bands and productive adjective-noun collocations at three frequency bands, which equated to a critical Chi-square value of 20.08 (at α = .00). The test did not show any cases that had a distance score exceeding this critical value.

Multicollinearity was also checked before conducting the MANOVA test. Correlation analyses were conducted for checking multicollinearity. The results of the correlation analyses showed that this assumption was not violated as the correlation of none of the tests were up around .8 or .9 (Pallant, 2010). Correlation analyses results of productive verb-noun and adjective-noun collocations at three bands are provided in table 26.

Table 26

Pearson Product-moment Correlations between Levels of PKCT

	1	2	3	4	5	6
1. RCT_1000_Verb-Noun	1.00					
2. RCT_2000_Verb-Noun	.65	1.00				
3. RCT_3000_Verb-Noun	.63	.67	1.00			
4. RCT_1000_Adj-Noun	.71	.65	.68	1.00		
5. RCT_2000_Adj-Noun	.68	.72	.74	.71	1.00	
6. RCT_3000_Adj-Noun	.56	.57	.66	.61	.68	1.00

The last assumption of MANOVA was the homogeneity of variance and co-variance matrices. As it was given as the result of MANOVA test, it was checked after conducting the test. It was checked by investigating Box's M Test of Equality of Matrices. The result of this test (93.66) was significant ($p < .001$) and it indicated that this assumption was violated. As the sample size of the groups was not equal and the significance value of the Box's M Test was not larger than .001, instead of Wilks' Lambda, Pillai's Trace was decided to be referred to evaluate multivariate significance (Tabachnick & Fidell, 2014).

After checking the necessary assumptions of MANOVA test and noting no serious violations, one-way between-groups MANOVA was conducted. The aim of this test was to investigate if the year of study had an effect on the productive knowledge of verb-noun and adjective-noun collocations of the tertiary level EFL students. The results of the MANOVA test suggested that there was a significant difference between the preparatory, second and fourth year university students' productive knowledge of verb-noun and adjective-noun collocations: Pillai's Trace = .39, $F(6, 168) = 6.83$, $p < .001$. The multivariate effect size was estimated at .195, which implies that 19% of the variance in the canonically derived dependent variable was accounted for by year of study at university.

In order to find out which of the six dependent variables could reach statistically significant difference, a series of one-way ANOVA's was planned to be conducted as follow-up tests to the MANOVA. Before the ANOVA's, the homogeneity of variance assumption was tested for all of the six dependent variables. Levene's *F* test results of all of the variables were considered to satisfy the homogeneity of variance assumption, except for the adjective-noun collocations at 2,000 frequency level ($p > .05$). As a result, the standard deviations (see Table 22) of this test were examined and it was seen that its standard deviation was not more than four times the size of the corresponding smallest. It suggested that the ANOVA would be robust in this case (Howell, 2010). After investigating the results of Levene's *F* tests, a series of ANOVA's were conducted to see which of the six dependent variables could reach statistical significance. The results of the ANOVA tests are given in the table below. As it can be seen in the table, except for the adjective-noun collocations test at 1,000 word frequency

level, all of the tests were significantly different for preparatory, second and fourth year students.

Table 27

Follow-up ANOVA Test Results of PKCT

	Prep. year		2nd Year		4th Year		*F*	η^2
	M	*SD*	*M*	*SD*	*M*	*SD*		
PKCT_1000_Verb_Noun	12.47	2.56	12.9	2.95	14.68	2.15	11.83*	.12
PKCT_1000_Adj_Noun	9.5	3.62	10.06	4.04	11.54	2.54	5.32	.06
PKCT_2000_Verb_Noun	8.9	3.16	11.74	3.75	12.56	2.46	21.1*	.2
PKCT_2000_Adj_Noun	6.05	3.39	8.27	5	10.39	3.04	17.29*	.17
PKCT_3000_Verb_Noun	5.35	3.33	7.1	3.36	9.74	3.68	23.27*	.21
PKCT_3000_Adj_Noun	4.63	2.7	5.95	2.97	7.54	3.35	13.29*	.13

*p<.001

After finding significant difference for the tests in the ANOVA's, post-hoc analyses were conducted in order to analyze individual mean difference comparisons across all three levels of year of study and all productive verb-noun and adjective-noun collocations at three word frequency levels. The results of the post-hoc analyses revealed that at 1,000 word frequency level in productive knowledge of verb-noun collocations, there was a statistically significant difference between second year students and fourth year students (*MD* = 1.8, *SE* = .48, p < .05) and between fourth year and preparatory year students (*MD* = 2.21, *SE* = .49, p < .05). However, there was not any significant difference between second year and preparatory year students (*MD* = .41, *SE* = .48, p > .05).

It was also found out that in the productive knowledge of verb-noun collocations test results at 2,000 word frequency level, there was a statistically significant difference between second year and preparatory year students (*MD* = 2.87, *SE* = .59, p < .05) and fourth year and preparatory year students (*MD* = 3.68, *SE* = .6, p < .05). However, the difference between fourth and second year students' productive knowledge of verb-noun collocations test results was not statistically significant (*MD* = .82, *SE* = .59, p > .05). On the other hand, all three groups of participants' productive knowledge of adjective-noun collocations test results were significantly different from each other. The difference between the test

results of second year and preparatory year students (*MD* = 2.22, *SE* = .72, *p* < .05), fourth and second year students (*MD* = 2.11, *SE* = .72, *p* < .05) and fourth year and preparatory year students (*MD* = 4.33, *SE* = .74, *p* < .05) were all significantly different from each other.

When the post-hoc analyses results of the productive knowledge of verb-noun collocations test at 3,000 word frequency level were investigated, it was realized that there was a statistically significant difference between all three groups of participants; between second year and preparatory year students (*MD* = 1.75, *SE* = .63, *p* < .05), fourth and second year students (*MD* = 2.64, *SE* = .63 *p* < .05) and fourth year and preparatory year students (*MD* = 4.39, *SE* = .65, *p* < .05). On the other hand, the post-hoc analyses results of the productive knowledge of adjective-noun collocations test at 3,000 word frequency level showed that the differences between fourth and second year students (*MD* = 1.59, *SE* = .55, *p* < .05) and fourth year and preparatory year students (*MD* = 2.91, *SE* = .57, *p* < .05) were statistically significant, while the difference between second year and preparatory year students was not (*MD* = 1.32, *SE* = .55, *p* > .05). Post-hoc analyses results of the PKCT in terms of year of study are presented in the table below.

Table 28

Post-Hoc Analyses (Bonferroni) Results of PKCT

Collocation Type	Frequency Level		2nd vs. Prep.	4th vs. 2nd	4th vs. Prep.
Verb-Noun	1,000	*MD*	.41	1.8*	2.21*
		SE	.48	.48	.49
		p	1.00	.001	.000
	2,000	*MD*	2.87*	.82	3.68*
		SE	.59	.59	.60
		p	.000	.49	.000
	3,000	*MD*	1.75*	2.64*	4.39*
		SE	.63	.63	.65
		p	.020	.000	.000
Adjective-Noun	2,000	*MD*	2.22*	2.11*	4.33*
		SE	.72	.72	.74
		p	.007	.012	.000
	3,000	*MD*	1.32	1.59*	2.91*
		SE	.55	.55	.57
		p	.055	.014	.000

Note. MD = Mean Difference; SE = Standard Error; p = Significance; * The mean difference is significant at the .05 level.

To sum up the results of the post-hoc analyses, it can be expressed that in productive knowledge of verb-noun collocations test results, except for the difference between second year and preparatory year students at the first 1,000 word frequency level and the difference between fourth and second year students at the second 1,000 word frequency level, there were significant differences between all three groups of participants. Moreover, in productive knowledge of adjective-noun collocations test results at the second and third 1,000 word frequency levels, there were significant differences between all three groups, except for the differences between second year and preparatory year students at 3,000 frequency band. As the ANOVA results did not show any significant difference for the adjective-noun collocations at the first 1,000 frequency level, post-hoc analysis was not performed for that level.

Findings for Research Question 5

The fifth research question aims at exploring the difference between receptive and productive knowledge of collocations in terms of the year of the participants at the university; preparatory, second and fourth year. It was found out that their scores were higher in RKCT than in PKCT. However, in this research question it is aimed to explore if this difference is statistically significant or not.

Research Question 5: Is there a significant difference between receptive and productive collocational knowledge of preparatory, second and fourth year students?. In order to answer this research question paired-samples t-tests were conducted on preparatory, second year and fourth year students' scores on receptive and productive knowledge of collocations tests. It was found out that for preparatory year students, there was a statistically significant difference between their receptive knowledge of collocations test scores (M = 60.21, SD = 10.8) and productive knowledge of collocations test scores (M = 46.79, SD = 14.3), t (56) = 8.53, p = .00 (two-tailed). The mean difference between their receptive and productive knowledge of collocations test scores was 13.42 with a 95% confidence interval ranging from 10.23 to 16.57. The eta squared statistic (.57) indicated a large effect size (Cohen, 1988).

The paired-samples t-test results for the second year students also indicated that there was a statistically significant difference between their receptive knowledge of collocations test scores (M = 69.6, SD = 16.9) and productive knowledge of collocations test scores (M = 56.02, SD = 19.4), t (61) = 10.22, p = .00 (two-tailed). The mean difference between their two collocations test scores was 13.58 with a 95% confidence interval ranging from 10.93 to 16.24. The eta squared statistic (.63) indicated a large effect size.

In the same way, the results of the paired-samples t-test for the fourth year students showed a statistically significant difference between their receptive (M = 79.02, SD = 9.85) and productive knowledge of collocations test scores (M = 66.46, SD = 14.2), t (56) = 10.45, p = .00 (two-tailed). The mean difference between their two collocations test scores was 12.56 with a 95% confidence interval ranging from 10.2 to 14.9. A large effect size was also found, with .66 eta squared statistic.

In conclusion, it can be stated that there was a statistically significant difference between the receptive and productive knowledge of collocations test scores of all three groups of participants. They had higher receptive collocational knowledge than the productive one. The mean score difference within and between the three groups of participants in two tests are displayed in the figure below.

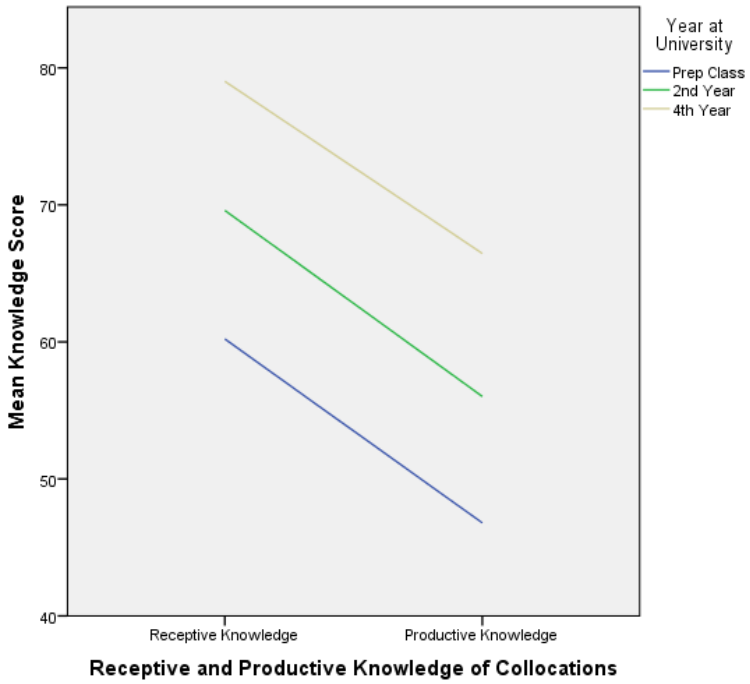

Figure 21. Mean score difference of groups in RKCT and PKCT.

Findings for Research Question 6

The sixth research question aims to find out whether there is a correlation between the participants' vocabulary knowledge and their knowledge of collocations. The first aim of the sixth research question is to investigate the correlation between the receptive vocabulary and receptive knowledge of verb-noun and adjective-noun collocations of the participants. The second aim is to examine if there is a correlation between productive vocabulary knowledge and productive knowledge of verb-noun and adjective-noun collocations of the participants. The answers of each sub-section of the sixth research question are given in different sections below.

Research Question 6.1: Is there a correlation between the receptive vocabulary knowledge of Turkish EFL learners and their receptive

knowledge of verb-noun and adjective-noun collocations?. The aim of the first section of the sixth research question is to find out if there is a relationship between receptive vocabulary knowledge of the participants and their receptive knowledge of verb-noun and adjective-noun collocations. The relationship between receptive vocabulary knowledge and receptive knowledge of verb-noun and adjective-noun collocations was investigated using Pearson product-moment correlation coefficient test. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a strong, positive correlation between the receptive vocabulary knowledge and receptive knowledge of collocations, r = .65, n = 176, p < .05. In addition, the correlation of receptive vocabulary knowledge and receptive knowledge of verb-noun and adjective-noun collocations were investigated separately as well. The results showed that there was a strong, positive correlation between receptive vocabulary knowledge and receptive knowledge of verb-noun collocations, r = .65, n = 176, p < .05 and between receptive vocabulary knowledge and receptive knowledge of adjective-noun collocations, r = .58, n = 176, p < .05. The results meant that the participants had receptive knowledge of more collocations, both verb-noun and adjective-noun, if they had receptive knowledge of more single word items at the first three 1,000 word frequency levels. The results of Pearson product-moment correlations are displayed in the table below.

Table 29

Pearson Product-moment Correlations between Receptive Vocabulary Knowledge and Receptive Knowledge of Collocations

	1	2	3	4
1. Receptive Vocabulary Knowledge	1.00			
2. Receptive Knowledge of Collocations (Total)	.65**	1.00		
3. Receptive Knowledge of Verb-Noun Collocations	.65**	.95**	1.00	
4. Receptive Knowledge of Adjective-Noun Collocations	.58**	.94**	.79**	1.00

** p < .001 (2-tailed).

Research Question 6.2: Is there a correlation between the productive vocabulary knowledge of Turkish EFL learners and their productive knowledge of verb-noun and adjective-noun collocations? The second

section of the sixth research question aims to reveal the relationship between productive vocabulary knowledge of the participants and their productive knowledge of verb-noun and adjective-noun collocations. The relationship between the productive vocabulary knowledge and productive knowledge of verb-noun and adjective-noun collocations was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. The results of the correlation analyses indicated that there was a strong, positive correlation between the productive vocabulary knowledge and productive knowledge of collocations, r = .66, n = 176, p < .05. When the correlations between productive vocabulary knowledge and productive knowledge of verb-noun and adjective-noun collocations were examined separately, it was also found out that there was a strong, positive correlation between productive vocabulary knowledge and productive knowledge of verb-noun collocations, r = .63, n = 176, p < .05 and between productive vocabulary knowledge and productive knowledge of adjective-noun collocations, r = .65, n = 176, p < .05. The results were in line with the correlation results of receptive vocabulary knowledge and receptive knowledge of collocations. They also showed that the participants had productive knowledge of more collocations, both verb-noun and adjective-noun, if they had productive knowledge of more single word items at the first three 1,000 word frequency levels. The results of Pearson product-moment correlations are displayed in the table below.

Table 30

Pearson Product-moment Correlations between Productive Vocabulary Knowledge and Productive Knowledge of Collocations

	1	2	3	4
1. Productive Vocabulary Knowledge	1.00			
2. Productive Knowledge of Collocations (Total)	.66**	1.00		
3. Productive Knowledge of Verb-Noun Collocations	.63**	.96**	1.00	
4. Productive Knowledge of Adjective-Noun Collocations	.65**	.97**	.86**	1.00

** p < .00 (2-tailed).

Findings for Research Question 7

The review of literature revealed that congruency (e.g. Gyllstad & Wolter, 2015), node word frequency (e.g. Nguyen & Webb, 2017), collocational frequency (e.g. Ellis et al., 2008), type of collocations tested (e.g. Begagić, 2014) and MI score (e.g. Nguyen & Webb, 2017) are among the factors that predict collocational knowledge. Thus, the seventh research question aims at finding out which of these factors best predict receptive and productive knowledge of collocations. The first aim of this research question is to discover the predictive effects of congruency, collocational frequency, node word frequency, type of collocations and their mutual information (MI) scores on receptive knowledge of collocations and find out the best predictor. The second aim of this research question is to investigate the predictive effect of these factors on productive knowledge of collocations and detect the best predictor of productive knowledge of collocations. The answers of each sub-section of the seventh research question are presented separately under different sub-titles below.

Research Question 7.1. Which of the interlexical (congruency) and intralexical (node word frequency, collocational frequency, type of collocation, MI score) factors best predicts receptive collocational knowledge?. In order to find the answer of this research question, multiple linear regression analyses were run. It should also be noted that for making the analyses for this research question, the data set was reorganized according to collocations. In the data set that was used for the analyses of the previous research questions were based on student IDs. However, in that data set, it was not possible to categorize the collocations according to their MI scores, type, node word frequency and collocational frequency. Collocational frequency and MI scores were entered as nominal variables according to the data obtained from COCA (Davies, 2008). In addition, the mean scores of participants for each collocation in the receptive test were entered as the receptive knowledge of collocations. It was also a nominal variable. The variables of congruency, type of collocation and node word frequency were coded as 0 and 1. In that way, the data became ready for the preliminary analyses of multiple regression analyses.

For ensuring reliable multiple regression analysis results, the data were screened and the assumptions of sample size, multicollinearity, values of residuals, outliers, normality, homoscedasticity and linearity were checked. The first thing that was examined was the sample size in regression. It is stated that for each predictor, there should be at least 15 cases of data for each predictor in the model (Field, 2013). As there are 120 cases of data, it was ensured that the sample size was enough for investigating the predictive effects of five variables.

After sample size, the second assumption that was checked was multicollinearity. It would be a problem if there was a perfect linear relationship between two or more predictors. Although the correlation results between the variables did not indicate any strong correlations between variables, for checking the assumption of multicollinearity, the variance inflation factors (VIF) and tolerance values were investigated. These two kinds of collinearity diagnostics were given as part of the results of the multiple regression analysis. For the interpretation of these two values, there are different suggestions. According to Allison (1999), tolerance values lower than .40 and VIF values higher than 2.50 indicates multicollinearity. On the other hand, Field (2013) and Pallant (2016) suggest that tolerance value lower than .10 and VIF value above 10 point out multicollinearity problem. The collinearity diagnostics of the present study did not pose a problem in terms of multicollinearity according to the suggested values, with tolerance values higher than .60 and VIF values lower than 2.00. Minimum and maximum values of these two collinearity diagnostics and their accepted values are given in the table below.

Then, the values of residuals were checked. It is assumed that errors in regression should be independent. In other words, they should be uncorrelated. This assumption was checked by conducting Durbin-Watson test. It is accepted that the result of this test should be between 1 and 3, closer to 2 is better (Field, 2013). The result of the test, which was 2.01 in the present study, showed that the assumption of independent errors was not violated.

The fourth assumption that was checked before the analysis was outliers. In order to detect any outliers, Mahalanobis and Cook's distances were checked. Comparing Mahalanobis distance score to a chi-square distribution with the same degrees of freedom, which was five in the model, did not indicate any cases that

exceeded the critical value of 20.52 (at α = .001). Furthermore, outliers were also checked by inspecting Cook's distance. According to Tabachnick and Fidell (2013), Cook's distance values higher than 1 can indicate the problem of outliers. However, in this study, the maximum Cook's distance value was .29, suggesting no problems of outliers.

Table 31

Multiple Regression Assumptions for Receptive Knowledge of Collocations

	Minimum	Maximum	Accepted Values
Standard Residuals	-2.32	2.65	-3 to 3
Cook's Distance	.00	.29	-1 to 1
Mahalanobis Distance	3.97	17.29	20.52
VIF	1	1.63	< 2.5 or <10
Tolerance	.62	.99	>.40 or >.10

In addition, normal Probability Plot (P-P) of the Regression Standardized Residual, which was requested as part of the multiple regression analysis, was investigated for checking normality. It was seen that the points were in a reasonably straight line and it ensured that the data were normally distributed.

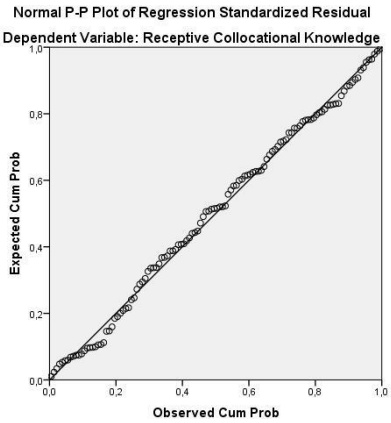

Figure 22. Normal p-p plot of normally distributed residuals for receptive collocational knowledge.

Finally, the assumptions of homoscedasticity and linearity were checked. Homoscedasticity was checked by investigating the scatterplot of residuals and linearity by scatter plots of variables. The analyses revealed that assumptions of homoscedasticity and linearity were not violated.

After checking the necessary assumptions of multiple linear regression analysis and noting no serious violations, a multiple linear regression analysis was calculated to predict participants' receptive knowledge of collocations based on congruency, node word frequency, collocational frequency, type of collocation and MI score. A significant regression equation was found ($F(5, 114) = 30.69$, $p < .001$), with an adjusted R^2 of .56. The results of the analysis indicated that the independent variables in the model could explain 56% of variance in receptive knowledge of collocations. When the contribution of each independent variable to the prediction of receptive collocational knowledge was investigated, it was found out that congruency with L1 made the largest unique contribution to the explanation of variance in receptive knowledge of collocations. It uniquely explained 43% of variance. On the other hand, node word frequency and collocational frequency also contributed significantly to the explanation of the model by uniquely explaining 5% and 3% of variance, respectively. However, the unique contributions of type of collocation and MI scores of collocations were not statistically significant. The results of the multiple regression analysis are provided in the table below.

Table 32

Multiple Regression Results for Receptive Knowledge of Collocations

	Unstd.		Std.		
	B	*SE*	*ß*	*t*	*Sig.*
(Constant)	48.96	7.44		6.58	.000
Congruency with L1	36.49	3.4	.66	10.72	.000
Node word frequency	-8.5	2.3	-.25	-3.7	.000
Collocational frequency	.04	.01	.19	3.0	.003
Type of collocation (adjective-noun vs. verb-noun)	4.89	3.6	.09	1.35	.180
MI score	-.98	1.12	-.06	-.87	.384

Dependent Variable: Receptive knowledge of collocations

In conclusion, it can be stated that the independent variables all together explained 56% of the variance in receptive knowledge of collocations. While the

best predictor of receptive knowledge of collocations was congruency with L1, node word frequency and collocational frequency had significant contributions to the explanation of the model. It showed that congruent collocations were known more than incongruent ones. On the other hand, the beta value of node word frequency was found to be negative. It indicated that the more collocations were known when the frequency levels of the node words decreased. For example, the participants knew more collocations whose node words were at the first 1,000 frequency level than at the second and third 1,000 levels. Furthermore, the more frequent the collocation in COCA (Davies, 2008) also meant higher receptive knowledge of the collocations. Although MI score did not make significant unique contribution, it also had a negative relationship with the receptive collocational knowledge. It indicated that collocations with lower mutual information scores were known better.

Research Question 7.2. Which of the interlexical (congruency) and intralexical (node word frequency, collocational frequency, type of collocation, MI score) factors best predicts productive collocational knowledge?. For finding the answer of the second part of the seventh research question, another multiple linear regression analysis was conducted. The data were screened and the assumptions of multicollinearity, values of residuals, outliers, normality, homoscedasticity and linearity were checked for ensuring reliable results of multiple regression analysis. As stated in the first part of this research question, the sample size was enough for investigating the predictive effects of five variables. First, the assumption of multicollinearity was checked. The correlation results between the variables did not indicate any strong correlations between independent variables. However, for ensuring that the assumption of multicollinearity was not violated, the variance inflation factors (VIF) and tolerance values were also investigated. As mentioned before, tolerance values are suggested to be higher than .40 (Allison, 1999) or .10 (Field, 2013; Pallant, 2016) and VIF values to be lower than 2.50 (Allison, 1999) or 10 (Field, 2013; Pallant, 2016). The minimum and maximum VIF values in the present study were 1.0 and 1.63 and the minimum and maximum tolerance values were .62 and .99. As indicated by VIF and tolerance values, the assumption of multicollinearity was not violated.

Second, it was investigated if the errors in regression were independent by running Durbin-Watson test. As suggested by Field (2013), the results of this test should be between 1 and 3 and the values closer to 2 are accepted as better results. The result of the Durbin-Watson test was 2.13 in the present study and it ensured that the errors in the regression were not correlated.

Third, by analyzing Mahalanobis and Cook's distances, the data were checked if there were any outliers whose scores could affect the results of the regression analysis. As the critical value for Mahalanobis distance suggested by Pallant (2016) is 20.52 (at α = .001) for five variables, comparing Mahalanobis distance score to a chi-square distribution with the same degrees of freedom did not indicate any outliers. Also, the maximum Cook's distance value, .35 in this study, did not point to any outliers. The minimum and maximum values of the investigated assumptions are provided with their accepted values in the table below.

Table 33

Multiple Regression Assumptions for Productive Knowledge of Collocations

	Minimum	Maximum	Accepted Values
Standard Residuals	-2.56	2.57	-3 to 3
Cook's Distance	.00	.35	-1 to 1
Mahalanobis Distance	3.97	17.29	20.52
VIF	1	1.63	< 2.5 or <10
Tolerance	.78	.91	>.40 or >.10

The fourth assumption that was checked was normality. In order to check it, normal Probability Plot (P-P) of the Regression Standardized Residual, which was requested as part of the multiple regression analysis, was investigated. It was seen that the points were in a reasonably straight line and it ensured that the data were normally distributed.

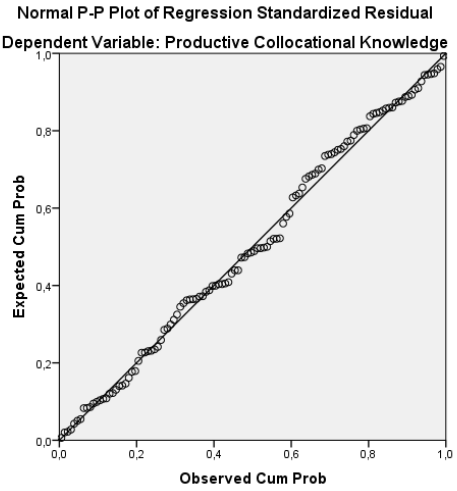

Figure 23. Normal p-p plot of normally distributed residuals for productive collocational knowledge.

The assumptions of homoscedasticity and linearity were also checked by investigating the scatterplot of residuals and scatter plots of variables. The analyses revealed that assumptions of homoscedasticity and linearity were not violated.

Checking all the assumptions of multiple linear regression analysis and noting no serious violations, it was ensured that the data were appropriate to provide reliable regression results. A multiple linear regression analysis was conducted to find out whether congruency, node word frequency, collocational frequency, type of collocation and MI score predict participants' productive knowledge of collocations. A significant regression equation was found ($F(5, 114) = 22.63$, $p < .001$), with an adjusted R^2 of .48. It indicated that 48% of the variance in the productive knowledge of collocations was explained by the independent variables in the model.

In order to find out the contribution of each independent variable to the prediction of receptive collocational knowledge, part correlation coefficients were examined. The results revealed that congruency with L1 made the largest unique contribution to the explanation of variance in productive knowledge of collocations, in line with the regression results of receptive collocational knowledge. Congruency with L1 uniquely explained 28% of variance in productive collocational knowledge. In addition, node word frequency and collocational frequency also contributed significantly to the explanation of model and they uniquely explained

4.7% and 4.6% of variance, respectively. In contrast to the multiple regression results of receptive collocational knowledge, in the productive one, type of collocation (adjective-noun vs. verb-noun) and MI score also made statistically significant contribution and each of them explained 2% of the variance. The results of the multiple regression analysis are given in the table below.

Table 34

Multiple Regression Results for Productive Knowledge of Collocations

	Unstd.		Std.		
	B	*SE*	*ß*	*t*	*Sig.*
(Constant)	49.3	8.7		5.68	.000
Congruency with L1	31.83	3.9	.53	8.02	.000
Node word frequency	-8.86	2.68	-.28	-.24	.001
Collocational frequency	.01	.00	.23	3.24	.002
Type of collocation (adjective-noun vs. verb-noun)	9.26	4.23	.16	2.18	.031
MI score	-2.9	1.3	-.17	-2.22	.029

Dependent Variable: Productive knowledge of collocations

Findings for Research Question 8

After the analysis of the effect of intralexical and interlexical factors on receptive and productive knowledge of collocations in the previous research question, in the eighth question, it is intended to find out if individual differences (age and gender) and the amount of formal L2 instruction relate to the receptive and productive collocational knowledge. The data used for answering the eighth and the ninth questions were collected by applying the adopted version of Fernández and Schmitt's (2015) "Language background and use" questionnaire. The data gathered in the first part of the questionnaire, which aimed to find out age, gender and the years of formal English instruction, were used for answering this question. The amount of L2 instruction indicates the year participants have spent learning English since the beginning of their formal education. The distribution of the number of participants according to their age, gender and amount of L2 instruction and their percentages are given in the table below.

Table 35

Distribution of Participants according to their Age, Gender and Amount of L2 Instruction

Variables		*N*	%
Age	18	10	5.7
	19	23	13.1
	20	40	22.7
	21	33	18.8
	22	15	8.5
	23	40	22.7
	24	11	6.3
	25	3	1.7
	27	1	.6
	Total	176	100
Gender	Male	92	52.3
	Female	84	47.7
	Total	176	100
Year of English Study	8	38	21.6
	9	16	9.1
	10	56	31.8
	11	37	21
	12	29	16.5
	Total	176	100

As it is displayed in the table above, age of the participants ranged from 18 to 27. Most of them were 20 (n = 40), 21 (n = 33) or 23 (n = 40). In addition to this, the number of male participants was slightly higher than the female participants, approximately 52% of them were male and 48% of them were female participants. When the table is investigated in terms of the amount of year they have spent for learning English during their education, it could be noticed that the participants spent at least 8 and at most 12 years for learning English. Most of them, approximately 32%, had been learning English for 10 years.

Research Question 8. How do individual differences (age and gender) and the amount of L2 instruction relate to receptive and productive knowledge of collocations?. The relationships between age, gender, year of English study and receptive and productive knowledge of collocations were

investigated in order to find the answer of this research question. The first variable that was investigated was gender. For finding if gender had a significant effect on receptive and productive knowledge of collocations, independent-samples t-tests were conducted. The results of the analyses indicated that there was no significant difference in receptive knowledge of collocations test scores for males (M = 69.52, SD = 15.8) and females (M = 69.7, SD = 14.2; t (174) = -.08, p = .94, two-tailed). Identically, the difference in productive knowledge of collocations test scores for males (M = 56.89, SD = 18.5) and females (M = 55.88, SD = 17.5) was not statistically significant (t (174) = .37, p = .71, two-tailed). The first step of the analyses revealed that gender was not a variable that had an effect on receptive and productive collocational knowledge.

The relationships between age, year of formal English instruction and two levels of collocational knowledge were investigated using Pearson product-moment correlation coefficient test. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. The results of the analyses indicated that there was a moderate, positive correlation between age and receptive collocational knowledge, r = .33, n = 176, p < .001, explaining approximately 11% of variance. Also, there was a weak, positive correlation between age and productive collocational knowledge, r = .25, n = 176, p < .001. It could explain over 6% of variance in productive knowledge of collocations. The results related to age meant that participants' receptive and productive collocational knowledge increased depending on their age. Older students had higher collocational knowledge compared to younger ones.

As the results of the correlation analysis between the amount of years of English study and the two levels of collocational knowledge were analyzed, it was found out that there was a strong, positive correlation between the amount of years participants engaged in formal English instruction and their receptive knowledge of collocations, r = .52, n = 176, p < .001. This correlation explained over 27% of variance in receptive knowledge of collocations. Besides, there was a moderate, positive correlation between the amount of years of English study and productive knowledge of collocations, r = .41, n = 176, p < .001, explaining approximately 17% of the variance. The results of the analysis related to year of

English study showed that more years of English study was associated with higher levels of receptive and productive collocational knowledge. Correlation analysis results for age and year of English study can be seen in Table 36.

To sum up, for answering the eighth research question the relationship between gender, age, the amount of years of English study and receptive and productive knowledge of collocations was investigated. The results showed that gender did not have an effect on both receptive and productive knowledge of collocations. Besides, age and the amount of years participants engaged in formal English instruction were correlated with both receptive and productive knowledge of collocations. It meant that the participants who were older and also the ones who had more years of formal English instruction had higher levels of both receptive and productive collocational knowledge.

Table 36

Correlations Analysis Results for Age and Year of English Study

	Receptive knowledge of collocations		Productive knowledge of collocations	
	r	r^2	*r*	r^2
Age	.33**	10.89[a]	.25**	6.25[a]
Year of English study	.52**	27.04[a]	.41**	16.81[a]

** Correlation is significant at the .01 level (2-tailed).

a. r^2 reported in percentage

Findings for Research Question 9

The last research question of the present study aims at exploring the relationship between the participants' language use and exposure to language outside the classroom and their receptive and productive knowledge of collocations. As stated above, the data used for answering this research question were obtained from the second part of the "Language background and use" questionnaire (Fernández and Schmitt, 2015). In this part of the questionnaire, first of all, it was asked to participants if they spent more than three months in a country where English was spoken. The answers of the participants who checked

no option to this question were coded as 0 and the ones who answered this question as *yes* were coded as 1 while entering the data.

The next part of the questionnaire included questions related to their personal language use for extracurricular activities per week related to;

- reading books, magazines and newspapers in English, or visiting English language websites,
- watching films, videos or TV in English
- listening to music in English
- using English to keep in contact with people (Facebook, MySpace, Twitter, Skype, email, SMS, etc.).

They answered those questions by checking one of the options; less than one hour, one to two hours or more than two hours. The first option, less than one hour, was coded as 0, one to two hours as 1 and more than two hours was coded as 2 while entering the data. With the help of those questions, the data related to their personal language use were gathered and used for assessment of this research question.

Before conducting analyses for answering the ninth research question, the data gathered related to personal language use were analyzed descriptively. It was found out that nearly 10% of the participants had been in an English-speaking country for more than three months. For the amount of time they spent for reading in English, nearly half of the participants indicated that they spent less than one hour. Approximately 34% of them chose the option one to two hours and nearly 21% of them spent more than two hours for reading in English for pleasure. It was noticed that for reading time, there was a falling tendency in frequency from option one to option three. The third descriptive analysis step was on the amount of time participants spent for watching films, videos or TV in English. It was realized that there was a rising tendency in frequency in terms of amount of time spent for this activity. Almost half of the participants, 49.4%, spent more than two hours for watching films, videos or TV in English. Approximately 11% of them stated that they spent less than one hour and the rest of the participants claimed that they watched something in English for one to two hours per week. When the

descriptive analysis of participants' listening time was investigated, it was found out that most of them, approximately 50%, listened to music in English for one to two hours per week. While approximately 35% of them spent more than two hours, nearly 15% spent less than one hour per week for listening to music in English. Lastly, the participants' answers in terms of amount of time they spent for social networking was investigated. It was revealed that more than half of them did not use English for keeping in touch with people or they used it for less than one hour per week. While approximately 42% of them used English for social networking for one to two hours per week, just 7.4% of them stated that they spent more than two hours per week for this activity. The distribution of the participants according to the amount of time they spent for reading, watching, listening and social networking in English and their being in an English-speaking country for more than three months is given in the table below.

Table 37

Distribution of Participants according to their Personal Language Exposure

Variables	Options	*N*	%
Reading time	less than 1 hour	81	46
	1 to 2 hours	59	33.5
	more than 2 hours	36	20.5
	Total	176	100
Watching time	less than 1 hour	20	11.4
	1 to 2 hours	69	39.2
	more than 2 hours	87	49.4
	Total	176	100
Listening time	less than 1 hour	27	15.3
	1 to 2 hours	87	49.4
	more than 2 hours	62	35.2
	Total	176	100
Social networking time	less than 1 hour	90	51.1
	1 to 2 hours	73	41.5
	more than 2 hours	13	7.4
	Total	176	100
Living in English-speaking countries	No	157	89.2
	Yes	19	10.8
	Total	176	100

Research Question 9.1. Is there a relationship between the degree of personal language use and receptive knowledge of collocations?. The first part of the ninth research question aims at finding out if there is a relationship

between the participants' language exposure outside the classroom and their receptive collocational knowledge. For investigating their relationship, correlation analyses were conducted. As there were two categories for the question of being in English-speaking countries as *yes* or *no* and a continuous dependent variable, for the first analysis a point-biserial correlation analysis was conducted. This analysis indicated a moderate, positive correlation between being in an English-speaking country and receptive collocational knowledge, r_{pb} = .46, n = 176, p < .01, with high levels of receptive collocational knowledge associated with being in an English speaking country at least for three months. On the other hand, for the reading, watching, listening and social networking time, Kendall's tau-b correlation analysis was run as in the answers of these items, time was split into three categories. The results of this analysis indicated that these four every day English exposure activities were all related to receptive knowledge of collocations, except for watching something in English. There was a positive relationship between the amount of time participants spent for reading in English per week and their receptive knowledge of collocations (τ_b = .36, n = 176, p < .01); between listening to music in English and receptive collocational knowledge (τ_b = .22, n = 176, p < .01) and between the amount of social networking time and receptive collocational knowledge (τ_b = .29, n = 176, p < .01). However, the relationship between watching time spent per week and receptive knowledge of collocations was not statistically significant (τ_b = .14, n = 176, p > .01). Everyday language exposure variables that significantly correlated with receptive collocational knowledge; reading, listening and social networking, were combined to find their total effect on receptive collocational knowledge. It was found out that there was a positive correlation between these activities and receptive knowledge of collocations (τ_b = .38, n = 176, p < .01)

In order to compare the results of all correlation analyses and to calculate the effect size, Kendall's tau b correlation coefficients were converted into Pearson's correlation coefficients (r) by using the formula below suggested by Walker (2003, p. 526).

$$r = \sin(.5 * \pi * \tau)$$

Pearson's correlation coefficients indicated that the correlations between listening, social networking, living in an English-speaking country and receptive

knowledge of collocations were moderate and they explained 11.6%, 20.3% and 21.2% of variance, respectively. Furthermore, the correlation between reading and receptive collocational knowledge was strong and it could explain over 28% of variance. In the same line, the correlation between composite language exposure activities (reading, listening and social networking) and receptive knowledge of collocations was strong and over 31% of the variance was explained. It showed that when language learners were exposed to more language input, they gained more receptive knowledge of collocations. The correlation results, calculated r and r^2 values can be seen in Table 38.

Table 38

Correlations between Language Exposure and Receptive Collocational Knowledge

	Receptive collocational knowledge		
	Correlation	*r*	r^2
Reading time	.36**	.53	28.09[a]
Watching time	.14	.22	4.84[a]
Listening time	.22**	.34	11.56[a]
Social networking time	.29**	.45	20.25[a]
Living in English-speaking countries	.46***	.46	21.16[a]
Composite exposure to English[b]	.38**	.56	31.36[a]

** Kendall's tau-b: $p < .001$
*** Point-biserial: $p < .001$
a. r^2 reported in percentage
b. Composite score includes Reading, Listening and Social networking

Research Question 9.2. Is there a relationship between the degree of personal language use and productive knowledge of collocations?. The aim of the second part of the ninth research question is to reveal if there is a relationship between the participants' language exposure outside the classroom and their productive knowledge of collocations. As it was done for the receptive knowledge of collocations, the relationship between language exposure activities and productive knowledge of collocations was calculated by running correlation analyses. As explained in the first part of this research question, for analyzing the relationship between living in an English-speaking country and productive knowledge of collocations, a point-biserial correlation analysis was conducted. The results of the analysis showed that there was a moderate, positive correlation between the two variables, $r_{pb} = .40$, $n = 176$, $p < .01$, explaining 16% of variance. It

indicated that being in an English speaking country at least for three months was associated with higher productive collocational knowledge.

Furthermore, for investigating the effect of reading, watching, listening and social networking time, Kendall's tau-b correlation analysis was run. The results of this analysis were similar to the ones obtained on receptive collocational knowledge. They indicated that there was a positive correlation between the amount of time participants spent for reading in English ($\tau_b = .33$, $n = 176$, $p < .01$) listening to music in English ($\tau_b = .20$, $n = 176$, $p < .01$) social networking ($\tau_b = .30$, $n = 176$, $p < .01$) and participants' productive knowledge of collocations. However, the relationship between watching time spent per week and productive knowledge of collocations was not statistically significant ($\tau_b = .10$, $n = 176$, $p > .01$). Statistically significant variables; reading, listening and social networking, were combined to find their relationship with productive collocational knowledge. It was found out that there was a positive correlation between these three activities and productive knowledge of collocations ($\tau_b = .35$, $n = 176$, $p < .01$).

After evaluating statistically significant correlations based on Kendall's tau b correlation coefficients, Pearson correlation coefficients were calculated by using Walter's (2003) formula in order to find effect size and compare all correlation coefficients. Pearson's correlation coefficients showed that the correlations between listening, social networking, living in an English-speaking country and productive knowledge of collocations were moderate and they explained 9.6%, 20.3% and 16% of variance, respectively. Moreover, the correlation between reading and productive collocational knowledge was strong and it could explain 24% of variance. In the same line, the correlation between composite language exposure activities and productive knowledge of collocations was strong and 27% of the variance was explained by this correlation. It also meant that the more language input they received with the help of reading, listening and social networking, the more productive knowledge of collocations they gained. The correlation results, calculated r and r^2 values can be seen in Table 39.

Table 39

Correlations between Language Exposure and Productive Collocational Knowledge

	Productive collocational knowledge		
	Correlation	*r*	r^2
Reading time	.33**	.49	24.01[a]
Watching time	.10	.15	2.25[a]
Listening time	.20**	.31	9.61[a]
Social networking time	.30**	.45	20.25[a]
Living in English-speaking countries	.40***	.40	16[a]
Composite exposure to English[b]	.35**	.52	27.04[a]

** Kendall's tau-b: $p < .001$
*** Point-Biserial: $p < .001$
a. r^2 reported in percentage
b. Composite score includes Reading, Listening and Social networking

Summary of the Findings

In the first research question, Turkish EFL learners' receptive vocabulary knowledge of most frequent 3,000 English words was assessed. In addition, the effects of word frequency levels and year of study at university on their receptive vocabulary knowledge were investigated. Descriptive statistical analyses results showed that the participants had the receptive knowledge of approximately 2,233 out of 3,000 words on average. A one-way repeated measures ANOVA test was conducted to compare the mean scores on the updated VLT at the first three frequency bands, as the receptive vocabulary size of the Turkish EFL learners was assessed at three different levels. The results of the test indicated that receptive word knowledge at the 1,000 frequency band (M = 26.76, SD = 2.05) was significantly higher than at the 2,000 frequency band (M = 22.55, SD = 4.41), which was significantly higher than at the 3,000 band (M = 17.3, SD = 6.55, 1K > 2K > 3K). In addition, to find out whether year of study at university had an effect on participants' receptive vocabulary knowledge, a one-way MANOVA test was performed. The results of this test revealed that there was a statistically significant difference between the preparatory year students' and fourth year students' and between the second year and fourth year students' receptive vocabulary knowledge at all three word frequency levels ($p < .05$). In contrast, statistically

significant difference was not found between preparatory and second year students' receptive vocabulary knowledge at any of the three levels.

Second research question aimed to find out productive vocabulary knowledge of participants and the effects of word frequency levels and year of study at university on their productive vocabulary knowledge. Descriptive statistical analyses results pointed out that on average they knew 1,633 out of 3,000 words productively. To compare the mean scores on the PVKT at the first three 1,000 frequency band, test of repeated measures ANOVA was run. It revealed that number of words known productively at the first frequency band (*M* = 23.05, *SD* = 4.16) was higher than at the second frequency band (*M* = 15.61, *SD* = 5.78), which was higher than at the third frequency band (*M* = 10.24, *SD* = 5.77, 1K > 2K > 3K). The differences were statistically significant. Furthermore, the effect of year of study at university was investigated by conducting a one-way MANOVA test. Its results showed that the differences among all three groups were significant at all three frequency levels of the productive vocabulary test (second year > preparatory, fourth year > second year, fourth year > preparatory, $p < .05$).

In the third research question, in addition to receptive collocational knowledge levels of the participants, the effects of node word frequency and year of study at university on the receptive knowledge of verb-noun and adjective-noun collocations were aimed to be explored. Descriptive statistical analyses results indicated that they had the knowledge of on average 60.75% of verb-noun and 55.25% of adjective-noun collocations in the RKCT. The effect of node word frequency on receptive knowledge of verb-noun collocations was explored by conducting a repeated measures ANOVA test. It showed that the differences among all three 1,000 node word frequency bands were statistically significant. Their scores at the first 1,000 level (*M* = 14.62, *SD* = 2.62) were higher than at 2,000 band (*M* = 12.63, *SD* = 3.03), which was also higher than at 3,000 band (*M* = 9.2, *SD* = 3.9, 1K > 2K > 3K). Furthermore, one-way repeated measures ANOVA test results comparing their receptive knowledge of adjective-noun collocations at three node-word frequency bands revealed the same results with the verb-noun collocational knowledge test. It also showed that their adjective-noun collocational knowledge was significantly higher at 1,000 band (*M* = 12.43, *SD* = 2.52) than at 2,000 band (*M* = 11.55, *SD* = 2.93) and it was also significantly

higher than at 3,000 band (*M* = 9.18, *SD* = 3.19, 1K > 2K > 3K). When it came to explore the effect of year of study at university on receptive knowledge of both collocation types, a one-way MANOVA test was performed. The results revealed that in receptive knowledge of verb-noun collocations test, except for the difference between second and preparatory year students at the first 1,000 word frequency band, the differences between all three groups were significant. Moreover, in receptive knowledge of adjective-noun collocations test results, there were significant differences between all three groups, except for the differences between the fourth and second year students at the second and third bands and the difference between second year and preparatory year students at the first frequency band.

In the fourth research question the same tests that were performed in the second research question were conducted to find out the productive knowledge of collocations, the effects of node word frequency and year of study at university on that knowledge. According to the results of descriptive statistical analyses, it was found out that students had productive knowledge of on average 53% of verb-noun and 41% of adjective-noun collocations in PKCT. By conducting a repeated measures ANOVA, it was revealed that productive knowledge of verb-noun collocations at 1,000 node word frequency band (*M* = 13.34, *SD* = 2.74) was higher than at 2,000 band (*M* = 11.08, *SD* = 3.54), which was higher than at 3,000 band (*M* = 7.39, *SD* = 3.87, 1K > 2K > 3K). The differences were statistically significant. Furthermore, it was found out that productive knowledge of adjective-noun collocations at 1,000 node word frequency band (*M* = 10.36, *SD* = 3.56) was higher than at 2,000 band (*M* = 8.24, *SD* = 4.29), which was higher than at 3,000 band (*M* = 6.04, *SD* = 3.23, 1K > 2K > 3K). For exploring the effect of year of study at university on productive knowledge of both collocation types, a one-way MANOVA test was conducted. The results did not indicate significant difference between the three groups for adjective-noun collocations at 1,000 level. However, the differences between the groups were significant at other levels and post-hoc analyses were conducted for them. They showed that in the productive knowledge of verb-noun collocations test, except for the difference between second year and preparatory year students at 1,000 band and the difference between fourth and second year students at 2,000 band, there were significant differences between all

three groups of participants. Moreover, in productive knowledge of adjective-noun collocations test results at 2,000 and 3,000 frequency bands, there were significant differences between all three groups, except for the differences between second and preparatory year students at the first band.

In the fifth research question, the difference between receptive and productive knowledge of collocations was explored in terms of the year of the participants at the university by conducting paired-samples t-tests. The test for the preparatory year students showed that their receptive knowledge of collocations (*M* = 60.21, *SD* = 10.8) was significantly higher than their productive knowledge (*M* = 46.79, *SD* = 14.3), *t* (56) = 8.53, p = .00 (two-tailed). In the same line, receptive knowledge (*M* = 69.6, *SD* = 16.9) of second year students was significantly higher than their productive knowledge (*M* = 56.02, *SD* = 19.4), *t* (61) = 10.22, p = .00 (two-tailed) and fourth year students' receptive knowledge (*M* = 79.02, *SD* = 9.85) was significantly higher than their productive knowledge(*M* = 66.46, *SD* = 14.2), *t* (56) = 10.45, p = .00 (two-tailed).

The sixth research question aimed to investigate if there was a correlation between the participants' vocabulary knowledge and their knowledge of collocations. First, the correlation between their vocabulary and collocational knowledge at the receptive level was examined by conducting a Pearson product-moment correlation coefficient test. According to the results of the test, there was a strong, positive correlation between receptive vocabulary knowledge and receptive knowledge of verb-noun collocations, $r = .65$, $n = 176$, $p < .05$ and there was a strong, positive correlation between receptive vocabulary knowledge and receptive knowledge of adjective-noun collocations, $r = .58$, $n = 176$, $p < .05$. Second, a Pearson product-moment correlation coefficient test was also conducted to explore the correlation between participants' productive vocabulary and productive collocational knowledge. It also indicated a strong, positive correlation between productive vocabulary knowledge and productive knowledge of verb-noun collocations, $r = .63$, $n = 176$, $p < .05$ and between productive vocabulary knowledge and productive knowledge of adjective-noun collocations, $r = .65$, $n = 176$, $p < .05$.

In the seventh question that aimed to find out which of the factors (congruency with L1, node word frequency, collocational frequency, type of

collocation and mutual information score) that affected collocational knowledge was the best predictor of it. For finding the answer of this research question multiple regression analyses for receptive and productive collocational knowledge were conducted. The results of the analyses indicated that the independent variables in the model could explain 56% of variance in the receptive knowledge of collocations and 48% of the productive knowledge. For both of knowledge levels, the best predictor was congruency with L1. It uniquely explained 43% of the variance in receptive knowledge and 28% of variance in productive knowledge.

In the eight research question, the effects of age, gender and year of formal English study on receptive and productive knowledge of collocations were investigated. The effect of gender was investigated by employing independent-samples t-tests. It was found out that there was no significant difference in receptive knowledge of collocations test scores for males (M = 69.52, SD = 15.8) and females (M = 69.7, SD = 14.2; t (174) = -.08, p = .94, two-tailed). Identically, the difference in productive knowledge of collocations test scores for males (M = 56.89, SD = 18.5) and females (M = 55.88, SD = 17.5) was not statistically significant (t (174) = .37, p = .71, two-tailed). The relationships between age, year of formal English instruction and two levels of collocational knowledge were investigated using a Pearson product-moment correlation coefficient test. According to the results, there was a strong, positive correlation between the years formal English instruction and participants' receptive knowledge of collocations, r = .52, n = 176, p < .001 and a moderate, positive correlation between the years formal English instruction and their productive knowledge, r = .41, n = 176, p < .001. Furthermore, test results also revealed a moderate, positive correlation between age and receptive collocational knowledge, r = .33, n = 176, p < .001 and a weak, positive correlation between age and productive collocational knowledge, r = .25, n = 176, p < .001.

In the last research question, effects of participants' language use outside the class on two levels of collocational knowledge were examined by conducting correlation analyses. For investigating the effect of visiting an English-speaking country a point-biserial correlation analysis was conducted. This analysis revealed that there was a moderate, positive correlation between being in an English-speaking country and receptive knowledge of collocations, r_{pb} = .46, n = 176, p <

.01. The correlation of it with the productive knowledge was also moderate r_{pb} = .40, n = 176, p < .01. On the other hand, Kendall's tau-b correlation analyses were run for finding out the correlation between the amount of time participants were engaged in activities of reading, watching, listening, social networking and two levels of collocational knowledge. It was found out that there was not a significant correlation between watching TV/films and two levels of collocational knowledge. Nevertheless, there was a positive correlation between participants' receptive knowledge and the amount of time they spent for reading in English per week (τ_b = .36, n = 176, p < .01); listening to music in English (τ_b = .22, n = 176, p < .01) and the amount of social networking time (τ_b = .29, n = 176, p < .01). Kendall's tau b correlation coefficients were converted into Pearson's correlation coefficients (r) to show the strength of the relationships. It indicated that the correlations between listening, social networking, living in an English-speaking country and receptive knowledge of collocations were moderate and they explained 11.6%, 20.3% and 21.2% of variance, respectively. Furthermore, the correlation between reading and receptive knowledge was strong and it could explain over 28% of variance. In line with these results, there was a positive correlation between productive knowledge and reading in English (τ_b = .33, n = 176, p < .01), listening to music in English (τ_b = .20, n = 176, p < .01) and social networking (τ_b = .30, n = 176, p < .01). The correlations between listening, social networking, living in an English-speaking country and productive knowledge were moderate and they explained 9.6%, 20.3% and 16% of variance, respectively. As it was the case in the receptive knowledge, the correlation between reading and productive knowledge was strong and it could explain 24% of variance. The correlation between the composite language exposure activities (reading, listening and social networking) and receptive knowledge was strong and over 31% of the variance was explained by this correlation. The composite activities were also strongly correlated with productive knowledge and it could explain 27% of variance.

In the fifth chapter of the dissertation, the findings of the present study will be discussed based on the relevant literature. In addition, the next chapter will also present the implications, suggestion and conclusion of the study.

Chapter 5
Conclusion, Discussion and Suggestions

This chapter briefly summarizes the contributions of this study in reference to the aforementioned research areas, namely, the factors that affect the receptive and productive collocational knowledge of Turkish tertiary level EFL learners. First, this part of the dissertation will offer a summary of the findings of the current study. Then, the findings of the study will be discussed based on the relevant literature by referencing to each research question separately. In the next part of this chapter, the findings of the current study will be referred to make a connection between theory and practice by presenting methodological and pedagogical implications. It will further shed light on to future studies by offering suggestions in line with the limitations of the study. Lastly, this chapter will present a conclusion regarding the effects of different factors on the receptive and productive knowledge of collocations.

Discussion of the Findings

Receptive vocabulary knowledge of Turkish tertiary level EFL learners. The findings obtained as part of the first research question indicated that the participants knew on average approximately 90% of the words at the first 1,000 level, 77% of the words at the second 1,000 level and 57% of the words at the third 1,000 level receptively. In total, they knew nearly 2,233 out of 3,000 words. In terms of mastery of each level, 22% of the participants mastered the first frequency band, 11% mastered the second band and just 2% mastered the third band. Although the findings of the current study indicate higher receptive knowledge of single-words of the participants than the results of Agustin-Llach & Terrazas-Gallego's (2009) and Nurweni & Read's (1999) studies, they still signal insufficiency with regard to receptive vocabulary knowledge. These results indicate participants' insufficient receptive vocabulary knowledge concerning the fact that the minimum amount of years of their formal English instruction was eight. It is seen that with a minimum of eight years of instruction, not even half of the 176 participants have mastered the vocabulary items at the first frequency band. On the other hand, the results of the present study seem to be slightly lower than the results of three other studies (Dang, 2020a; Nguyen, 2020; Siregar, 2020). There

may be two reasons of this difference. The first one is that in Dang (2020a) and Siregar's (2020) studies, the participants were English-majored students, which may mean more exposure to language or higher proficiency levels. It can also mean that their participants may be more aware of the lexical features of the target language. The second reason could be related to the participants' proficiency levels of English. The students participated in the present study usually start their preparatory year English education at A1 or at most A2 levels. However, Nguyen (2020) states that students in Vietnam start public high schools achieving A2 level and they reach B1 after grade 12. Although the students in Nguyen's (2020) study were high school students, it seems that they had higher proficiency levels than the participants of the current study and as a result, they achieved mastery at the first two 1,000 levels.

When the results of the study are evaluated with regard to the amount of words that should be known by non-native speakers in spoken and written discourse, it is also seen that the participants lack necessary receptive vocabulary knowledge. Having the receptive knowledge of approximately 2,233 out of 3,000 words does not seem to be high enough to understand spoken discourse successfully according to Laufer's (1998) suggestion, which is knowing 3,000 word-families. However, according to Nation's (2001) suggestion of 2,000 word-families, it seems that they can understand what they hear mostly. On the other hand, when the results are evaluated in terms of enjoyable reading and understanding unsimplified texts, the receptive vocabulary knowledge of the participants seems to be far below the suggested threshold levels. While the suggested level for enjoyable reading is 5,000 word-families (Hirsh & Nation, 1992), for unsimplified texts, it may differ from 3,000 (Laufer, 1992) to 8,000 or 9,000 word-families (Nation, 2006). Although it is possible for the participants to know some words from other frequency levels which were not measured in the study, their limited performance with regard to the assessed frequency bands implies that their receptive vocabulary knowledge at the higher levels will be lower than at the assessed levels.

The results of the present study are consistent with a number of previous studies (Akbarian, 2010; Dang, 2020b; Hajiyeva, 2014; Nguyen & Nation, 2011; Nguyen & Webb, 2017; Stæhr, 2008; Vu & Nguyen, 2019). These studies indicate

limited receptive vocabulary knowledge of participants and there seems to be some possible reasons of this insufficient knowledge. As stated by Dang (2020b) the first reason of this insufficient receptive vocabulary knowledge can be the limited input that the learners are exposed to in EFL contexts. The amount of exposure to the language is necessary for vocabulary learning to happen in an EFL environment (Webb & Nation, 2011). However, in an EFL environment, there is a limited amount of instruction time and a lot of objectives to reach. The only environment where most of the EFL learners are directly exposed to the target language is classroom. As a result, limited input may lower the chance of learning some of the words, especially the high frequency words, incidentally. Second possible reason of this limited vocabulary profile may be associated with the selection of target words to teach or the course books and the vocabulary items included in them. Instead of focusing on the high frequency words first, they may include words from lower levels of frequency. For example, O'Loughlin's (2012) study on the vocabulary items of a textbook revealed that the book tended to include a great number of infrequent words, but a limited number of frequent words (just among the most frequent 2,000 words). As high frequency words are the vocabulary items which are frequently used in the language, the chance of coming across with them in a course book should be higher. The third possible reason is the number of exposure to the high frequency words. For learning a word, the amount of exposures is stated to be between 5 and 16 (Nation, 2001). According to this suggestion, the chance of learning a word decreases if exposure to it takes place less than 5 times. In a study in which reading texts in the series of a textbook were analyzed, it was found out that the percentage of novel words that occurred at least six times in the texts was just 4.2 (Nguyen, 2020). This finding can be seen as an example of one of the reasons that hinders learning of those words. Limited number of exposures to the high frequency words may be the reason of participants' insufficient receptive knowledge of lexical items in the present study. Another result of Nguyen's (2020) study was that the percentage of the novel words that facilitated comprehension of the text was about 11.5. One of the variables that moderate learning a word is its importance in comprehending the text it is used in (Ellis, 1995). Hence, if a target word does not have a crucial role in understanding the sentence or text it is embedded in, it may not attract students' attention and they do not try to decipher or learn its meaning. This may

lead to unnecessary overload of new words without giving them chance to build up or improve their knowledge of vocabulary (Nguyen, 2020).

The second area of interest that was investigated related to participants' receptive word knowledge was the effect of word frequency levels. The analyses of the findings revealed that the difference between the mean scores of the participants at the three frequency bands of the receptive vocabulary knowledge was statistically significant. They had the highest mean score at the first 1,000 level, followed by the second and the third 1,000 bands. The findings of the study relating to the effect of frequency on receptive knowledge supports the common assumption that lexical knowledge grows in accordance with frequency; learners gain the knowledge of more frequent words earlier than the less frequent words (Read, 1988; Schmitt et al., 2001). Moreover, the findings of the current study are supported by the results of Milton (2006) and Nguyen and Webb's (2017) studies which also signal the effect of frequency on vocabulary knowledge. However, the results should be interpreted with precaution because some other studies have reported the effect of frequency for the first three frequency levels but not for the other levels (e.g. Aizawa, 2006; Brown, 2012; Elgort, 2013; Karami, 2012; Nguyen & Nation, 2011). As just the first three levels are investigated both in the current study and Nguyen and Webb's (2017) study, it may be normal not to detect any anomalies and find the effect of frequency. The inconsistencies in the frequency levels beyond the first three levels may be caused by the limited vocabulary knowledge of the learners, especially at lower levels. As a consequence of the limited knowledge, their vocabulary knowledge at the lower frequency bands may not differ significantly to reflect the effect of frequency (Aizawa, 2006). They might also be the result of the high amount of loanwords (Karami, 2012) and cognates (Elgort, 2013) at lower levels or just the limited amount of test items that aims to assess the vocabulary knowledge at each level (Nguyen & Webb, 2017). Hence, it should be noted that the results should be interpreted with precaution. In the present study, the common assumption that the more frequent words are learnt better than the infrequent ones is borne out at the 1,000, 2,000 and 3,000 frequency levels. As a result, it can be stated that there seems to be a tendency to gain the knowledge of high frequency words sooner than the lower frequency words among the most frequent 3,000 words. However, it seems necessary to

carry out more studies to make a generalization about the effect of frequency on receptive lexical knowledge of tertiary level Turkish learners of English.

Furthermore, as part of the first research question, it was explored whether the participants' year of study at university affected their receptive vocabulary knowledge. The results of the updated VLT according to the participants' year at university revealed that fourth year students had significantly higher scores than preparatory and second year students at all three 1,000 word frequency levels. Besides, second year students had higher scores at all three levels than the preparatory year students. However, this difference was not statistically significant. This insignificant difference can be the result of concentration of these two groups of learners on different types of vocabulary items. After preparatory year, first and second year students tend to learn the technical terms related to their subject area and their focus turns from general vocabulary items to technical terms. However, preparatory year students just focus on general words, not the technical ones. As a result, although second year students have slightly higher scores, the difference was not statistically significant. Previous studies also support the tendency of having better vocabulary knowledge with the increasing amount of years at university. For instance, Alharbi (2018) compared the receptive vocabulary knowledge of second and fourth year students and found out that fourth year students had significantly higher scores than the second year students. He stated that students have more chance to learn vocabulary items from different levels based on the time they study at university. On the other hand, Milton and Treffers-Daller (2013) investigated the effect of year at university on vocabulary knowledge as well. They compared freshmen, sophomores and juniors. The researchers discovered that juniors had higher vocabulary knowledge than sophomores and they had higher vocabulary knowledge than freshmen. However, no statistical significance was found in group differences. If it is supposed that each year the learners have more input of language, their vocabulary knowledge may be expected to increase as well. However, the results of the studies mentioned here and the current study indicate that in practice it is not like what is expected. These studies indicate that year of study at university and vocabulary knowledge can be related, but not strongly correlated. More studies are needed to make a

generalization about the effect of year of study at university and vocabulary knowledge.

Productive vocabulary knowledge of Turkish tertiary level EFL learners. The findings of the second research question revealed that participants of the study knew on average approximately 77% of the words at the first band, 52% at the second band and 34% of them at the third band productively. In total, they knew on average nearly 1,633 out of 3,000 words, which meant about 54% of all test. In terms of mastery of each level, 21% of the participants mastered the first 1,000 level, just 2% mastered the second band but none of the participants could master the third band. Compared to the results of the receptive vocabulary test, it is realized that the participants had lower scores in the productive vocabulary test. The results of the receptive vocabulary test showed that they knew 78% of 3,000 words while they knew 54% of the words in the productive test. This may indicate that learners of English know more words receptively than they know them productively. This finding is supported by a number of previous studies (e.g. Laufer, 1998; Martínez Adrián & Gallardo del Puerto, 2010; Webb, 2005, 2008; Yamamoto, 2011; Zheng, 2009).

The second area of interest that was investigated within the frame of the second research question was the effect of word frequency levels on participants' productive vocabulary knowledge. The results of the present study showed that there was a statistically significant difference between the mean scores of the participants at all three frequency bands of the productive word knowledge. They had the highest mean score at the first 1,000 band, followed by the mean scores of the second and the third 1,000 bands. In line with the findings of receptive vocabulary test, the productive test also revealed that frequency affected the time of learning new words productively. The participants had productive knowledge of more words if they were used more frequently (Read, 1988; Schmitt et al., 2001). Supporting the findings of the current study, Webb (2008) and Zheng (2009) revealed that productive vocabulary scores of learners decreased as the frequency of words decreased. It can be stated that there is a tendency of learning more frequent words earlier than the less frequent words productively but more research is needed to make generalizations.

It should also be noted that a controlled productive test was employed in the present study and the most frequent 3,000 words were tested productively. However, while testing productive vocabulary knowledge in speech or free writing, it may not be possible to test the effect of word frequency. Milton (2009) claims that learners may choose words from different frequency levels in writing and speaking. It depends on the message they want to convey and how they choose to convey it. However, they usually tend to choose words from the most frequent ones. This explanation also supports the finding of the present study that the more frequent the words are, the more they are used productively. Nonetheless, more studies are needed to generalize the results; especially the ones which measure productive vocabulary knowledge in speech and free writing. In that way, it can be possible to discover whether learners have a tendency to choose high frequency words in their speech and writing, ignoring the less frequent ones or not.

As part of the second research question, the effect of year of study at university on productive vocabulary knowledge of the participants was also investigated. It was found out that all of the groups were significantly different in terms of their productive vocabulary knowledge at all three bands of frequency. It showed that fourth year students had higher scores than the second year students and they had higher scores than the preparatory year students. Compared to receptive one, in the PVKT scores, the impact of year of study at university can be observed more clearly. However, more studies are needed to make a generalization about the effect of year of study at university, as stated in the discussion of receptive vocabulary knowledge part. Nevertheless, the tendency of rising productive vocabulary knowledge in line with the years of study at university has been observed in the present study.

Receptive collocational knowledge of Turkish tertiary level EFL learners. The analyses of the third research question results showed that Turkish EFL learners at tertiary level had the receptive knowledge of on average 60.75% of the verb-noun collocations and 55.25% of adjective-noun collocations in the RKCT. When their receptive knowledge of verb-noun and adjective-noun collocations was investigated based on their node words' distribution in the frequency levels, it was found out that they knew more than 50% of both collocation types at the first and second frequency bands, while they knew less

than 50% of the collocations at the third band. The results of the present study are slightly higher than Nguyen and Webb's (2017) results. They reported that their participants knew more than 50% of both types of collocations receptively just at the first frequency band. At the other two bands, they could not find even half of the correct collocations. The reason of this slight difference between the findings of the two studies could be related to employing different test formats. As mentioned before, the target collocations' node words were provided in a single sentence context in the current study and the participants were asked to choose the verb or adjective collocates of them among the four options. However, Nguyen and Webb (2017) did not provide any contexts for the target collocations in their study. They just gave the node words and asked the participants to choose the right collocates of them among the four options. As supplying a short context allows test takers to pitch the meaning of missing collocations (Revier, 2009), seeing the node words decontextualized may have hindered the participants in Nguyen and Webb's study from choosing the correct answers. As a result, they might have found less numbers of correct collocations than the participants of the current study. In another study which was carried out in Turkish context, Almacıoğlu (2018) reported that tertiary level participants in her study knew 61.07% of verb-noun and 53.76% of adjective-noun collocations receptively. Although the author's findings may seem to be parallel to the present study, she did not report the frequency bands of the node words used in her study. In both of the studies mentioned here (Almacıoğlu, 2018; Nguyen & Webb, 2017) the stated cutoff point for mastery of receptive collocational knowledge was 50%. However, they did not provide any theoretical information for this decision. Moreover, in both of the studies, the tests applied for measuring the receptive collocational knowledge were not validated. In addition, the number of items for measuring each type of collocation was just five in Almacıoğlu's study. Hence, it seems it is not appropriate to make any comments about the mastery of receptive collocational knowledge just by looking at their scores on average. In contrast to the studies mentioned above, receptive collocational knowledge scores of the students in the present study echoed the results of some other studies, which found out approximately similar scores (e.g. Brashi, 2009; Jaén, 2007; Keshavarz & Salimi, 2007; Nizonkiza, 2011a, 2015). As it is done in the present study, participants'

receptive collocational knowledge is reported by giving percentages, but the mastery of knowledge is not decided on in these studies.

The second point that was investigated related to receptive knowledge of verb-noun and adjective-noun collocations as part of the third research question was the effect of node word frequency on the receptive knowledge of both types of collocations. The results indicated that participants' RKCT scores were significantly affected by node word frequency. It meant that they had the receptive knowledge of more collocations whose node words were from the first frequency band than that of second frequency band. They also knew more collocations whose node words were from the second band than that of the third band. The effect of node word frequency suggests that the more frequent the node words are the more collocations are known by the learners receptively. Nizonkiza (2015) and Nguyen and Webb (2017) also reported the effect of node word frequency on receptive collocational knowledge. The findings of these studies, including the current one, may contribute to the suggestions of researchers who indicate the effect of frequency on vocabulary knowledge (e.g. Nation, 1990; Nation & Beglar, 2007; Read, 2000) and extend it to receptive collocational knowledge as well.

The effect of year of study at university on receptive knowledge of collocations was also investigated. When the frequency levels were not taken into consideration, the difference between all three groups according to both types of collocations was statistically significant. Detailed analyses of verb-noun collocations according to the frequency levels revealed that the scores of all groups were significantly different from each other, except for the difference between preparatory and second year students at the first 1,000 level. At this level, receptive collocational knowledge of these two groups was so close that the difference was not significant. On the other hand, detailed analyses of adjective-noun collocations according to frequency levels and year of study at university revealed that except for the difference between second and fourth year students' scores at the 2,000 and 3,000 frequency bands and the difference between preparatory and second year students at the first 1,000 frequency level, the three groups' scores were significantly different. Insignificant results of level-based analyses of the receptive knowledge of collocations seem to be affected by both the nature of collocation types and the node word frequency of the collocations. At

higher frequency levels, collocational knowledge is high or at lower levels knowledge is limited for both of the compared groups that they did not indicate difference. On the other hand, it is reported that L2 learners' knowledge of verb-noun collocations is higher than adjective-noun collocations (e.g. Begagić, 2014; El-Dakhs, 2015; Kamarudin et al., 2020; Nguyen & Webb, 2017; Saudin et al., 2017). More insignificant results for the adjective-noun collocations between groups may be affected by the difficulty of the adjective-noun collocations for the L2 students.

The results of the study related to effect of year of study at university on receptive knowledge of both types of collocations are supported by previous studies. For example, Begagić (2014) found out significant difference between freshmen and seniors. On the other hand, Nizonkiza (2015) investigated the hypothesis that learners' scores of receptive collocational knowledge test and their proficiency levels are correlated and confirmed that receptive collocational knowledge reflects students' proficiency level. Participants' language proficiency was not directly assessed in the present study. However, according to Nizonkiza's confirmation, it can also be assumed that according to their receptive collocational test scores, second year students are at a higher proficiency level than the preparatory year students and fourth year students are at a higher proficiency level than second year students. In that case, more studies, which revealed that receptive collocational knowledge develops according to proficiency levels, support the results of this study (Bonk, 2001; Gyllstad, 2007, 2009; Keshavarz & Salimi, 2007; Nizonkiza, 2011a, 2015). To sum up, it is possible to state that receptive collocational knowledge increases in line with the year of study at university or proficiency level although the amount of increase is not exactly the same from one level to another (Nizonkiza, 2015).

Productive collocational knowledge of Turkish tertiary level EFL learners. The analyses of the third research question results showed that Turkish EFL learners at tertiary level had the productive knowledge of on average 53% of the verb-noun collocations and 41% of adjective-noun collocations in PKCT. In terms of node word frequency of the collocations, it was revealed that they knew more than 50% of both types of collocations at the first 1,000 level and less than 50% of both types of collocations at the third 1,000 level. However, their

productive knowledge differed according to the type of collocation at the second 1,000 level because it was more than 50% for noun combinations with verbs and less than 50% for noun combinations with adjectives. Based on these findings, it seems appropriate to claim that the EFL learners participated in the current study have insufficient productive knowledge of collocations and it is supported by the results of the earlier studies (Brashi, 2009; Begagić, 2014; El-Dakhs, 2015; Kamarudin et al., 2020; Miqdad, 2012; Nizonkiza, 2012).

The analyses related to the effect of node word frequency on the productive knowledge of collocations revealed that node word frequency affected the productive knowledge of both types of collocations significantly. The participants had higher productive knowledge of collocations whose node words were from the first 1,000 level than the ones at the 2,000 and 3,000 frequency levels. They also had higher productive knowledge of both types of collocations whose node words were from the 2,000 band than the ones at the 3,000 band. Nizonkiza (2011a, 2011b) also found out the effect of frequency on productive collocational knowledge and stated that frequent collocations are identified by test takers better than low frequency collocations. As it can be seen, frequency is a factor that affects not only vocabulary knowledge as stated by Nation (1990), Nation and Beglar (2007) and Read (2000), as revealed by this study it is also an effective factor on receptive and productive collocational knowledge. However, it should also be noted that for making generalizations about the effect of frequency on receptive and productive collocational knowledge, more studies are needed.

Additionally, the effect of year of study at university on productive collocational knowledge was investigated as part of the fourth research question. The results indicated that year of study at university affected both types of collocations significantly. However, detailed analyses indicated that none of the groups; preparatory, second and fourth year students, had significantly higher scores of adjective-noun collocations in PKCT than the others at the first frequency band. At this level, the scores of participants from three years of study at university were so close that they did not differ significantly. The insignificant result for all groups at a specific level of the same type of collocation may be the result of adverse effects of specific collocation type and frequency level. As it is mentioned before, adjective-noun collocations are more difficult to acquire

compared to verb-noun collocations (e.g. Begagić, 2014; El-Dakhs, 2015; Kamuradin, 2020; Nguyen & Webb, 2017; Saudin et al., 2017). On the other hand, more collocations are known at higher frequency levels. It may be claimed that participants' limited productive knowledge of adjective-noun collocations was so close to each other at this high frequency level that any difference was not detected. In their study, Ebrahimi-Bazzaz et al. (2014) also stated that academic year (first, second, third and fourth years) of the participants was a factor that affected productive collocational knowledge in general. However, their detailed analyses also indicated insignificant difference especially between freshmen and sophomores and between sophomores and juniors. In another study, Revier (2009) also investigated productive knowledge of collocations of 10^{th} and 11^{th} grade high school students and first year university students. He found out that there was a significant difference between 10^{th} and 11^{th} graders' productive collocational knowledge and that of first year university students. However, he also could not detect significant difference between 10^{th} and 11^{th} graders and stated that significant difference was found out at least in two years, but not in one single year. Moreover, Nizonkiza (2012) examined the relationship between productive collocational knowledge and L2 proficiency. The researcher revealed a significant and positive correlation between them. As participants' productive collocational knowledge increase with the year of study at university, it can be assumed that their collocational knowledge predicts their proficiency level. In that case, more studies which claim the effect of proficiency levels on productive collocational knowledge support the present study (Al-Zahrani, 1998; Gitsaki, 1996; Nizonkiza, 2012).

The difference between receptive and productive collocational knowledge. The difference between the receptive and productive collocational knowledge of preparatory, second and fourth year students was investigated in the fifth research question. It was discovered that all groups of participants knew significantly more collocations receptively than they knew them productively. This statistical significant difference had a large effect size for all groups of participants. This finding is supported by many previous studies (e.g. Begagić, 2014; Brashi, 2009; Gaballa & Al-Khayri, 2014; Jaén, 2007; Kamarudin et al., 2020; Koya, 2005; Laufer & Waldman, 2011; Nizonkiza, 2015; Saudin et al., 2017). There may be

several reasons of limited productive collocational knowledge. First, as Schmitt (2010, 2014) states, collocational knowledge is a context-based language aspect of knowing a word and it requires large amounts of exposure to reach productive level. It indicates that receptive knowledge can be gained with less amount of exposure than productive knowledge. Hence, limited exposure might improve receptive knowledge, but not the productive one. Second, production is more difficult than reception. After meeting a new word, learners need to know many competing associations about the word (Ellis & Beaton, 1993; Schmitt, 2014), basically its pronunciation, spelling and meaning to be able to get ready to use it themselves (Melka, 1997). The third reason claimed to affect the result is that receptive tests are easier than the productive ones (Nation, 2013). Receptive tests provide stimuli which helps recognition of the target words while in production, test-takers need to recall the form of the word exactly and for this they cannot make use of any stimuli. Nation (2013) suggests that there should not be any features that add to the difficulty of the test, except for the difficulty of production over reception. In this study, RKCT employed a multiple-choice test format while PKCT had a fill-in-the-blanks test format. Although multiple-choice test format is easier than the fill-in-the-blanks format, it is related to the distinction of difficulty between receptive and productive tests. The same target collocations were addressed in both types of tests and a sentential-context was also provided in the productive test in order to keep the difficulty just at the receptive-productive distinction. For instance, selecting lower frequency collocations for receptive test than the productive one may result in higher productive knowledge, as it was the case in AL-Amro's (2006) study. Hence, it can be stated that test formats used for testing receptively and productively known collocations are affected by the nature of the distinction between these two aspects. However, the test items should not affect the amount of this difficulty. The last reason can be related to the amount of in-class receptive and productive tasks (Ellis & Beaton, 1993). If more receptive use of language is practiced in-class and productive use is ignored, then learners' receptive use develops more. Previous research supports the assumption that receptive tasks contribute more to receptive vocabulary knowledge and productive tasks to productive knowledge (Griffin & Harley, 1996; Waring, 1997). These may be possible reasons of the finding that participants know more collocations receptively than they know them productively.

Correlation between single–word items and collocational knowledge. After investigating receptive and productive knowledge of single-words and collocations as part of previous research questions, correlation between them was also investigated in the sixth research question. The results indicated a strong, positive correlation between receptive vocabulary knowledge and receptive knowledge of verb-noun (*r* = .65) and adjective-noun (*r* = .58) collocations. Moreover, the results of the present study revealed that there was a strong, positive correlation between productive vocabulary knowledge and productive knowledge of verb-noun (*r* = .63) and adjective-noun (*r* = .65) collocations. The results show that learners' collocational knowledge increases in line with their vocabulary knowledge, both at receptive and productive levels. If it is assumed that vocabulary items are not learned in isolation, as learners meet the new words in contexts, they also provide extra information about those words for learners to gain some information. In that way, they also learn the words that are used together with the new words. In that respect, it is not surprising to find a correlation between the two aspects of vocabulary knowledge. Echoing one aspect of the results obtained in the current study, Gyllstad (2009) and Nguyen and Webb (2017) reported a strong positive correlation between receptive vocabulary and collocational knowledge. They explained it as the increase in knowledge of frequent vocabulary items facilitates becoming familiar with the words used with them. Moreover, Torabian et al. (2014) investigated the correlation between vocabulary and collocational knowledge at both receptive and productive levels. They also found out strong positive correlations between two aspects of vocabulary knowledge at both receptive and productive levels, in line with the findings of the present study. In addition, they stated that learners' scores in receptive tests were higher than their productive tests and their collocational knowledge was lower than their vocabulary knowledge. The same results were found out in this study related to higher receptive knowledge and limited collocational knowledge. Nevertheless, Mutlu and Kaşlıoğlu (2016) investigated the relationship between receptive knowledge of single words and receptive and productive knowledge of collocations. The findings revealed a moderate positive correlation between the receptively known single-words and collocations. However, there was a weak correlation between receptive knowledge of single-words and productive collocational knowledge. It seems that it is not surprising to

have different degrees of correlation in this study because of the difference in the nature of the vocabulary and collocation tests. While one was aimed to measure knowledge of single-words receptively, the other was for assessing collocational knowledge productively. They also reported the same reason for this weak correlation and explained it as participants might have been using their receptive vocabulary knowledge for recognizing collocations, but not for producing them. As stated before, for production greater knowledge is needed than for reception (Nation, 2001; Gyllstad, 2013).

From the point of view that collocational knowledge is an aspect of word knowledge that is related to vocabulary depth (Read, 2000; Milton, 2009; Schmitt, 2000), there are more studies which show correlations that support the result obtained in the present study (e.g. Gyllstad, 2007; Meara & Wolter, 2004; Nurweni & Read, 1999; Qian, 1999; Vermeer, 2001). These studies show that vocabulary breadth and depth develop together, although they are accepted as different dimensions of vocabulary knowledge (Nguyen & Webb, 2017). Moreover, there are discussions about the lack of clear definitions of breadth and depth (Gyllstad, 2013), and these results can be indication of the fact that it is not possible to separate these two as different dimensions. They are highly correlated because they are interdependent (Akbarian, 2010; Milton, 2009). Nevertheless, Nguyen and Webb (2017) suggest interpreting the results with caution because of the possible effects of different factors on this correlation such as proficiency level or frequency of collocations. Hence, keeping in mind other factors that may possibly affect the knowledge of collocations, the findings of the present study contribute to related literature on the correlation between single-word and collocational knowledge.

Effects of intralexical and interlexical factors on receptive and productive collocational knowledge. In the seventh research question, the effects of some interlexical and intralexical factors on receptive and productive collocational knowledge were investigated. The interlexical factor that was investigated was congruency with L1. If the collocations in English were the ones that were expressed in the same way in Turkish, they were accepted as congruent collocations. The intralexical factors that were investigated in the study were collocational frequency, node word frequency, MI score and type of collocation (verb-noun or adjective-noun collocations). Multiple regression analyses results

showed that the model in which the effects of these five variables were investigated, explained 56% of the variance in RKCT and 48% in the PKCT scores. In both of the tests, the best predictor of collocational knowledge was congruency with L1. It uniquely explained 43% of variance in the RKCT and 28% in the PKCT scores. Congruency with L1 had a clear effect on both receptive and productive collocational knowledge, supporting the results obtained from previous studies (e.g. Gyllstad & Wolter, 2015; Laufer & Waldman 2011; Lee, 2016; Nesselhauf, 2003; Phoocharoensil, 2013; Shehata & Zareva, 2015; Wolter & Yamashita, 2017; Yamashita & Jiang, 2010). Yamashita and Jiang (2010) explained the effect of congruency by referring to Jiang's (2004) L2 lexical model. In his model, Jiang (2004) argued that L2 learners, especially adults, do not have the chance to be exposed to high amounts of contextualized L2 input. As a result, they cannot extract the meanings of L2 words from the limited input. They have a well-established system of concepts linked to their L1 and they usually use the same conceptual system for L2. As a result, for making a connection between the concept and the new word, they make use of their L1 by using the L1 translation of the new L2 word. In time, with the help of more language exposure, learners transfer their L1 lemma information to L2 and at the last stage they make a full connection between the concept and L2 lexicon. Although Jiang' (2004) model was originally developed to explain the processing of single word items, it can be applied to the acquisition of collocations as well (Lee, 2016). It can be applied by assuming that the information of possible collocations in L1 may be transferred to L2 lexicon. It is usually observed in the classroom environment that the learners tend to use the collocational information in their L1 if they do not know it in English. Yamashita and Jiang (2010) also claim that it is not easy to place incongruent collocations in mental lexicon. It needs a long time and high amounts of exposure to L2 to acquire them. As a result, incongruent collocations tend to be hard to be acquired by English learners with different native languages. Wolter and Yamashita (2017) state that the effect of frequency is decreased by incongruency. At the same frequency level, congruent collocations are known better than the incongruent ones. Detailed analyses of the results supported this claim. First, the mean scores were checked. It was seen that congruent collocations' mean scores were higher than that of incongruent ones, at the same frequency level. This was the case at all levels and in both receptive and productive tests. Further, to find out

if these differences were significant, paired-samples T-tests were conducted. It was discovered that participants' scores for congruent collocations were significantly higher than the incongruent ones at all three 1,000 frequency levels and in both of the tests. These findings support Wolter and Yamashita's (2017) claim about the relationship between congruency and frequency.

Other than congruency, the second factor that had a significant effect on both receptive and productive collocational knowledge was node word frequency. This result indicated that the more frequent the node words were the better collocations were known both receptively and productively. As stated before, the relation there is a connection between the congruency and node word frequency. It seems that because of the higher impact of congruency, node word frequency' effect decreased. On the other hand, node word frequency predicted receptive and productive collocational knowledge better than collocational frequency. One of the reasons of this finding can be the fact that the quantity of contextualized language input is insufficient in EFL settings for collocational frequency to be effective in impacting learning (Nguyen & Webb, 2017). It means that collocational frequency can be lower than the node word frequency and as a result, the collocations with higher frequency node words are learnt better than the lower frequency collocations in corpus. Hence, they require to be seen in a large amount of language input, but in EFL context that is limited. The second reason of node word frequency's having a higher impact can be related to the fact that learners tend to learn single-word items according to their frequencies (Nguyen & Webb, 2017). This is also the case in the present study and Nguyen and Webb's study. As they know the higher frequency single-word items better, they may also recognize and produce the words that are frequently used with them.

Multiple regression analyses did not indicate significant effect of type of frequency and mutual information score on receptive knowledge. However, they had a slight effect on productive collocational knowledge. Although some previous studies report that the acquisition of verb-noun collocations is easier than adjective-nouns (e.g. Begagić, 2014; El-Dakhs, 2015; Kamarudin, 2020; Nguyen & Webb, 2017; Saudin et al., 2017) and the results of the present study show that the participants have better knowledge of verb-noun collocations, the type of collocations was not found to be as effective as congruency and node word

frequency and collocational frequency. MI score indicates the power of relationship between the constituents of collocations because it shows these two words' combination is not by chance (Nguyen & Webb, 2017). This strength increases as the frequency of the words decreases. As a result, it did not affect receptive collocational knowledge and slightly affected productive knowledge. It is negatively correlated with productive knowledge because of the mentioned frequency effect on mutual information score. Ellis et al.'s (2008) study suggested that MI score is not a crucial factor for non-native speakers, but it is for native speakers. Also, Fernández and Schmitt (2015) report that collocational frequency predicts collocational knowledge better than MI score. Overall, it can be stated that frequency, either single-word or collocational, and congruency with L1 seem to be effective factors not only on collocational knowledge, but also on other factors that are related to collocational knowledge.

Effects of individual differences on receptive and productive collocational knowledge. After investigating the interlexical and intralexical factors that affect knowledge of collocations at receptive and productive levels, the effects of individual differences such as gender, age and years of English the participants had were also investigated in the eighth research question. The results showed that gender difference affected neither receptive nor productive collocational knowledge significantly. The results of the present study corroborates with some other studies in which the effect of gender was investigated on receptive and productive collocational knowledge. For instance, Ganji (2012a) investigated the effect of gender on a receptive collocational knowledge test performance of Iranian university students and reported that it did not have an effect on receptive collocational knowledge. In addition, Fernández and Schmitt (2015) investigated the effect of gender on productive collocational knowledge of 108 Spanish speakers of English. They also stated that participants' productive collocational knowledge was not significantly affected by gender difference. These findings indicate that male and female learners have similar amounts of collocational knowledge both at receptive and productive levels and there might be other individual differences that affect this knowledge.

In addition to gender, the second factor whose effect was investigated in the eighth question was the age of participants. As it was stated in the previous

section, the age of the participants ranged from 18 to 27. Correlation analyses revealed that there was a moderate, positive correlation between the age of the participants and their receptive knowledge of collocations (*r* = .33). Furthermore, there was a weak, positive correlation between the age of the participants and their productive knowledge of collocations (*r* = .25). Fernández and Schmitt (2015) also found out a weak, positive correlation between the productive collocational knowledge and age of their participants. Although correlations were detected between the age of participants and their receptive and productive knowledge of collocations in the present study, the results should be interpreted carefully. Of course, it cannot be stated that collocational knowledge improves just in years on its own. These moderate and weak correlations indicate that other factors may also affect this knowledge at both receptive and productive levels. They might be the amount of language input learners are exposed to or the amount of years learners have engaged in formal English instruction.

Another factor whose effect was also investigated in the eighth research question was the years of English study the participants had engaged in from the beginning of their formal education life. The years of their formal English instruction ranged from 8 to 12. The relationship between the years of formal English study the participants had engaged in and their receptive and productive knowledge of collocations was also investigated by conducting correlation analyses. The results showed that there was a strong, positive correlation between the amount of years participants had engaged in formal English instruction and their receptive knowledge of collocations (*r* = .52). Moreover, the correlation analyses indicated that there was a moderate, positive correlation between the amount of years participants had engaged in formal English instruction and their productive knowledge of collocations (*r* = .41). These results showed that the more language instruction the participants had engaged in, the better scores they gained in both receptive and productive collocational tests. It is not surprising to find that result as more years of formal instruction means being exposed to more language input and higher levels of collocational knowledge. Fernández and Schmitt (2015) also investigated the effect of year of instruction on productive collocational knowledge of their participants. They reported a moderate correlation between them, similar to the results of the present study. These results are also in

line with the study of Schmitt et al. (2004) who stated that acquisition of formulaic sequences can be facilitated by instruction.

Effects of outside the class language use on receptive and productive collocational knowledge. After the effect of year of formal English instruction on the collocational knowledge of the participants, the effect of language exposure outside the class on receptive and productive collocational knowledge was also investigated. Personal engagement with language was investigated by the amount of time they spent outside the class for reading, watching, listening and social networking. In addition, the participants were also asked whether they spent at least three months in English-speaking countries. The results showed that there was a moderate correlation between listening, social networking, living in an English-speaking country and receptive collocational knowledge and a strong correlation between reading and receptive collocational knowledge. Moreover, when the activities which had a significant correlation with receptive collocational knowledge were combined (listening, reading, social networking and living in an English-speaking country), it was also revealed that this composite out of the class exposure to English was strongly correlated with receptive collocational knowledge. The analyses of the productive collocational knowledge and language exposure questionnaire showed the same correlations. A moderate correlation was also found between listening, social networking, living in an English-speaking country and productive collocational knowledge. In addition, the correlation between reading and productive collocational knowledge was also strong. Moreover, the correlation between composite language exposure activities and productive knowledge of collocations was also strong.

In their study, Fernández and Schmitt (2015) revealed similar results. However, while the activity that did not correlate with collocational knowledge was watching TV or films in the present study, they did not find any correlation between listening and productive collocational knowledge. They found a correlation between reading, watching TV or films, social networking, living in an English-speaking country. The reason of not finding a significant relationship between watching TV/films in the present study may have resulted from the film watching habit of the participants. If they watch films with subtitles in their L1, it may not improve their collocational knowledge. In contrast to this finding, Yüksel and

Tanrıverdi (2009) conducted a study in which the participants' vocabulary knowledge was assessed before and after watching two movies. They concluded that both groups which watched movies with captions and no captions improved their vocabulary knowledge. There may be two reasons for this contrasting result. First, the participants in their study watched the movies in their regular classes and before watching them, they had a vocabulary test. As a result, the participants may have been more motivated to watch the movies as they were a part of a study. However, in the current study, outside the class TV/film watching habit of the participants was investigated with the help of a questionnaire. They did not watch the films in a classroom environment. The difference of the procedure may cause this contrasting result. Second, they just focused on single word items and did not investigate the depth of vocabulary knowledge like collocations. As a result, to make a generalization about the effect of watching TV/films on collocational knowledge, more studies are needed to be conducted. For gaining information about how learners prefer to watch films, interviews with participants are needed to be conducted. However, it can be stated that the participants in the present study did not improve their receptive and productive collocational knowledge by watching TV/films.

The language exposure activity which affected receptive and productive knowledge of participants in the current study was reading. It is seen that learners can learn some aspects of vocabulary from context (Nation, 2001) such as collocations because in reading activities they have the chance to get deeper information about words (Daskalovska, 2011). Previous studies showed that reading short stories or novels improve collocational knowledge (Daskalovska, 2011; Macis, 2018; Naderi & Barani, 2020). It should also be stated that there is a bi-directional relationship between reading comprehension and collocational knowledge. While these studies (Daskalovska, 2011; Macis, 2018; Naderi & Barani, 2020) indicated a positive effect of reading on collocational knowledge, Ma and Lin (2015) and Ganji (2012b) found out that collocational knowledge improved reading comprehension. It should also be stated that these studies do not focus on extensive reading activities which are done voluntarily by learners, as it was investigated in the present study. They focused on in-class reading activities or the reading activity the participants took part as a participant of the conducted

experiment. For the effect of free reading habits of learners, more research is needed.

Listening to music was also found to be an activity which contributed to the receptive and productive collocational knowledge of the participants in the present study. This finding suggests that the more time the learners spend listening to music, the better collocational knowledge they have. The result of Pavia et al.'s (2019) experimentally designed study that investigated the effects of listening to songs on the recognition of collocations supports the finding of the current study related to listening to music. They concluded that the learners in their study had the potential to recognize collocations and learn their spoken forms by listening to songs. In addition, Webb and Chang (2020) investigated the effect of listening to a graded reader on spoken forms of collocations and concluded that listening may have a better role on improving collocational knowledge than on single words. They state that collocations are realized better in listening as learners hear words as chunks, not the pronunciation of single word items. In that way, instead of focusing on single words, they realize collocations and collocations become more transparent for them. Although these experimental studies indicate a positive correlation between listening to songs and collocational knowledge, the present study focused on out of class listening to music activity. While listening to music did not correlate with collocational knowledge in Fernández and Schmitt's (2015) study, it did correlate in the present study. The participants in their study may have higher collocational knowledge or they may spend less time listening to music or listening to music might not facilitate their collocational knowledge, so they did not find a correlation. It seems that interviewing the participants about their listening habits would help to uncover the difference between the current study and Fernández and Schmitt's (2015) study.

Social networking seems to be an indispensable part of everyday life and it was found out in the present study that it is one of the ways of exposure to language outside the class which is correlated with collocational knowledge. This positive correlation showed that the more time participants spent for social networking the better collocational knowledge they had. Fernández and Schmitt (2015) also found the same results in their study. Furthermore, living in an English speaking country at least for three months was another factor that was positively

correlated with collocational knowledge. While Fernández and Schmitt (2015), Groom (2009), and Siyanova and Schmitt (2008) also found the positive effect of immersion, the study conducted by Nesselhauf (2005) revealed that living in an English spoken country caused a slight improvement in the production of correct collocations. Although the strength of this effect can change based on the approach to collocations and the learner groups, it can be concluded that the learners who has lived in an English speaking country have a chance to improve their collocational knowledge. It can be seen as the result of increased amount of contextualized language exposure.

The correlation between composite effect of reading, listening to music, social networking and receptive collocational knowledge explained over 31% of receptive knowledge, while that explained 27% of productive collocational knowledge. These are everyday exposure activities and it can be concluded that if learners increase the amount of language input they receive by engaging in such kinds of outside the class activities, they can have the chance to learn more collocations. Schmitt and Redwood's (2011) study also supports this finding as they state that the higher amount of L2 engagement with different activities indicate better phrasal verb knowledge.

Conclusion

The present study investigated the factors that affect the collocational knowledge of tertiary level EFL students at the receptive and productive levels in a descriptive way. The factors whose effects were investigated in the scope of the current study were vocabulary knowledge at receptive and productive levels, an intralexical factor (congruency of the collocations with Turkish), interlexical factors (node word frequency, collocational frequency, type of collocation, MI scores of collocations), individual differences (age, gender and years of formal English instruction) and personal language use outside the class (living in an English-speaking country, reading in English, listening to English music, watching films/videos/films, social networking). For assessing receptive vocabulary knowledge, Webb et al.'s (2017) Updated VLT was employed. Its fill-in-the-gaps format productive version was developed and used for measuring productive knowledge. In addition to these two vocabulary tests, two collocational knowledge

tests, receptive and productive, were also developed. As these tests were designed specifically for the current study, the target collocations were selected based on the intralexical and interlexical factors that were aimed to be investigated. The target collocation types investigated were verb-noun and adjective-noun collocations. Each test included 120 target items. The node words were selected from the first three 1,000 frequency levels. They were evaluated as the node word frequency of the target collocations. At each level, there were 20 items for both types of collocations. Half of the collocations at each level were congruent with Turkish and the other half included incongruent ones. The information of frequencies of collocations and their MI scores were taken from COCA (Davies, 2008).

The findings of the study showed that vocabulary and collocational knowledge of participants were correlated. As collocational knowledge is accepted to be an aspect related to vocabulary depth (Read, 2000; Milton, 2009; Schmitt, 2000), and as vocabulary breadth and depth develop together (Nguyen & Webb, 2017), this finding indicated the parallel development of vocabulary breadth and depth. In addition, it was also revealed that productive knowledge was limited compared to receptive knowledge both for vocabulary and collocational knowledge. This finding indicates the fact that production requires more information about a word than reception (Ellis & Beaton, 1993; Schmitt, 2014) and hence it requires more exposure to the usage of the words in context. As a result, it takes longer to be able to produce words. However, it should also be noted that some aspects of vocabulary knowledge can be learned productively before some aspects are learned receptively (Webb, 2008). It can be concluded that learners tend to learn a word receptively before they can use it in a written or spoken context.

Other than the knowledge of single-word items, investigation of the effect of intralexical and interlexical factors revealed that the best predictor of collocational knowledge, both at receptive and productive levels, was congruency with L1. It indicates that EFL learners use their L1 collocational knowledge for processing collocations in English. The findings of the present study also showed the positive effect of personal language exposure outside-the-class on collocational knowledge

suggesting that the more language exposure and use results in the higher knowledge of collocations.

Overall, the findings of the present study suggest that many different factors can affect the collocational knowledge. However, by being aware of these factors and benefiting from the factors that have a positive impact, collocational knowledge can be improved. More attention is needed to be paid to collocations in a classroom environment. In line with the findings of the current study, some pedagogical implications are offered in the next section of the dissertation.

Pedagogical implications. Depending on the findings, some pedagogical implications which will be useful for language learners, language teachers, teacher candidates and materials developers are provided. Collocations are found to be an essential component of vocabulary knowledge. However, they are also found to be problematic for even high proficiency level non-native speakers (e.g., Altenberg & Granger, 2001; Nesselhauf, 2003, 2005). Especially in EFL context, they become more difficult to learn because of limited contextualized language input. All these facts emphasize the importance of paying special attention to collocations in English instruction. However, it should also be stated that years of formal English instruction has a positive effect on recognition and production of collocations and previous studies indicate the effect of instruction on collocational knowledge (e.g. Abdellah, 2015; Peters, 2014, 2016). Therefore, collocations should be considered as a vocabulary component which can be improved with special attention.

The first thing to do is raising awareness of collocations. Learners need to be assisted to realize the fact that just knowledge of single word items does not help them in reception and especially in production. Hence, while learning new words, their awareness should be raised to the words that are used with them. This study shows that collocational knowledge lags behind vocabulary knowledge. It is not as easy to learn collocations as single-word items. However, teachers should help them recognize collocations by highlighting words that are frequently used together. For instance, students can be asked to find a specific type of collocations in a written text or by providing the node words, they can be asked to find the collocates from the context. For improving this realization, students should be informed about the resources they can use on their own such as dictionaries, collocation dictionaries and concordances. However, students should learn how to

use these reference sources by practicing their usage in class. In that way, they can understand how to employ them for facilitating their collocational knowledge. After a brief explanation about how to utilize them, these resources can be used in different activities. For example, students can be given a text with erroneous collocations. Then, they can be asked to work in groups and re-write the text by using the reference resource. In that way, they improve their dictionary using skills and collocational knowledge as well as benefiting from working in a group. As Newton (1995) asserted, it is possible for students to learn the vocabulary items that are used by other students in their groups while working on tasks together. It shows that in group discussions, students also get input about the usage of vocabulary items and in that way, they have the chance to increase their vocabulary knowledge. This can also improve the collocational knowledge of students as suggested by Nguyen and Webb (2017).

Another point to be paid attention is the effect of congruency. As the present study indicates, congruency with L1 has an effect on collocational knowledge. The findings of the study show that EFL learners tend to rely on their L1 collocational knowledge for recognizing and producing collocations in English. Teachers should make students aware of the fact that collocations are not combined in the same way in L2 as it is done in L1. They should pay more attention especially to incongruent collocations for highlighting the arbitrary nature of them. If learners do not know the collocate of a word, they combine two single words to make the collocation by negatively transferring their L1 collocational knowledge. For avoiding this, incongruent collocations can be selected and analyzed together. Different activities can be used for helping students realize incongruent collocations. For instance, students can be asked to analyze a text written by another student in the class for checking if the collocations are used correctly. After deciding on the collocations and checking their usage from dictionaries or corpus, they can discuss in groups whether the collocations are congruent with their language or not. Besides, the collocations in authentic written or spoken texts can be provided and the students can be asked to decide if they are congruent in their L1 or how they are expressed in their L1. In that way, students realize the difference between the two languages in terms of the combination of collocations.

The positive effect of language use outside the class on collocational knowledge is also highlighted in the present study as well. These activities increase the amount of language input learners are exposed to. In that way, they can have the chance to see how collocations are used in context. With the help of them, the disadvantage of limited classroom input can be diminished. Hence, learners should also be encouraged to be engaged in outside the class activities such as watching films or videos, listening to songs, reading books or online materials. These activities can be used as extracurricular activities. Students can be asked to engage in one of these activities and write a reflection or have a discussion with other students in the class to give them the chance to use the contextualized input in their written or spoken products. Furthermore, they can also be guided to find native speakers with whom they can communicate and improve their collocational knowledge. They can also be encouraged to attend exchange programs which give them the opportunity to communicate with people in the language they are learning. In that way, they increase the amount of contextualized input and it facilitates their collocational knowledge.

The correlation between vocabulary and collocational knowledge both at receptive and productive levels suggests that they can be improved together. While teaching single-words, students can be guided to realize the other words that are commonly used together. While doing this, the effect of node word frequency should also be considered. It should not be forgotten that students should come across with the target words frequently enough to learn them. Materials writers should select the lexical items to be included in their materials based on the frequency of them. They should include high-frequency words and their collocates especially at beginner levels. Although it is known that textbooks are generally thematically organized, target vocabulary should include high frequency words and they should be provided with their common collocates. They should be presented in texts in which their meaning is needed to be understood for comprehension of the text. In that way, learners pay special attention to these words or collocations for understanding the text. The findings of the current study related to correlations between frequency, year of study at university and collocational knowledge also suggests that frequency of words can be graded based on learners year of study. This can be done by focusing on more frequent

words at first years and selecting less frequent words at higher levels. As learners increase their language awareness and they become more autonomous by realizing how they learn better in time, they can learn lower frequency words better at higher grades.

It should also be kept in mind that a language teacher who is not aware of the importance of collocations or who does not have sufficient knowledge of collocations cannot facilitate their students' collocational knowledge. At that point, it is important for teacher candidates to be educated well in terms of collocational knowledge. Teacher candidates should also be aware of the importance of collocational knowledge for accuracy and fluency. They should know that without that knowledge, they cannot be proficient enough and use the language they are educated to teach like a native speaker. If they lack this knowledge and awareness, they cannot guide their students to become proficient language users. As a result, their language teaching education should be planned in a way that aims to train teachers who are aware of the fact that it is not possible to communicate with the knowledge of single words and collocational knowledge is a crucial component of vocabulary knowledge. They should also be digitally literate to be able to use online resources like corpus or know how to design their courses by using online tools.

Suggestions for Further Research

Based on the limitations presented in Chapter 1, the findings of the present study offer some suggestions for further research. First of all, this study just focused on verb-noun and adjective-noun collocations and the node words of these collocations were selected among the most frequent 3,000 words in English. Further studies might focus on assessing the knowledge of more types of collocations. In addition, they might choose the node words of the target collocations among the frequent and less frequent words in order to have the chance to compare participants' collocational knowledge at different levels. In addition to it, the procedure of employing the tests of collocational knowledge could be divided into steps. In that way, the participants will not have to answer all of a high number of questions at one time.

There is an abundant room for further research to determine how to test receptive and productive knowledge. Further studies might test the collocational knowledge at different levels in activities based on using different language skills. For example, receptive collocational knowledge might be assessed in listening or reading tasks while productive knowledge is assessed in spoken of written products of learners. In that way, instead of assessing knowledge at recognition and recall levels, collocational knowledge could be assessed in real language use.

This study focused on evaluating the collocational knowledge levels of the participants. Further studies should shed light on how collocations are processed by conducting online tests or the method of eye-tracking. In addition, longitudinal studies should be done in order to find out how collocational knowledge improves year by year. In that way, more detailed information may be obtained about the rate of improvement at different stages.

The findings of the collocational knowledge tests should also be supported with interviews with participants. For example, they can be interviewed about their collocational awareness, their vocabulary learning strategies and about their outside-the-class language activities. By the help of these interviews, the results of quantitative data can be discussed more effectively. The data obtained by employing questionnaires may sometimes be limited for discussing the different factors that may affect knowledge levels of participants.

Further studies might also include more numbers of participants with different backgrounds. For instance, they can be selected from different stages of formal education or from different language proficiency levels. In that way, more generalizable findings about the collocational knowledge of EFL learners might be obtained.

Last but not least, it is suggested for further studies that the depth of vocabulary knowledge can be assessed by evaluating that knowledge by multiple components, not just collocations. The interrelation of these components gives a better picture of vocabulary knowledge.

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APPENDIX-A: Participant Consent Form

…./…./…….

Merhaba,
Yapacak olduğumuz çalışmaya gösterdiğiniz ilgi ve ayırdığınız zaman için şimdiden çok teşekkür ederiz. Bu formla, kısaca ne yaptığımızı ve bu araştırmaya katılmanız durumunda neler yapacağımızı anlatmayı amaçladık.

Bu çalışma Hacettepe Üniversitesi Eğitim Bilimleri Enstitüsü doktora öğrencisi Zeynep ÖZDEM ERTÜRK tarafından, Prof. Dr. İsmail Hakkı ERTEN danışmanlığında hazırlanacak bir doktora tezidir. Bu araştırma, Türkiye'de üniversite düzeyinde İngilizce öğrenen öğrencilerin algısal ve üretimsel eşdizim bilgisine etki eden faktörleri tespit etmeyi amaçlamaktadır. Bu sebeple de, kelime ve eşdizim bilgisi testlerine ve dile ne kadar maruz kaldığınızı göstermeyi amaçlayan ankete katılımınız çok önemlidir.

Çalışmanın yapılabilmesi için Hacettepe Üniversitesi etik komisyonundan gerekli izin alınmıştır. Çalışmaya katılım gönüllülük esasına dayanmaktadır. Çalışmaya katılıp katılmamayı seçme hakkınız bulunmaktadır. Ayrıca bu çalışmaya katılabilmek için en az 18 yaşında olmanız gerekmektedir. Çalışmaya katılmak istemiyorsanız ya da 18 yaşından küçükseniz lütfen bu formu iade ediniz ya da boş bırakınız.

Veri toplama aracında kişisel risk oluşturacak ya da size rahatsızlık verecek sorular bulunmamaktadır. Ancak, katılım esnasında herhangi bir sebepten dolayı çalışmada yer almak istemezseniz, istediğiniz anda vazgeçmekte ve çalışmadan ayrılmakta serbest olduğunuzu ve bu durumun size hiçbir sorumluluk getirmeyeceğini unutmayınız. Gönüllü katılım formunu imzaladıktan sonra çalışmadan çıkmak isterseniz bunu araştırmacıya söylemeniz yeterli olacaktır.

Araştırmadan elde edilen veriler ve kimlik bilgileriniz yalnızca bilimsel amaçlarla kullanılacak ve kimseyle paylaşılmayacaktır. Çalışma ile ilgili olarak aklınıza gelebilecek sorularınız için görevli kişilerle irtibata geçmekten çekinmeyiniz. Ayrıca çalışma bittikten sonra aklınıza gelen sorular olması ya da çalışmanın sonuçları hakkında bilgi almak istemeniz durumunda lütfen aşağıda verilen iletişim adreslerinden irtibata geçmekten çekinmeyiniz. Ayırdığınız vakit için teşekkür ederiz.

Sorumlu Araştırmacının

Adı Soyadı : Prof. Dr. İsmail Hakkı ERTEN
Adres : Hacettepe Üniversitesi
e-posta : **********
Telefon : **********

Yardımcı Araştırmacının

Adı Soyadı : Zeynep ÖZDEM ERTÜRK
Adres : Niğde Ömer Halisdemir Üni.
e-posta : **********
Telefon : **********

Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman yarıda bırakıp çıkabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayımlarda kullanılmasını kabul ediyorum.

Katılımcı: Adı, soyadı :
Adres :
Tel :
İmza :

APPENDIX-B: Receptive Vocabulary Knowledge Test

Değerli katılımcılar,

The updated Vocabulary Levels Test (Webb, Sasao, & Ballance, 2017) kelime bilginizi ölçmeyi hedeflemektedir. Test, İngilizce'de en çok kullanılan ilk 3000 kelimeyi içermektedir. Her 1000 seviyeden 30 soru bulunmaktadır. Sorularda üç tanım altı sözcükle verilmiştir. Her grupta satırlarda verilen üç tanımın sütunlarda verilen altı kelimeden hangilerine ait olduğunu bulunuz ve işaretleyiniz. Aşağıda testi nasıl cevaplayacağınıza dair bir örnek verilmiştir.

	game	island	mouth	movie	song	yard
land with water all around it		✓				
part of your body used for eating and talking			✓			
piece of music					✓	

1000

	choice	computer	garden	photograph	price	week
1. cost						
2. picture						
3. place where things grow outside						

	eye	father	night	van	voice	year
4. body part that sees						
5. parent who is a man						
6. part of the day with no sun						

	center	note	state	tomorrow	uncle	winter
7. brother of your mother or father						
8. middle						
9. short piece of writing						

	box	brother	horse	hour	house	plan
10. family member						
11. sixty minutes						
12. way of doing things						

	animal	bath	crime	grass	law	shoulder
13. green leaves that cover the ground						
14. place to wash						
15. top end of your arm						

	drink	educate	forget	laugh	prepare	suit
16. get ready						
17. make a happy sound						
18. not remember						

	check	fight	return	tell	work	write
19. do things to get money						
20. go back again						
21. make sure						
	bring	can	reply	understand	stare	wish
22. say or write an answer to somebody						
23. carry to another place						
24. look at for a long time						

	alone	bad	cold	green	loud	main
25. most important						
26. not good						
27. not hot						

	awful	definite	exciting	general	mad	sweet
28. certain						
29. usual						
30. very bad						

2000

	coach	customer	feature	pie	vehicle	weed
31. important part of something						
32. person who trains members of sports teams						
33. unwanted plant						

	average	discipline	pocket	knowledge	vegetable	trap
34. food grown in gardens						
35. information which a person has						
36. middle number						

	circle	justice	knife	onion	partner	pension
37. round shape						
38. something used to cut food						
39. using laws fairly						

	cable	section	sheet	site	staff	tank
40. part						
41. place						
42. something to cover a bed						

	apartment	cap	lawyer	envelope	speed	union
43. cover for letters						
44. kind of hat						
45. place to live inside a tall building						

	argue	contribute	quit	seek	vote	wrap
46. cover tightly and completely						
47. give to						
48. look for						

	avoid	contain	murder	search	switch	trade
49. have something inside						
50. look for						
51. try not to do						

	bump	complicate	include	organize	receive	warn
52. get something						
53. hit gently						
54. have as part of something						

	available	constant	super	medical	proud	electrical
55. feeling good about what you have done						
56. great						
57. happening all the time						

	environmental	junior	pure	rotten	smooth	wise
58. bad						
59. not rough						
60. younger in position						

3000

	behavior	apology	bible	celebration	angle	portion
61. actions						
62. happy occasion						
63. statement saying you are sorry						

	anxiety	athlete	counsel	foundation	phrase	wealth
64. combination of words						
65. guidance						
66. large amount of money						

	liquid	conference	frequency	agriculture	regime	volunteer
67. farming						
68.government						
69. person who helps without payment						

	asset	heritage	novel	prosecution	poverty	suburb
70. having little money						
71. history						
72. useful thing						

	audience	crystal	intelligence	outcome	pit	welfare
73. ability to learn						
74. deep place						
75. people who watch and listen						

	consent	enforce	exhibit	retain	specify	target
76. agree						
77. say clearly						
78. show in public						

	capture	accomplish	debate	impose	proceed	prohibit
79. catch						
80. go on						
81. talk about what is correct						

	absorb	decline	exceed	link	nod	persist
82. continue to happen						
83. goes beyond the limit						
84. take in						

	approximate	frequent	graphic	pale	prior	vital
85. almost exact						
86. earlier						
87. happening often						

	consistent	enthusiastic	former	logical	marginal	mutual
88. not changing						
89. occurring earlier in time						
90. shared						

APPENDIX-C: Productive Vocabulary Knowledge Test

Değerli katılımcılar,

Bu test (Productive Vocabulary Knowledge Test), üretimsel kelime bilginizi ölçmeyi amaçlamaktadır. Aşağıda verilen cümlelerdeki boşluklar bir kelimeden oluşmaktadır. Her kelimenin ilk iki harfi verilmiştir. Cümleleri okuyarak ilk iki harfi verilen kelimeyi bulup boşlukları tamamlayınız. En kısa kelime üç harften oluşmaktadır.

1. My parents bought a new watch for me. It seems expensive, but I don't know the **pr**_____ of it.

2. When I look at this **ph**_____, I remember the day when we moved into this house. It was a very tiring day, but still we were very excited to have a new house.

3. Sue has a lovely **ga**_____ in front of her house. It has beautiful flowers and trees.

4. My friend has had an **ey**_____ surgery and he does not need to wear glasses or contact lenses any more.

5. It is my birthday today. My mother is baking the birthday cake and my **fa**_____ is cleaning the house. I love my parents.

6. Harry's parents don't let him stay out late at **ni**_____. He has to be at home before 10 p.m.

7. I like spending time with my cousin Jenny. She is the daughter of my **un**_____ but she is like my sister.

8. The city **ce**_____ is usually very crowded and there are a lot of shops and cafes there.

9. I don't know who wrote it, but yesterday I found a **no**_____ in my bag telling me to be careful because someone wants to kill me.

10. My nephew, the son of my **br**_____, is going to start primary school this year.

11. You don't have to spend an **ho**_____ in the shower every morning. I don't want to be late for school while waiting for you.

12. If you don't have a **pl**_____ for the weekend, we can go to the cinema together.

13. When we go on a picnic, we like playing and lying on the **gr**_____. However, my mother hates it because of the green stains on our clothes.

14. For saving our water, we should have a quick shower instead of having a long **ba**_____.

15. Your **sh**_____ is the connection between your body and your arm.

16. Mary is a lucky woman because her husband likes to get up early to **pr**_____ breakfast for her every day.

17. Our teacher always tells us not to **la**_____ at our friends' pronunciation mistakes because they feel ashamed and do not want to speak again.

18. Whenever I go to the supermarket, I always **fo**_____ to buy some of the things I need. I just remember them when I come home.

19. Most people in our country **wo**_____ from 8 a.m. to 5 p.m. on week days and they usually have a lunch break at noon.

20. We decided to stay out late on Friday night. However, our baby did not stop crying and we had to **re**_____ home at 10 p.m.

21. I **ch**_____ my e-mails frequently. My boss usually gets angry if he can't get quick answers to his e-mails.

22. I hate looking at the computer screen, but I have to read and **re**_____ to more than a hundred e-mails every day as part of my job.

23. The teacher of my daughter told the kids to **br**_____ their favorite toys on Mondays, so their favorite school day became Monday.

24. I really hate it when people stop and **st**_____ at me when I try to park my car. I know I am not good at parking and it makes me really stressed.

25. There are many reasons why I want to learn English, but the **ma**_____ reason is that I want to live abroad.

26. I can't decide if it is good or **ba**_____ to change my job. I like my colleagues, but I need to earn more.

27. I don't like winter because the weather gets too **co**_____. I like warm weather in spring.

28. I don't know the **de**_____ date of their wedding ceremony. However, I certainly know that they are getting married this summer.

29. This book provides **ge**_____ information about animals – nothing specific about crocodiles.

30. We had planned to go fishing last weekend. However, the weather was **aw**_____, so we stayed at home.

31. I like my new smartphone. For me, the best **fe**_____ of it is its high-quality camera, because I really like taking selfies.

32. If we don't play well in the match, the **co**_____ of our football team gets really angry with us.

33. I am looking for organic **we**_____ control methods because I don't want to harm plants and products in my field.

34. Day by day, it is getting more difficult to find organic fruit and **ve**_____.

35. Although my uncle can't speak French, he has a good **kn**_____ of French grammar.

36. He really loves reading books. The **av**_____ number of books he reads per week is four.

37. When I was a primary school student, it was really difficult to draw shapes like a **ci**_____, square or rectangle properly.

38. He is so careless. Whenever he goes into the kitchen to cook and uses a **kn**_____, he cuts his finger.

39. We have to be equal to everybody. Everybody deserves fair treatment. This is what **ju**_____ means.

40. In this **se**_____ of the library, there are a lot of articles about how to design video games.

41. They are planning to set up a new factory in the city, but the **si**_____ for the new factory has not been decided yet. I mean, we don't know where it will be.

42. To make a bed for me, Tom covered the sofa in the living room with a **sh**_____, put a pillow and a blanket on it.

43. My son wrote a letter to his grandparents, put it in an **en**_____ and asked me to send it to them.

44. Mark usually wears a cowboy hat, but today he's wearing a baseball **ca**_____.

45. Living in an **ap**_____ is really difficult for us because our neighbors don't like the noise of our dog.

46. We have bought a really nice birthday present for Paul and now we are waiting for the sales assistant to **wr**_____ the gift box.

47. It was a group work project, but one of our friends did nothing to **co**_____ to it. He just shared the expenses and did nothing to finish it.

48. Human beings, whether they are aware of it or not, continually **se**_____ happiness. The aim of life is finding how to be happy.

49. Two liters of milk **co**_____ about sixty grams of protein.

50. If I want to **se**_____ for something on the internet, I usually use Google.

51. In order to be a healthy person, we should **av**_____ eating unhealthy food.

52. Don't worry! When I **re**_____ an e-mail from the professor, I will forward it to you.

53. A young boy and a young girl **bu**_____ into each other and they fall in love immediately. This is a very common scene from traditional Turkish movies.

54. Does the price of the room **in**_____ breakfast? If not, it seems a little bit expensive.

55. Tom is a very helpful, hardworking and smart child. His parents are always **pr**_____ of him.

56. Your new hair style looks **su**_____. I really loved it.

57. I am fed up with his **co**_____ criticism. He always criticizes everybody and complains about everything.

58. I forgot to put the tomatoes in the fridge and they went **ro**_____. They smell really bad.

59. Her face is so **sm**_____ that it looks like a baby's face. She doesn't have any spots, wrinkles or acnes.

60. If a father and a son have the same name, "**ju**_____" is added to son's name to show that he is the younger one.

61. If you want to be a good model for children, be careful about your **be**_____. Don't say "read books" but be a model for them by reading books.

62. For the **ce**_____ of his wife's birthday, he organized a surprise party and bought a nice present.

63. The computer company sent a letter of **ap**_____. They stated that they were sorry for the late service.

64. A **ph**_____ is a group of words that work together to make meaning, but it is not a complete sentence.

65. Psychiatrists, psychologists, social workers and other mental health professionals provide **co**_____ to people who need help psychologically.

66. Nowadays, **we**_____ and fame are very important for young people. They just want to earn a lot of money and to be known by billions of people on social networks.

67. Ag_____ is an important economic resource for Brazil. Tobacco, fruit, cotton, soy, coffee, sugarcane, corn, beans, wheat, and rice are country's major products.

68. Every country in the world has its own system of government. For example, in democratic **re**_____, people vote for people who represent them in the government.

69. It is really nice to work as a **vo**_____ and help people who are in need. Although you don't earn any money, you feel good because you help those people.

70. In the world, there are a lot of people who live in **po**_____. These people do not have any money to pay for basic human needs such as food, clean water, shelter and more.

71. "World **He**_____ List" includes cultural and natural properties which are specified by a UNESCO Committee. We have eleven properties from Turkey on this list and Cappadocia is one of them.

72. She is very hard-working and she knows four languages. She is a great **as**_____ to the company. If she leaves her job, the company will have problems.

73. What is more important for being successful, **in**_____ or motivation? I mean, do we need to have the ability to learn or be eager to learn?

74. Tom's stomach is like a bottomless **pi**_____. It should be deep place which cannot be filled because he is always hungry.

75. I think the new TV program has a lot of **au**_____. All of my friends watch it and they even talk about it every day.

76. My aunt has never got married because her father didn't give **co**_____ to her marriage. He wanted her to live with him forever.

77. We should **sp**_____ the date and time of the next meeting. If it is not stated clearly, people can make plans and it gets really difficult for us to get together again.

78. The new part of the museum should be large enough to **ex**_____ several huge dinosaur skeletons.

79. After two hours, the animal control team managed to **cap**_____ the animal which escaped from the zoo and put it back in its cage.

80. I have been trying to solve a maths problem for ten minutes. I am stuck because I forgot the formula and I have to remember it to **pr**_____. If not, I can't find the answer.

81. Last week, we had a class **de**_____ on the use of smart phones at school and our team won it. We persuaded our friends and the teacher that it should be banned to use them at school.

82. Do you have to **pe**_____ in blaming yourself for what happened? Stop doing it; it was not your fault!

83. Many drivers usually tend to **ex**_____ the speed limit and driving too fast is one of the main reasons of accidents.

84. In a paper towel commercial, elephants are used to show how the paper towels **ab**_____ water and make everywhere dry.

85. I don't know exactly, but the **ap**_____ number of the students in the class was twenty-five.

86. The job requires **pr**_____ experience in advertising. As you have worked for an advertising company before, I believe that you can easily get this job.

87. He makes **fr**_____ visits to Japan on business. He goes there three times a month.

88. What he said yesterday is not **co**_____ with what he had said last week. It is really difficult to believe what he says.

89. Yesterday, I met one of my **fo**_____ students. He said that he graduated from university and started to work as an engineer.

90. Tom loves Mary, but the feeling is not **mu**_____. Unfortunately, Mary is in love with someone else.

APPENDIX-D: Receptive Knowledge of Collocations Test

Değerli katılımcılar,
Bu test (Receptive Knowledge of Collocations Test), birlikte kullanılan kelimeler ile ilgili algısal bilginizi ölçmeyi amaçlamaktadır. Verilen cümleleri okuyarak boşluğa hangi seçenekteki sözcüğün geleceğine karar veriniz.

1. In my spare time, I really like to _____ books and enjoy the story.
a) have **b)** read
c) return **d)** check

2. I don't usually _____ television, because I can't find any interesting programs on TV.
a) turn **b)** open
c) look **d)** watch

3. My grandparents don't like e-mails or messages, so I _____ letters to them. They become really happy when they receive my letters.
a) stop **b)** read
c) write **d)** get

4. Do NOT _____ ideas from other people when you are doing your homework. Use your own ideas.
a) steal **b)** take
c) talk **d)** change

5. While studying, I don't want to let anybody come in and make noise, so I usually _____ the door of my room.
a) open **b)** have
c) lock **d)** break

6. You should _____ note of the exam date because it is very important for you.
a) write **b)** buy
c) send **d)** take

7. For finding a well-paid job, the first thing you have to do is to _____ school. As a student, you can just find a low-paid part-time job.
a) finish **b)** go
c) enter **d)** stop

8. I can _____ hair. If you want, I can do it for you. You don't need to go to the hairdresser.
a) remove **b)** cut
c) wear **d)** lose

9. I usually _____ water after I eat ice-cream for not getting sick.

a) take **b)** bring

c) drink **d)** boil

10. Everybody can _____ mistakes; it is something normal for human beings. Don't feel sorry for that.

a) cause **b)** do

c) perform **d)** make

11. I really get angry when people _____ their nose during an exam because I can't concentrate on questions.

a) blow **b)** tidy

c) pull **d)** push

12. People believe that their dreams come true on their birthdays so they _____ a wish.

a) ask **b)** make

c) request **d)** want

13. As there were a lot of questions about eating habits, the professor told that he would _____ the issue the following week.

a) take **b)** let

c) address **d)** leave

14. You had better _____ a doctor for your never ending headache.

a) see **b)** go

c) seem **d)** need

15. If my boyfriend does not show his love to me, it can _____ the question whether he does not love me.

a) ask **b)** raise

c) answer **d)** reply

16. He always wonders if it is possible to _____ money without working.

a) cost **b)** pay

c) win **d)** make

17. If you make a promise you should keep it; you should not _____ your promise.

a) change **b)** stop

c) fail **d)** break

18. People usually _____ the ring on the fourth finger of their left hand when they get married.

a) put **b)** hang

c) wear **d)** take

19. Although she is interested in basketball, she doesn't _____ sports. She says she doesn't have time.

a) play **b)** perform

c) make **d)** fulfill

20. If you have a toothache, you should take a painkiller to _____ the pain in a short period of time.

a) suffer **b)** manage

c) feel **d)** end

21. The teacher asked a/an _____ question and I couldn't answer it. It was really hard to answer.

a) easy **b)** difficult

c) big **d)** beautiful

22. When she was a _____ girl, she dreamed of becoming a ballerina.

a) little **b)** mini

c) junior **d)** short

23. I try to eat less and exercise regularly, but I can't lose weight. It is a _____ problem for me.

a) deep **b)** large

c) huge **d)** big

24. We enjoyed the _____ meal that our friend cooked for us and then we went on studying.

a) good **b)** beautiful

c) delicious **d)** small

25. Although he is a/an _____ person and it is his first job, his boss thinks that he is really successful.

a) small **b)** experienced

c) young **d)** little

26. We wanted to stay at that hotel for one night, but we couldn't find a/an _____ room. It was full.

a) free **b)** empty

c) light **d)** blank

27. It is not a good idea to keep _____ animals in zoos because it is better for them to live in their habitat.

a) wild **b)** pet

c) dead **d)** social

28. Just give me a _____ answer, do you love me or not?

a) little **b)** minimum

c) small **d)** short

29. It is sometimes difficult to understand the teacher because of the _____ noise in the classroom.

a) high **b)** tall

c) big **d)** loud

30. It is my _____ chance to pass the exam; otherwise I will have to leave school and start working.

a) last **b)** first

c) final **d)** late

31. Researchers found that there is a positive correlation between stress level and _____ health.

a) full **b)** terrible

c) poor **d)** rich

32. As my sister is always on a diet, she never drinks _____ milk, she prefers fat free milk.

a) fresh **b)** whole

c) oily **d)** fatty

33. I don't have a _____ name, but most of my friends have, like my best friend Ayşe Naz.

a) last **b)** huge

c) middle **d)** full

34. It is not a good idea to tell _____ jokes to children who are under 18.

a) dirty **b)** bad

c) poor **d)** ugly

35. We decided to go out and get some _____ air because we were at home for two days.

a) beautiful **b)** open

c) neat **d)** fresh

36. The only _____ drink I prefer with fast food is cola. I know it is unhealthy, but I like it.

a) fast **b)** soft

c) hard **d)** warm

37. It started as a _____ rain, but in a short period of time it became a flash flood.

a) friendly **b)** polite

c) kind **d)** gentle

38. I will go from Rome to London and come back just in two days. It will be a _____ trip and I will get extremely tired.

a) fast **b)** round

c) hard **d)** regular

39. As it is difficult to realize _____ ice, drivers should be very careful in winter in order to avoid accidents.

a) hidden **b)** dark

c) black **d)** blue

40. If you tell a lie to me, you can't say that it is a/an _____ mistake. No, I can't forgive you!

a) honest **b)** cheap

c) small **d)** tiny

41. I generally listen to classical music in order to _____ my stress.

a) decrease **b)** break

c) kill **d)** reduce

42. Don't _____ the bell; use your own keys to open the door. I'm very busy with the housework.

a) play **b)** ring

c) steal **d)** push

43. I know it is a very difficult one, but you are studying hard so you will _____ that exam.

a) take **b)** skip

c) pass **d)** achieve

44. After you _____ the mission, you will get 6250 dollars, and unlock the next mission.

a) complete **b)** carry

c) finish **d)** fail

45. I really want to be fit this summer. I will _____ my goal if I lose five kilos.

a) reach **b)** arrive

c) gain **d)** make

46. They tried to _____ evidence to show that he was guilty, but they could not prove it.

a) detect **b)** get

c) find **d)** prove

47. If you sleep now, you might _____ the opportunity to watch the Oscar show.

a) forget **b)** miss

c) escape **d)** waste

48. Would you like to _____ advice to people who want to become a successful musician? What should they do?

a) pass **b)** bring

c) deliver **d)** give

49. When deciding on the hotel, he always chooses the ones where he can _____ golf. It's his favorite sport.

a) have **b)** do

c) play **d)** go

50. He is a romantic person. He always wants to _____ poems aloud to his girlfriend.

a) have **b)** read

c) study **d**) announce

51. The teacher clapped her hands to _____ attention of the students who were talking to each other.

a) pull **b)** want

c) need **d)** call

52. Just calm down, think about the details and _____ a decision about the new job offer.

a) make **b)** give

c) arrive **d)** have

53. I usually _____ a taxi if I am late for work and it costs me a lot.

a) twist **b)** have

c) take **d)** use

54. We haven't finished the project yet, but we have managed to _____ progress.

a) make **b)** watch

c) take **d)** have

55. In order to _____ muscles, some people drink protein shakes before or after workout.

a) make **b)** relax

c) do **d)** build

56. She plans to _____ the University of Michigan after graduating from high school.

a) go **b)** attend

c) study **d)** apply

57. Max is really bad at playing football. He can't _____ any goals.

a) score **b)** throw

c) do **d)** shoot

58. I hope the young tree in our garden can _____ root easily and grow up in a short period of time.

a) put **b)** release

c) take **d)** make

59. The president of the university is going to _____ a speech on the opening ceremony of the new academic year.

a) speak **b)** deliver

c) do **d)** tell

60. You can guess the meaning of an unknown word by finding which other words in the sentence _____ a clue to the meaning of it.

a) show **b)** lead

c) put **d)** provide

61. Some people believe that _____ technology has made our lives easier, but we have become lazier.

a) modern **b)** last

c) past **d)** old

62. He has to find a part-time job because his family's _____ income is not enough to let him study without working.

a) tiny **b)** below

c) low **d)** short

63. The _____ purpose of ice bucket challenge was to raise awareness for a disease.

a) same **b)** basic

c) essential **d)** main

64. Two years ago, she lost her memory in a/an _____ accident and she still can't remember anything about her past.

a) terrific **b)** terrible

c) scary **d)** horrible

65. Smoking is a _____ habit and young people shouldn't even try it.

a) poor **b)** ugly

c) terrible **d)** bad

66. If a country is rich and its people have enough money to live on, it shows that this country has a/an _____ economy.

a) intense **b)** powerful

c) strong **d)** heavy

67. I won't be here for one month because I will go on a _____ journey. I will miss you so much.

a) long **b)** tall

c) far **d)** high

68. He is really good at literature. He knows all the _____ poets of the world literature and their poems.

a) strong **b)** famous

c) big **d)** private

69. She has the chance to eat _____ fruit because she has a big garden and there are many fruit trees in it.

a) junior **b)** young

c) fresh **d)** new

70. Amy put a _____ towel on her baby's forehead to reduce her high fever.

a) watery **b)** wet

c) hot **d)** juicy

71. William normally comes home from work in twenty minutes. However, yesterday, he could come in two hours because of _____ traffic.

a) slow **b)** serious

c) high **d)** heavy

72. The store sells everything from sports clothes to _____ fashion. I mean you can find not only sneakers, but also designers' clothes there.

a) high **b)** late

c) luxury **d)** heavy

73. He wants to have a career in _____ trade, so that he can help his father sell their products to other countries.

a) strange **b)** outer

c) external **d)** foreign

74. In Turkish culture, we celebrate the first tooth of a baby and this ceremony is known as "diş buğdayı". It is not something new like baby shower, but it is a _____ tradition.

a) prior **b)** tall

c) long **d)** high

75. It is said that _____ chocolate, which has high cocoa content, can improve health and lower the risk of heart disease.

a) dark **b)** light

c) thick **d)** strong

76. Alex and Diana are both talkative and outgoing. They get on well with each other. They are a _____ match.

a) complete **b)** perfect

c) exact **d)** full

77. I'm Asian and I have a really _____ accent. People usually cannot understand what I am saying when I speak in English.

a) heavy **b)** dark

c) thick **d)** extreme

78. If Turkish sarma and dolma are cooked with olive oil, they are consumed as a _____ dish. However, if meat is included in them, they become main dishes.

a) side **b)** secondary

c) light **d)** warm

79. I couldn't sleep the whole night because I had a/an _____ stomach.

a) sad **b)** sorry

c) unhappy **d)** upset

80. Tim and John are my _____ cousins because their mother is my mother's sister.

a) closed **b)** first

c) immediate **d)** second

81. My parents don't let me use social media now. They told me that they will _____ the ban when I get 15.

a) raise **b)** take

c) lift **d)** break

82. When I was a high school student, my parents didn't use to ____ permission to stay out late. I had to be home before 8.00p.m.

a) allow **b)** give

c) let **d)** pass

83. If you want to _____ the prize, you have to listen to the questions carefully and find the correct answers.

a) win **b)** earn

c) gain **d)** have

84. We should immediately _____ a solution to the problem of global warming before it is too late.

a) discover **b)** obtain

c) invent **d)** find

85. My friends never _____ defeat when they lose a game and they always argue. I hate playing games with them.

a) accept **b)** agree

c) confess **d)** approve

86. We need to produce and _____ goods to the rest of the world, instead of buying them from other countries.

a) move **b)** send

c) sell **d)** deal

87. I usually mix baking soda and vinegar, and _____ the mixture in a bucket of water. I use it for cleaning the house because I am allergic to detergent.

a) empty **b)** pour

c) spill **d)** discharge

88. To _____ conflict, we try to buy the same clothes to the twins. If not, they start to argue.

a) prohibit **b)** make

c) refuse **d)** avoid

89. She says she wants to _____ a novel in the future. I hope she can't, because she doesn't know language rules. Most of her sentences are ungrammatical.

a) note **b)** type

c) write **d)** broadcast

90. We have to _____ the data of the survey to see what our students need to learn for improving their English level.

a) investigate **b)** work

c) scan **d)** analyze

91. He did not want to live anymore and attempted to _____ suicide. Fortunately, he was saved.

a) kill **b)** commit

c) make **d)** murder

92. I have to _____ wealth in a short period of time to get married to my love because her father does not let her marry a man who is not rich.

a) create **b)** make

c) save **d)** get

93. That exam was very important for her because it was the only way to _____ admission to that school.

a) win **b)** get

c) make **d)** gain

94. There are many articles which _____ emphasis on health and they suggest many things to do for having a healthy lifestyle.

a) place **b)** supply

c) set **d)** take

95. It seems impossible for our company to _____ a profit this year. It costs a lot to buy goods, but we can't sell them at a high price.

a) do **b)** have

c) make **d)** get

96. We should _____ conclusions from our past experiences and plan our future accordingly.

a) take **b)** draw

c) get **d)** receive

97. Her father had a heart attack last week. It was really difficult to find a doctor who could _____ the surgery because it was risky.

a) make **b)** take

c) perform **d)** practice

98. It is not clear who is going to _____ victory. Both of the players show that they are determined and don't want to give up.

a) claim **b)** get

c) beat **d)** defeat

99. He has had a job interview and a jury of three people is going to _____ his fate. If he gets the job, he will get married.

a) draw **b)** agree

c) approve **d)** decide

100. In a football match, the referee has to _____ a coin to determine which team will start the match.

a) throw **b)** flip

c) blow **d)** jump

101. As a result of global warming, _____ temperature in cities will become a serious problem and it will be really difficult to breathe.

a) hot **b)** high

c) tall **d)** over

102. We are expected to write a _____ description of our dream house, it will be just one paragraph.

a) brief **b)** small

c) little **d)** true

103. The _____ fee of the private schools is so high that I am planning to send my daughter to a state school.

a) yearly **b)** free

c) annual **d)** great

104. Alex used to be very rich. However, he had to sell his _____ jet because of financial problems.

a) individual **b)** special

c) specific **d)** private

105. Gaining weight is an _____ consequence of aging, less exercise and unhealthy eating habits. If you eat unhealthy food and don't exercise, you become fat.

a) unavoidable **b)** inevitable

c) urgent **d)** inescapable

106. During the festival, there are a lot of _____ concerts in our city. We have fun without paying any money.

a) cheap **b)** empty

c) expensive **d)** free

107. For applying M.A. programs, you need to submit your diploma or a/an _____ document that shows you graduated from university. It should be signed by the president of the university.

a) official **b)** formal

c) informal **d)** illegal

108. He lost his whole family in a car accident. He has nobody, except for a few _____ relatives who live in other cities.

a) remote **b)** far

c) distant **d)** away

109. His teacher always punishes him because of his _____ behaviors. He is always rude to his friends and teachers and he does not obey the school rules.

a) ugly **b)** bad

c) poor **d)** wrong

110. For protecting her children and feeding them with healthy food, she tries to find the products of _____ agriculture.

a) organic **b)** good

c) old **d)** chemical

111. People tend to laugh in serious situations when they are anxious. Nothing can explain it, it is just a/an _____ laughter.

a) angry **b)** mad

c) strange **d)** nervous

112. My friend is a writer and she prefers _____ transport. She says that when she gets on a bus, she has the chance to observe different people and get new ideas for her new stories.

a) whole **b)** collective

c) public **d)** neat

113. He started to wear glasses because he had _____ vision.

a) rich **b)** poor

c) bad **d)** little

114. They decided to cut down a lot of trees for building a new shopping mall, but because of the _____ criticism, they changed their plan.

a) dense **b)** intense

c) strong **d)** powerful

115. There is a/an _____ contrast between the lives of rich and poor people. Their lives and preferences are very different.

a) sharp **b)** apparent

c) obvious **d)** real

116. She wanted to whisper in my ear, but it was a _____ whisper and everybody heard what she said.

a) soft **b)** low

c) high **d)** loud

117. It is obvious that small stores are becoming targets of criminal gangs. They see such places as a _____ target for easy money.

a) good **b)** hard

c) soft **d)** clear

118. Compared to men, women are more likely to be injured, or killed by _____ violence, regardless of their ethnicity, race, or socio-economic status.

a) domestic **b)** familial

c) racial **d)** administrative

119. Although he won the elections, it was a/an _____ victory for him because he received fewer votes than he expected.

a) small **b)** unimportant

c) tiny **d)** narrow

120. He does not have the _____ courage to say that what his friends do is wrong. He can't state what he really thinks because he is afraid of losing his friends.

a) civil **b)** moral

c) big **d)** real

APPENDIX-E: Productive Knowledge of Collocations Test

Değerli katılımcılar,

Bu test (Productive Knowledge of Collocations), birlikte kullanılan kelimelerle ilgili üretimsel bilginizi test etmeyi amaçlamaktadır. Aşağıda verilen cümlelerdeki boşluklar bir kelimeden oluşmaktadır. Her kelimenin ilk iki harfi verilmiştir. Cümleleri okuyarak ilk iki harfi verilen kelimeyi bulup boşlukları tamamlayınız. Bulacağınız kelimelerden bazıları sadece üç harften oluşabilir.

1. You should **re**_____ books to improve your vocabulary knowledge.
2. I did not use to **wa**_____ television frequently when I was a child, because I spent most of my time playing with my friends in the park.
3. I used to **wr**_____ letters to my grandparents when I was a child, but now I don't.
4. The director purposely did not watch the other films, because he did not want to **st**_____ ideas and also he wanted to be as original as possible.
5. Don't forget to **lo**_____ the door before you leave the house because there are a lot of burglars nowadays.
6. I think I should **ta**_____ note of the name of the book and the author, if not, I can forget.
7. It is very difficult for you to **fi**_____ school because you don't study and you even don't go to school.
8. In Hawaii, there is a new law that a barber cannot **cu**_____ hair until he's had 1,500 hours of training.
9. Don't forget to **dr**_____ water a lot in order to stay healthy.
10. If you don't want to lose your job, you shouldn't **ma**_____ a mistake any more.
11. I am sorry, but I have to **bl**_____ my nose frequently because I have the flu.
12. On the New Year's Eve, she never forgets to thank to her past years and **ma**_____ a wish for the New Year.

13. The president told that they would **ad**_____ the issue of his unemployment next week. They will discuss this problem and find ways to reduce it.

14. He needs to **se**_____ a doctor for his stomachache immediately. He can't eat anything.

15. The explanation of the boss about the financial problems can **ra**_____ the question whether the workers will lose their job.

16. Nowadays, it is very popular to **ma**_____ money with your video camera or smart phone as a vlogger or YouTuber. In that way, you can earn a lot of money.

17. He promised not to smoke and he didn't **br**_____ his promise. He does not smoke any more.

18. He likes to **we**_____ a ring on each of his fingers, he looks like Barış Manço.

19. I **pl**_____ sports regularly to stay healthy and to feel better.

20. I don't know how to **ma**_____ the pain when I have migraine attacks. Painkillers don't work.

21. In the test, there was a **di**_____ question and I couldn't answer it.

22. In the toy shop, there was a **li**_____ girl who wanted her mum to buy her a doll.

23. Although I go to bed early, I can't wake up early in the morning. It is a **bi**_____ problem for me because I have morning classes.

24. I think my mother is one of the best chefs in the world. She cooks really **de**_____ meals.

25. As a **yo**_____ person, she is aware of the fact that she should show respect to old people.

26. It was an **em**_____ room when we moved here, but now it is full of furniture.

27. You have to be careful in the forest as you can come across with a **wi**_____ animal.

28. Give **sh**_____ answers to these questions. Write just one or two-words, not a long sentence.

29. I could not sleep well last night because of the **lo**_____ noise coming from the next door.

30. His wife told him that it was his **la**_____ chance to continue their marriage. If he can't find a job, she will get divorced.

31. One of the main reasons of **po**_____ health is unhealthy diet. If you always eat fast food, you can't be healthy.

32. People who are on a diet prefer fat-free milk because they believe that **wh**_____ milk has more milk fat and more calories than fat-free milk.

33. OK, your first name is Alex and your family name is Williams. Do you have a **mi**_____ name?

34. The old woman left the show with her grandson because she did not like the comedian's **di**_____ jokes and she didn't want her grandson to listen to them.

35. Farmers are generally very healthy, because they have a healthy diet and get a lot of **fr**_____ air.

36. I don't prefer **so**_____ drinks like cola because of their high calories, but I prefer mineral water.

37. It was just a **ge**_____ rain and lasted just five minutes. We did not get wet.

38. I don't want to come back from Paris, but unfortunately it is a **ro**_____ trip and I will be back in June.

39. Every year, a lot of car accidents occur in winter as a result of **bl**_____ ice. We should be more careful while driving in winter because we can't realize the ice on the roads.

40. Don't worry about it! It's an **ho**_____ mistake and your friends will forgive you.

41. I don't know how to **re**_____ my stress, I am very nervous because of my exams.

42. If you **ri**_____ the bell, Martha gets really angry because her baby is sleeping.

43. Robert took it for the third time but still couldn't **pa**_____ the exam.

44. In this game, players must **co**_____ missions like collecting coins and attacking enemies.

45. He wants to become a successful doctor. He works hard to **re**_____ his goal.

46. Nobody believed that he was innocent until he could **fi**_____ evidence to prove that.

47. You shouldn't **mi**_____ the opportunity to go abroad with Erasmus program without paying any money.

48. My grandparents always **gi**_____ advice to me about how to be a good person.

49. I really like to **pl**_____ golf, but there is not a golf course in my city.

50. The teacher asked him to **re**_____ the poem aloud and his friends listened to him carefully.

51. We decided to start a campaign to **ca**_____ attention to global warming.

52. You have to **ma**_____ a decision! Will you go on working for that company or look for a new job?

53. This morning, I missed the bus and decided to **ta**_____ a taxi instead of waiting for the next bus.

54. At the beginning, it seemed impossible to learn a new language on my own, but it is good to see that I **ma**_____ progress day by day. I have learnt a lot of things.

55. Some people spend hours in gyms because they want to **bu**_____ muscles.

56. It is my dream to **at**_____ the University of Cambridge and study Genetics.

57. It was hard for the other team to **sc**_____ goals, because our goalkeeper was perfect in that match.

58. I think the seed I planted last month started to **ta**_____ root, it is growing up.

59. A famous professor is going to **de**_____ a speech on financial issues at the conference hall tomorrow.

60. The police are trying to find something that can **pr**_____ a clue about the murder. They still don't know anything about the murderer and how s/he murdered the old man.

61. With the help of **mo**_____ technology, communication in the 21st century has changed a lot. We can see and talk to people at the same time even when they are in another country.

62. His **lo**_____ income was not enough to support the whole family so he decided to find a new job and earn more money.

63. The **ma**_____ purpose of basketball game is to make a goal by shooting the ball through the basket or hoop.

64. When he was a child, he had a **te**_____ accident and lost one of his legs.

65. One of his **ba**_____ habits is that he is always late and I can't stand waiting for someone more than ten minutes.

66. For having a **st**_____ economy, a country should be able to produce its own goods independently.

67. After a **lo**_____ journey, we could turn back to our house safely.

68. Do you know the poems of **fa**_____ poet Can Yücel?

69. For being healthy, you should eat **fr**_____ fruit and vegetables every day.

70. After the shower, my roommate throws her **we**_____ towel on my bed and I hate it.

71. I'm afraid I'll be late for the meeting because of **he**_____ traffic. My boss will get angry.

72. She is not a rich person, but she prefers spending all her salary on **hi**_____ fashion.

73. For the economy of our country, **fo**_____ trade is very important. We should be able to sell our goods to other countries.

74. We have a **lo**_____ tradition of visiting our grandparents on our religious holidays.

75. I don't prefer **da**_____ chocolate; I like milk chocolate with nuts.

76. If you are with someone who makes you feel good about yourself, it can be said that you are a **pe**_____ match.

77. From their **th**_____ accent, it was not difficult to understand that they were Indian.

78. French fries and rice are among the most popular **si**_____ dishes that are served with main course.

79. Some kinds of herbal tea can help you feel better if you have an **up**_____ stomach.

80. Mary is not my **fi**_____ cousin because she is the daughter of my mother's cousin.

81. Many parents ask schools to **li**_____ the ban on phones at school because they want to call their children during the day.

82. If they **gi**_____ permission, we will organize a charity event on the campus and raise money for the students who need help.

83. In this game show, if you answer ten questions correctly, you will **wi**_____ the prize.

84. In order to **fi**_____ a solution to our problem, the first and the most important thing to do is to know exactly what the problem is.

85. You can't always be the winner, you may sometimes lose. The important thing is that if you lose, you have to **ac**_____ defeat.

86. Turkey is a country which can produce and **se**_____ goods such as tobacco, sugar beets, olives and nuts to other countries.

87. In order to make omelette, mix eggs, salt and pepper in a bowl and **po**_____ the mixture in a frying pan.

88. In order to **av**_____ conflict, I don't usually talk to my wife when she is angry.

89. The author went to Africa and spent three years there to **wr**_____ a novel. He wanted to reflect the real life there in his book.

90. I have to **an**_____ the data statistically to see the relationship between age and reading habit.

91. People didn't understand why she wanted to **co**_____ suicide because she was a famous, rich and beautiful woman.

92. I don't know how to **cr**_____ wealth because I spend all my salary in one month and can't save any money.

93. In order to **ga**_____ admission to M.A. programs in Turkey, you need the scores of some exams like ALES.

94. While learning a new language, most learners **pl**_____ emphasis on the grammar of the language and ignore the skills like listening and speaking.

95. The purpose of a business is to **ma**_____ a profit. You shouldn't sell your products if you don't earn any money.

96. The information you have given is not enough to **dr**_____ the conclusion that you were not there at the time of accident. How can you prove that?

97. They are successful surgeons. They are a team and they always **pe**_____ surgeries successfully. Their patients get well in a short period of time.

98. I need some advice to be a better chess player and to **cl**_____ victory in the match against my friends.

99. This exam will **de**_____ her fate. If she passes it, she will become a teacher.

100. Both Carol and I were tired at the end of the day. When we got home, we had to **fl**_____ a coin to decide who would make dinner.

101. It is really difficult to sleep here in summer because of **hi**_____ temperature. It is generally 30°C at night.

102. The lecturer started the course with a **br**_____ description of the things we had to do for passing that course.

103. You have to pay the **an**_____ fee for your credit card. It is automatically charged once a year to your credit card account for the benefits that come with that credit card.

104. Her family is very rich. They even have a **pr**_____ jet and she can go abroad whenever she wants.

105. If you don't attend your classes regularly and don't study hard, you will fail your exams. It is an **in**_____ consequence.

106. It was a **fr**_____ concert. It was good that we didn't pay for it, but it was very crowded.

107. An identity card is an **of**_____ document with your name, date of birth, photograph, or other information on it that proves who you are.

108. We have the chance to meet our **di**_____ relatives in wedding ceremonies. In every ceremony, we meet a new one because my parents have a lot of relatives.

109. He does not have a lot of friends because of his **ba**_____ behaviors. He is always rude and shouts at people around him.

110. It seems to be a good idea to produce chemical-free products but some experts believe that **or**_____ agriculture can't produce enough food to feed today's world.

111. I always suffer from **ne**_____ laughter when I feel anxious. When I am presenting to my class, meeting new colleagues, or asking a girl out, I start to laugh.

112. We should prefer walking, cycling or **pu**_____ transport instead of driving. In that way, we can prevent air pollution and also have the chance to meet new people.

113. Most people need reading glasses when they become old. They can't read easily because of **po**_____ vision.

114. As a result of the **st**_____ criticism, the government decided to cancel their tax increase plan.

115. There is a **sh**_____ contrast between his past and present comments about the government. It is really difficult to understand his political view.

116. The baby was sleeping in the room, so he whispered in my ear. Although it was a **lo**_____ whisper, I didn't understand what he said.

117. Crowded places are **so**_____ targets for pickpockets. They steal money from people's pockets or bags easily.

118. Do_____ violence is not only physical and its purpose is to gain power and control over a husband/wife, partner, girl/boyfriend or family member.

119. Although the political campaign of the president was supported by a lot of people, he could win a **na**_____ victory. He did not receive as many votes as he predicted.

120. He was the only person who had the **mo**_____ courage to say what the boss asked them to do was not ethical.

APPENDIX-F: Language Background and Use Questionnaire

(Adapted from Fernández & Schmitt, 2015)

In order to help us to better understand, interpret and classify your answers, would you mind telling us more about your personal and language learning background? Please provide the following information by ticking (✓) in the box or writing your response in the space.

Gender: ___ Male ___ Female

Age: _____

1. How many years have you been studying English? _____

2. Have you spent a long period (3 months or more) in English-speaking countries?

__ Yes __ No

3. How much time per week do you spend…:

- reading books, magazines and newspapers in English, or visiting English language websites? __ 0–1 hour __ 1–2 h. ___ 2+ h.
- watching films, videos or TV in English? __ 0–1 hour __ 1–2 h. __ 2+ h.
- listening to music in English? __ 0–1 hour __ 1–2 h. __ 2+ h.
- using English to keep in contact with people? (Facebook, MySpace, Twitter, Skype, email, SMS, etc.): __ 0–1 hour __ 1–2 h. __ 2+ h.

APPENDIX-G: Information of Collocations Investigated in the Study

		Verb	Noun	Node Word Frequency	Collocational Frequency	Mutual Information Score
Congruent	1	READ (1K)	BOOK (1K)	1,000	2519	5.35
	2	WATCH (1K)	TELEVISION(1K)	1,000	564	5.97
	3	WRITE (1K)	LETTER (1K)	1,000	746	6.27
	4	STEAL (1K)	IDEA(1K)	1,000	54	3.85
	5	LOCK (1K)	DOOR (1K)	1,000	402	5.99
	6	TAKE (1K)	NOTE (1K)	1,000	883	3.87
	7	FINISH (1K)	SCHOOL (1K)	1,000	498	3.82
	8	CUT (1K)	HAIR (1K)	1,000	710	4.1
	9	DRINK (1K)	WATER (1K)	1,000	1007	5.21
	10	MAKE (1K)	MISTAKE (1K)	1,000	2529	5.87
Incongruent	11	BLOW (1K)	NOSE (1K)	1,000	143	6.35
	12	MAKE (1K)	WISH (1K)	1,000	224	4.32
	13	ADDRESS (1K)	ISSUE (1K)	1,000	1064	5.54
	14	SEE (1K)	DOCTOR (1K)	1,000	1196	3.33
	15	RAISE (1K)	QUESTION(1K)	1,000	452	4.25
	16	MAKE (1K)	MONEY (1K)	1,000	6210	3.95
	17	BREAK (1K)	PROMISE (1K)	1,000	74	3.12
	18	WEAR (1K)	RING (1K)	1,000	56	4.14
	19	PLAY (1K)	SPORTS(1K)	1,000	318	4.48
	20	MANAGE (1K)	PAIN (1K)	1,000	77	4.44
		Adjective	**Noun**	**Node Word Frequency**	**Collocational Frequency**	**Mutual Information Score**
Congruent	21	DIFFICULT (1K)	QUESTION (1K)	1,000	420	4.02
	22	LITTLE (1K)	GIRL (1K)	1,000	9350	7.15
	23	BIG (1K)	PROBLEM (1K)	1,000	2149	4.84
	24	DELICIOUS (1K)	MEAL (1K)	1,000	75	8.22
	25	YOUNG (1K)	PERSON (1K)	1,000	1185	4.55
	26	EMPTY (1K)	ROOM (1K)	1,000	397	4.93
	27	WILD (1K)	ANIMAL (1K)	1,000	462	7.63
	28	SHORT (1K)	ANSWER (1K)	1,000	575	5.41
	29	LOUD (1K)	NOISE (1K)	1,000	288	8.5
	30	LAST (1K)	CHANCE (1K)	1,000	1504	4.72
Incongruent	31	POOR (1K)	HEALTH (1K)	1,000	642	4.78
	32	WHOLE (1K)	MILK (1K)	1,000	495	6.35
	33	MIDDLE (1K)	NAME (1K)	1,000	529	4.28
	34	DIRTY (1K)	JOKE (1K)	1,000	68	7.21
	35	FRESH (1K)	AIR (1K)	1,000	5906	8.75
	36	SOFT (1K)	DRINK (1K)	1,000	569	8.04
	37	GENTLE (1K)	RAIN (1K)	1,000	53	6.42
	38	ROUND (1K)	TRIP (1K)	1,000	612	7.47
	39	BLACK (1K)	ICE (1K)	1,000	182	3.36
	40	HONEST (1K)	MISTAKE (1K)	1,000	128	7.28

		Verb	Noun	Node Word Frequency	Collocational Frequency	Mutual Information Score
Congruent	**41**	REDUCE (2K)	STRESS (2K)	2,000	288	6.97
	42	RING (1K)	BELL (2K)	2,000	443	7.63
	43	PASS (1K)	EXAM (2K)	2,000	59	5.75
	44	COMPLETE (1K)	MISSION (2K)	2,000	117	3.91
	45	REACH (1K)	GOAL (2K)	2,000	378	5.3
	46	FIND (1K)	EVIDENCE (2K)	2,000	391	3.28
	47	MISS (1K)	OPPORTUNITY (2K)	2,000	207	4.35
	48	GIVE (1K)	ADVICE (2K)	2,000	288	4.67
	49	PLAY (1K)	GOLF (2K)	2,000	904	6.87
	50	READ (1K)	POEM (2K)	2,000	247	5.64
Incongruent	**51**	CALL (1K)	ATTENTION (2K)	2,000	662	4.42
	52	MAKE (1K)	DECISION (2K)	2,000	4228	4.91
	53	TAKE (1K)	TAXI (2K)	2,000	114	3.78
	54	MAKE (1K)	PROGRESS (2K)	2,000	580	4.1
	55	BUILD (1K)	MUSCLES (2K)	2,000	176	6.87
	56	ATTEND (2K)	UNIVERSITY (2K)	2,000	305	4.6
	57	SCORE (2K)	GOAL (2K)	2,000	81	4.38
	58	TAKE (1K)	ROOT (2K)	2,000	454	5.52
	59	DELIVER (2K)	SPEECH (2K)	2,000	113	5.26
	60	PROVIDE (2K)	CLUE (2K)	2,000	54	4.56
		Adjective	**Noun**	**Node Word Frequency**	**Collocational Frequency**	**Mutual Information Score**
Congruent	**61**	MODERN (2K)	TECHNOLOGY (2K)	2,000	639	6.33
	62	LOW (1K)	INCOME (2K)	2,000	809	6.82
	63	MAIN (1K)	PURPOSE (2K)	2,000	473	6.69
	64	TERRIBLE (1K)	ACCIDENT (2K)	2,000	153	7.18
	65	BAD (1K)	HABIT (2K)	2,000	323	7.18
	66	STRONG (1K)	ECONOMY (2K)	2,000	322	4.67
	67	LONG (1K)	JOURNEY (2K)	2,000	680	5.85
	68	FAMOUS (2K)	POET (2K)	2,000	56	6.46
	69	FRESH (1K)	FRUIT (2K)	2,000	831	8.63
	70	WET (1K)	TOWEL (2K)	2,000	106	8.63
Incongruent	**71**	HEAVY (1K)	TRAFFIC(2K)	2,000	263	6.69
	72	HIGH (1K)	FASHION (2K)	2,000	178	3.84
	73	FOREIGN (2K)	TRADE (2K)	2,000	538	5.91
	74	LONG (1K)	TRADITION (2K)	2,000	700	5.28
	75	DARK (1K)	CHOCOLATE (2K)	2,000	558	7.81
	76	PERFECT (1K)	MATCH (2K)	2,000	433	7.48
	77	THICK (1K)	ACCENT (2K)	2,000	93	7.86
	78	SIDE (1K)	DISH (2K)	2,000	503	6.88
	79	UPSET (2K)	STOMACH (2K)	2,000	143	7.89
	80	FIRST 1*)	COUSIN (2K)	2,000	327	4.48

		Verb	Noun	Node Word Frequency	Collocational Frequency	Mutual Information Score
Congruent	**81**	LIFT (1K)	BAN (3K)	3,000	180	7.6
	82	GIVE (1K)	PERMISSION (3K)	3,000	86	4.4
	83	WIN (1K)	PRIZE (3K)	3,000	230	6.01
	84	FIND (1K)	SOLUTION (3K)	3,000	499	4.31
	85	ACCEPT (1K)	DEFEAT (3K)	3,000	70	6.59
	86	SELL (1K)	GOODS (3K)	3,000	85	5.85
	87	POUR (2K)	MIXTURE (3K)	3,000	245	9.24
	88	AVOID (2K)	CONFLICT (3K)	3,000	126	5.56
	89	WRITE (1K)	NOVEL (3K)	3,000	219	5.16
	90	ANALYZE (3K)	DATA (3K)	3,000	172	6.48
Incongruent	**91**	COMMIT (2K)	SUICIDE (3K)	3,000	1218	11.66
	92	CREATE (2K)	WEALTH (3K)	3,000	84	5.22
	93	GAIN (2K)	ADMISSION (3K)	3,000	79	7.3
	94	PLACE (1K)	EMPHASIS (3K)	3,000	333	4.15
	95	MAKE (1K)	PROFIT (3K)	3,000	746	4.76
	96	DRAW (1K)	CONCLUSION (3K)	3,000	142	6.05
	97	PERFORM (2K)	SURGERY (3K)	3,000	166	6.27
	98	CLAIM (2K)	VICTORY (3K)	3,000	118	5.84
	99	DECIDE (1K)	FATE (3K)	3,000	195	6.92
	100	FLIP (2K)	COIN (3K)	3,000	109	10.09
		Adjective	**Noun**	**Node Word Frequency**	**Collocational Frequency**	**Mutual Information Score**
Congruent	**101**	HIGH (1K)	TEMPERATURE (3K)	3,000	350	5.07
	102	BRIEF (2K)	DESCRIPTION (3K)	3,000	320	8.79
	103	ANNUAL (3K)	FEE (3K)	3,000	343	8.54
	104	PRIVATE (2K)	JET (3K)	3,000	449	7.99
	105	INEVITABLE (3K)	CONSEQUENCE(3K)	3,000	100	9.29
	106	FREE (1K)	CONCERT (3K)	3,000	130	5.26
	107	OFFICIAL (2K)	DOCUMENT (3K)	3,000	68	5.56
	108	DISTANT (3K)	RELATIVE (3K)	3,000	163	7.76
	109	BAD (1K)	BEHAVIOR (3K)	3,000	729	5.55
	110	ORGANIC (3K)	AGRICULTURE (3K)	3,000	103	8.03
Incongruent	**111**	NERVOUS (2K)	LAUGHTER (3K)	3,000	102	7.19
	112	PUBLIC (1K)	TRANSPORT (3K)	3,000	205	5.67
	113	POOR (1K)	VISION (3K)	3,000	51	3.45
	114	STRONG (1K)	CRITICISM (3K)	3,000	73	4.44
	115	SHARP (2K)	CONTRAST (3K)	3,000	747	9.19
	116	LOUD (1K)	WHISPER (3K)	3,000	72	8.32
	117	SOFT (1K)	TARGET(3K)	3,000	50	4.49
	118	DOMESTIC (3K)	VIOLENCE (3K)	3,000	3902	10.25
	119	NARROW (1K)	VICTORY (3K)	3,000	80	5.96
	120	MORAL (3K)	COURAGE (3K)	3,000	207	8.06

APPENDIX-H: Ethics Committee Approval

Tarih: 19.02.2019 10:23
Sayı: 35853172-300-E.00000462476

T.C.
HACETTEPE ÜNİVERSİTESİ
Rektörlük

Sayı : 35853172-300
Konu : Zeynep ÖZDEM ERTÜRK Hk.

EĞİTİM BİLİMLERİ ENSTİTÜSÜ MÜDÜRLÜĞÜNE

İlgi : 14.01.2019 tarihli ve 51944218-300/00000411143 sayılı yazı.

Enstitünüz Yabancı Diller Eğitimi Ana Bilim Dalı İngiliz Dili Eğitimi Bilim Dalı doktora programı öğrencilerinden **Zeynep ÖZDEM ERTÜRK**'ün **Prof. Dr. İsmail Hakkı ERTEN** danışmanlığında yürüttüğü **"Türkiye'de Üniversite Düzeyinde İngilizce Öğrenen Öğrencilerin Algısal ve Üretimsel Eşdizim Bilgisine Etki Eden Faktörler"**başlıklı tez çalışması, Üniversitemiz Senatosu Etik Komisyonunun **22 Ocak 2019** tarihinde yapmış olduğu toplantıda incelenmiş olup, etik açıdan uygun bulunmuştur.

Bilgilerinizi ve gereğini saygılarımla rica ederim.

e-imzalıdır
Prof. Dr. Rahime Meral NOHUTCU
Rektör Yardımcısı

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Duygu Didem İLERİ

APPENDIX-I: Declaration of Ethical Conduct

I hereby declare that…

- I have prepared this thesis in accordance with the thesis writing guidelines of the Graduate School of Educational Sciences of Hacettepe University;
- all information and documents in the thesis/dissertation have been obtained in accordance with academic regulations;
- all audio visual and written information and results have been presented in compliance with scientific and ethical standards;
- in case of using other people's work, related studies have been cited in accordance with scientific and ethical standards;
- all cited studies have been fully and decently referenced and included in the list of References;
- I did not do any distortion and/or manipulation on the data set,
- and **NO** part of this work was presented as a part of any other thesis study at this or any other university.

29 /07/2021

(Signature)
Zeynep ÖZDEM ERTÜRK

APPENDIX-J: Dissertation Originality Report

29/07/2021

HACETTEPE UNIVERSITY

Graduate School of Educational Sciences

To The Department of Foreign Language Education

Thesis Title: Factors Affecting Receptive and Productive Knowledge of Collocations of Tertiary Level Learners of English in Turkey

The whole thesis that includes the *title page, introduction, main chapters, conclusions and bibliography section* is checked by using **Turnitin** plagiarism detection software take into the consideration requested filtering options. According to the originality report obtained data are as below.

Time Submitted	Page Count	Character Count	Date of Thesis Defence	Similarity Index	Submission ID
12/07/2021	261	87615	02/07/2021	18%	1604539487

Filtering options applied:

1. Bibliography excluded
2. Quotes included
3. Match size up to 5 words excluded

I declare that I have carefully read Hacettepe University Graduate School of Educational Sciences Guidelines for Obtaining and Using Thesis Originality Reports; that according to the maximum similarity index values specified in the Guidelines, my thesis does not include any form of plagiarism; that in any future detection of possible infringement of the regulations I accept all legal responsibility; and that all the information I have provided is correct to the best of my knowledge.

I respectfully submit this for approval.

Name Lastname:	Zeynep Özdem Ertürk
Student No.:	N14245048
Department:	Foreign Language Education
Program:	English Language Teaching
Status:	☐ Masters ☒ Ph.D. ☐ Integrated Ph.D.

Signature

ADVISOR APPROVAL

APPROVED
(Prof. Dr. Nuray Alagözlü)

APPENDIX-K: Yayımlama ve Fikrî Mülkiyet Hakları Beyanı

Enstitü tarafından onaylanan lisansüstü tezimin/raporumun tamamını veya herhangi bir kısmını, basılı (kâğıt) ve elektronik formatta arşivleme ve aşağıda verilen koşullarla kullanıma açma iznini Hacettepe Üniversitesine verdiğimi bildiririm. Bu izinle Üniversiteye verilen kullanım hakları dışındaki tüm fikri mülkiyet haklarım bende kalacak, tezimin tamamının ya da bir bölümünün gelecekteki çalışmalarda (makale, kitap, lisans ve patent vb.) kullanım hakları bana ait olacaktır.

Tezin kendi orijinal çalışmam olduğunu, başkalarının haklarını ihlal etmediğimi ve tezimin tek yetkili sahibi olduğumu beyan ve taahhüt ederim. Tezimde yer alan telif hakkı bulunan ve sahiplerinden yazılı izin alınarak kullanılması zorunlu metinlerin yazılı izin alınarak kullandığımı ve istenildiğinde suretlerini Üniversiteye teslim etmeyi taahhüt ederim.

Yükseköğretim Kurulu tarafından yayınlanan **"Lisansüstü Tezlerin Elektronik Ortamda Toplanması, Düzenlenmesi ve Erişime Açılmasına ilişkin Yönerge"** kapsamında tezim aşağıda belirtilen koşullar haricince YÖK Ulusal Tez Merkezi / H.Ü. Kütüphaneleri Açık Erişim Sisteminde erişime açılır.

- Enstitü/Fakülte yönetim kurulu kararı ile tezimin erişime açılması mezuniyet tarihinden itibaren 2 yıl ertelenmiştir. (1)
- Enstitü/Fakülte yönetim kurulunun gerekçeli kararı ile tezimin erişime açılması mezuniyet tarihimden itibaren … ay ertelenmiştir. (2)
- Tezimle ilgili gizlilik kararı verilmiştir. (3)

29 /07 /2021

(imza)

Zeynep ÖZDEM ERTÜRK

"Lisansüstü Tezlerin Elektronik Ortamda Toplanması, Düzenlenmesi ve Erişime Açılmasına İlişkin Yönerge"

(1) Madde 6. 1. Lisansüstü tezle ilgili patent başvurusu yapılması veya patent alma *sürecinin devam etmesi durumunda, tez danışmanının önerisi ve enstitü anabilim dalının uygun görüşü Üzerine enstitü veya fakülte yönetim kurulu iki yıl süre ile tezin erişime açılmasının ertelenmesine karar verebilir.*

(2) Madde 6. 2. *Yeni teknik, materyal ve metotların kullanıldığı, henüz makaleye dönüşmemiş veya patent gibi yöntemlerle korunmamış ve internetten paylaşılması durumunda 3. şahıslara veya kurumlara haksız kazanç; imkânı oluşturabilecek bilgi ve bulguları içeren tezler hakkında tez danışmanın önerisi ve enstitü anabilim dalının uygun görüşü üzerine enstitü veya fakülte yönetim kurulunun gerekçeli kararı ile altı ayı aşmamak üzere tezin erişime açılması engellenebilir.*

(3) Madde 7. *1. Ulusal çıkarları veya güvenliği ilgilendiren, emniyet, istihbarat, savunma ve güvenlik, sağlık vb. konulara ilişkin lisansüstü tezlerle ilgili gizlilik kararı, tezin yapıldığı kurum tarafından verilir*. Kurum ve kuruluşlarla yapılan işbirliği protokolü çerçevesinde hazırlanan lisansüstü tezlere ilişkin gizlilik kararı ise, ilgili kurum ve kuruluşun önerisi ile enstitü veya fakültenin uygun görüşü Üzerine üniversite yönetim kurulu tarafından verilir. Gizlilik kararı verilen tezler Yükseköğretim Kuruluna bildirilir.*
Madde 7.2. *Gizlilik kararı verilen tezler gizlilik süresince enstitü veya fakülte tarafından gizlilik kuralları çerçevesinde muhafaza edilir, gizlilik kararının kaldırılması halinde Tez Otomasyon Sistemine yüklenir*

** Tez danışmanının önerisi ve enstitü anabilim dalının uygun görüşü üzerine enstitü veya fakülte yönetim kurulu tarafından karar verilir.*