VOCABULARY SIZE AND COLLOCATIONAL KNOWLEDGE OF TURKISH EFL LEARNERS

(İNGİLİZCEYİ YABANCI DİL OLARAK ÖĞRENEN TÜRK ÖĞRENCİLERİN KELİME DAĞARCIĞI VE EŞDİZİM BİLGİSİ)

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ABSTRACT

This study aims to investigate the relationship between the receptive vocabulary size, and productive and receptive verb-noun collocational knowledge of Turkish EFL learners. The participants of this large-scale study were 326 high school students in their final year. Data were collected through a vocabulary test, a receptive verb-noun collocation test, and a productive verb-noun collocation test modelled on Gyllstad's receptive verb-noun collocation test. The results showed that the average vocabulary size of students included approximately 8.450 word families and this finding positively correlated with collocational knowledge of the students. Additionally, it was found that students' receptive knowledge of verb-noun collocations was broader than their productive knowledge on the same type of collocations. In line with the results of the study some of the implications related to collocation knowledge and teaching are presented at the end of the paper.
Keywords: collocation, receptive vocabulary size, productive knowledge, receptive knowledge.

ÖZET

Bu çalışma, İngilizceyi yabancı dil olarak öğrenen Türk öğrencilerin kelime dağarcığı ile üretimsel ve algısal eşdizim bilgileri arasındaki ilişkiyi araştırmayı amaçlamaktadır. Çalışmanın katılımcıları, 326 lise son sınıf öğrencisinden oluşmaktadır. Veriler, kelime testi, algısal fiil-isim eşdizimleri testi ve bu test üzerine modellenen üretimsel fiil-isim eşdizimleri testiyle toplanmıştır. Sonuçlar, öğrencilerin dağarcığının ortalama 8.450 kelime ailesinden oluştuğunu ve eşdizim bilgileriyle pozitif korelasyon içinde olduğunu göstermiştir. Buna ek olarak, öğrencilerin algısal fiil-isim eşdizim bilgilerinin üretimsele kıyasla daha fazla olduğu görülmüştür. Çalışmanın sonunda, sonuçlara dayanarak eşdizim bilgisine ve öğretimine ilişkin çıkarımlara yer verilmiştir.
Anahtar Sözcükler: eşdizim bilgisi, kelime dağarcığı, üretimsel bilgi, algısal bilgi.

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INTRODUCTION

There is a growing body of research supporting the link between vocabulary knowledge and performance in a foreign language (Milton, 2013). For learners of English as a foreign language (EFL), building a rich mental library of lexicon is essential for developing communicative competence to effectively function in English. However, the process is a demanding one for learners. Word knowledge is complex and multifaceted, as it involves the knowledge of word form, meaning and usage (Nation, 2001). Moreover, vocabulary knowledge encompasses not only acquiring the knowledge of words, but also multi-word phrases that have a clear and formulaic usage. It is argued that this formulaic language composes a large part of written and spoken discourse (Erman & Warren, 2000; Foster, 2001).

Collocation, as a sub-category of formulaic language, deserves special attention due to its role in both vocabulary and language learning. Wray (2000) asserts that collocations compose most of the natural language and thus the acquisition of a large number of collocations would give learners the ability to communicate successfully, produce and comprehend ideas accurately. Similarly, Nattinger (1988) argues that collocations make learners more fluent in speaking and writing as they give learners a command of larger discourse patterns. While mastering collocations is a crucial aspect in developing learners' communicative competence, studies indicate this task is a huge challenge for EFL learners and that collocational competence is acquired late (e.g. Nesselhauf, 2003; Shei & Pain, 2000).

Given the role of collocations and vocabulary knowledge in the enhancement of learners' communicative competence, this study investigated Turkish senior high school students' vocabulary size and knowledge of verb-noun collocations. In particular, it aimed to determine whether a correlation existed between the vocabulary size and verb-noun collocational knowledge of the participants.

Vocabulary Size

Vocabulary size refers to the number of words that a learner knows (Nation & Waring, 2002). The attempts to describe vocabulary size that a learner needs to function in English well have all been based on word families (Hu & Nation, 2000; Laufer, 1989; Nation, 2006). According to Nation's (2006) list based on British National Corpus (BNC), the most frequent 1.000 word families have six members on average. The number of members in a word family decreases to three at the 9.000 frequency level. Referring to Nation's (2006) calculations, Schmitt (2008) stated that knowing 6.000 word families for effective listening means knowing 28.015 individual words, whereas the knowledge of 8.000 word families for successful reading equals to knowledge of 34.660 different word forms.

For reading, Laufer (1989) suggested that 95% coverage of the vocabulary items is needed to comprehend a text. Hu and Nation (2000) found that this percentage should be 98% to do reading without any assistance. To reach that percentage, Nation (2006) found that knowledge of 6.000-7.000 word families for spoken discourse and 8.000-9.000 word families for written discourse are necessary.

These findings indicate that learners need to know a great number of lexical items to operate effectively in English. However, it should be noted that these requirements are based on individual words, without phrasal lexical items being taken into account. For this reason, the addition of phrasal lexical items to these given numbers would mean the sufficient vocabulary size is actually larger than indicated by these studies.

In contrast to the requirements mentioned above, research has shown that vocabulary sizes of learners generally fall behind these vocabulary size requirements. For example, Milton and Meara (1998) measured receptive vocabulary knowledge of 63 Greek EFL learners and 80 German EFL learners who were 14-15 years old through Meara's (1995) LLEX Lingua Vocabulary Test. They found that Greek EFL learners' vocabulary size was around 1.680, while German EFL learners' was 1.200 word families. Horst, Cobb and Meara (1998) studied the vocabulary knowledge of 34 low-intermediate learners in an intensive English program at a university in Oman. Employing a multiple-choice test and a word association test, the researchers found the participants' receptive vocabulary size to be 2.000 word families. In another study, Barrow, Nakashimi and Ishino (1999) found the receptive vocabulary size of 962 Japan EFL University first year students as 2.300 word families. Nurweni and Read (1999) used a translation test, a word associates test and an interview to identify the vocabulary knowledge of 314 first year students of Indonesian University. They found that students had the knowledge of around 1.226 word families. Laufer (2001) utilized Vocabulary Levels Test (Nation, 1990) to determine the passive vocabulary size of Chinese university learners majoring in English and found that it was around 4.000 word families. Bungard-Nielsen, Best and Tyler (2011) used Vocabulary Size Test (Nation & Beglar, 2007) to examine the vocabulary knowledge of 31 Japanese first year college students. The test results showed that the participants had a mean vocabulary size of 6.452 word families.

According to Schmitt (2010), one key reason for the failure of learners in reaching the target vocabulary size levels is the instruction focusing on individual words. He points that the practitioners have a tendency to put emphasis on individual words rather than collocations, because they think that individual words are basic lexical items, easy to teach and incorporate into materials. However, as Lewis (1997) and Hill (2000) suggest, teachers' presentation of new vocabulary items together with their frequently co-occurring words can result in expansion of learners' knowledge of vocabulary. Additionally, knowing what words co-occur with some specific words assists learners in associating and storing words more easily (Nattinger, 1988). Thus, it is essential to integrate collocations into vocabulary instruction to help EFL learners expand their vocabulary size.

Vocabulary size has also been suggested as an indicator of collocational knowledge (Bergström, 2008; Gitsaki, 1999, Gyllstad, 2007; Kadlecova, 2014; Koya, 2005). In their studies, Gitsaki (1999) and Koya (2005) found a significant development of collocational knowledge as participants' vocabulary knowledge developed. Administering a receptive collocation test and a vocabulary size test to

Swedish learners of English, Gyllstad (2007) and Bergström (2008) observed a positive correlation between the scores of both tests. Kadlecova (2014) similarly found a high correlation between the two variables with Slovak learners of English. The results of these studies conducted in different research settings indicate a positive correlation between learners' vocabulary size and receptive collocational knowledge.

Collocation

Firth (1957) is known as the first linguist to introduce the term collocation. According to Firth (1957), it is 'the company that the words keep' (p.183). Sinclair (1991), one of the advocates of this view, defines collocations as 'the occurrence of two or more words within a short space of each other in a text' (p.170). Nesselhauf (2005) considers collocation as 'a type of word combinations in a certain grammatical pattern' (p.25). She asserts that a collocation is not restricted to only two lexical items (e.g. put pressure), as it may also include other items that are closely associated with them (e.g. put pressure on somebody). Benson, Benson and Ilson (1997) divided collocations into two major types: grammatical and lexical. According to the researchers, grammatical collocations consist of a noun, adjective or verb and a preposition or a grammatical structure like infinitive or clause, whereas lexical collocations are different combinations of nouns, adjectives and adverbs. They do not contain prepositions, infinitives or clauses. According to their classification, grammatical collocations were further divided into eight types (e.g. noun+prep., noun+to+infinitive, prep.+noun) while lexical collocations were listed as seven types (e.g. verb+noun, adjective+noun, verb+adverb).

Collocations compose a large portion of the native speaker's linguistic competence (Pawley & Syder, 1983; Schmitt, 2004; Wray, 2002). Many scholars thus have viewed collocation as a crucial element that improves non-native speakers' use of target language (Howarth, 1998; Lewis, 2000; Nation, 2001; Nattinger, 1980; Pawley & Sayder, 1983; Wray, 2000). According to Nattinger (1980) collocations serve as a memory aid and help retention. Similarly, DeCarrico (2001) argues that the presentation of words in collocations '…assist the learner in committing these words to memory and also aid in defining the semantic areas of a word' (p.292). Henriksen (2013), citing a number of studies, lists the reasons for the importance of mastering collocations: learners can make idiomatic choices and come across as native-like, process language fluently under real-time conditions, channel cognitive energy into more creative production, and understand connotational meaning (pp.33-34). For Lewis (2000), learners need collocational knowledge to move beyond the intermediate plateau, which is a state that most language learners experience since it is challenging for them to go further once they reach the intermediate level.

There has been a considerable amount of research undertaken to describe and measure collocational knowledge of EFL learners, and to seek effective ways in enhancing learners' collocational competence (Akıncı, 2009; Alsakran, 2011; Bağcı, 2014; Gencer, 2004; Gitsaki, 1996; Hsu, 2002; Koç, 2006; Koosha &

Jafarpor, 2006; Martynska, 2004; Nesselhauf, 2003; Shehata, 2008; Zarei & Koosha, 2003). Studies with a focus on measuring learners' productive and/or receptive knowledge on collocations have been conducted in various EFL contexts. In the Greek context, Gitsaki (1996) investigated collocational knowledge of 275 ESL learners through different proficiency levels. Results indicated that grammatical collocations were easier for the participants to acquire than lexical collocations and verb-noun lexical collocations were the most difficult among 37 types of collocations covered in the study. Based on the results, Gitsaki (1996) proposed that learners go through three stages in the development of collocational knowledge. In the first stage, collocations are learned as unanalyzed lexical items. In the second stage, learners are in the process of developing their collocational knowledge and in the last stage learners are able to use both lexical and grammatical collocations properly.

In the Chinese context, Shei and Pain (2000) examined the collocational knowledge of 40 Chinese EFL learners and 31 other non-native speakers, through an acceptability judgment questionnaire. The results indicated poor collocational knowledge of the Chinese students. Nesselhauf's (2003) study with 32 advanced German EFL learners revealed that many of the verb-noun collocation combinations that were the focus of the study were problematic for learners and the most common type of mistake was the wrong choice of verbs. Other studies also indicated that EFL learners experienced problems with the production of collocations (Zarei & Koosha, 2003) and learners' productive knowledge of collocations were significantly lower than their receptive skills (Martynska, 2004; Shehata, 2008; Alsakran 2011).

In the Turkish context, Bağcı (2014) examined collocational knowledge of 34 pre-intermediate and 34 advanced level learners, focusing on four different collocation types: verb-noun, adjective-noun, adjective-preposition, and noun-preposition. The results showed that proficiency played a crucial role in collocational knowledge as advanced level learners performed better than pre-intermediate level learners in tests. Among the collocation types, verb-noun collocations were found to be the least problematic type for both groups. It was also found that the receptive collocational knowledge of learners in both groups was broader than their productive collocational knowledge, echoing findings of previous studies.

Several studies conducted in EFL contexts have focused on the effects of classroom instruction on learners' collocational competence. In a qualitative study, Hsu's (2002) treatment involved direct emphasis on lexical collocations in both spoken and written discourses. The results revealed that such emphasis could help students learn new collocations. Similarly, Koosha and Jafarpour (2006), aimed to investigate whether Data-Driven Learning (DDL) would affect the learning of collocation of prepositions and understand whether students at different proficiency levels differed in their knowledge on collocation of prepositions. The results showed that the DDL approach was effective and learners' performance on collocation of prepositions was related to their proficiency level.

In Turkey, Gençer (2004) explored whether an awareness-raising activity focusing on frequently used verb-noun collocations increased learners' knowledge of collocations. While the experimental group was given awareness-raising tasks on collocations, the control group was taught the same collocations through traditional vocabulary techniques such as explaining word meanings. Productive and receptive tests showed that the experimental group outperformed the control group. Similarly, Koç (2006) investigated whether explicit collocation instruction improved students' lexical collocation awareness and influenced the retention of vocabulary. Results showed that the participants were able to identify and categorize collocations in any text, and that vocabulary instruction was helpful in vocabulary retention. Akıncı's (2009) study comparing the effects of three types of instruction in learning verb-noun collocations (DDL instruction, explicit instruction and combined method) indicated that explicit instruction group and combined method group performed similarly and significantly better than DDL group in relation to accurate use of collocations. In terms of judgment about the acceptability of the target collocations, explicit instruction group outperformed DDL group; however, no significant difference was found between explicit instruction group and combined method group.

To sum up, research studies have shown that mastering collocations is a challenging aspect of vocabulary acquisition, and targeting collocations in EFL teaching, either in specific tasks or as part of general classroom instruction, helps learners increase their knowledge and competence on collocations.

A review of studies on collocations indicated that despite growing research interest, studies on collocations have been scarce in Turkey, and mainly conducted to explore ways to increase the collocational knowledge of EFL learners. Thus the present study has two major aims: to examine the relationship between receptive vocabulary size of Turkish EFL students and their receptive and productive knowledge of verb-noun collocations; and to establish whether a significant difference exists between Turkish EFL students' productive and receptive knowledge of verb-noun collocations. According to the research aims, the following questions were formulated:

1. What is the receptive vocabulary size of Turkish EFL learners who are about to finish high school education?
2. Is there any correlation between the receptive vocabulary size of Turkish EFL learners and their;
    a. receptive knowledge of verb-noun collocations?
    b. productive knowledge of verb-noun collocations?
3. Is there a significant difference between Turkish EFL learners' productive and receptive knowledge of verb-noun collocations?

METHODOLOGY

Research Design

Since the present study aimed at documenting the performance of Turkish EFL learners on collocations, it has a descriptive research design. Within this

design, the target population was specified as senior high school students and tests that would tap into their vocabulary and collocational knowledge, namely, Vocabulary Size Test (Nation & Beglar, 2007), a receptive verb-noun collocation test- COLLMATCH 3 (Gyllstad, 2007) and its productive version designed by the researchers were used.

Participants and Setting

The study involved 326 senior students of five different Anatolian high schools (S1, S2, S3, S4 and S5) in Turkey, which were chosen through convenient sampling. 164 male and 162 female students were between the ages of 16-18 and had been learning English for approximately 9 years.

In Turkey, Anatolian high school is a selective school model among public high schools that admits its students according to grade point average and scores received in nation-wide standardized tests. Until 2005-2006 academic year, these schools offered one year foreign language education as a preparatory year, with 24 English classes per week, followed by three years of secondary education. Beginning from 2005-2006 academic year, the curriculum of Anatolian high schools was changed; the preparatory year was cancelled and secondary education that lasted for three years was extended to four years. Despite this change, a limited number of Anatolian high schools continue to offer the preparatory year, with 20 English classes per week, in addition to the four-year secondary education. In the current study, only one of the participating schools (S3) has an additional preparatory year, whereas others offer the regular four-year education. That means, in Anatolian high schools without the preparatory year, a typical student in the final year will have taken 518 hours of formal English education whereas a student who receives a language preparatory education will have taken a total of 1258 hours of English.

Regarding coursebooks, *Yes You Can* (B1 level) provided by the Ministry of National Education (MNE) is used in two participating schools (S2 and S5). In this coursebook, vocabulary items based on the listening or reading texts on the theme of the unit are presented individually and mainly through matching activities. In other participating schools, the classes are conducted with the coursebooks that English teachers have selected: Spark 4-upper intermediate (S1 and S4) and Longman-TOEFL IBT (S5). The coursebook Spark 4 involves vocabulary teaching activities such as looking up words and phrases in the word lists, matching them to their synonyms, antonyms or definitions, spider grams, gap filling exercises and categorizing. In Longman-TOEFL IBT, different meanings of the words are presented through various examples together with their daily usage in different phrases. Teachers in each school also commented that the coursebooks were supported with other supplementary materials such as worksheets and visual aids during classes. Information about the participating schools is given below in Table 1.

Table 1 . Schools in the study

Schools	No of Students	Coursebook	Location
S1	68	Spark 4-upper intermediate	İstanbul
S2	80	Yes You Can-B1 level	Mersin
S3	80	Longman-TOEFL IBT	İstanbul
S4	68	Spark 4-upper intermediate	İstanbul
S5	30	Yes You Can-B1 level	Muş
Total	326		

Data Collection Instruments

The data were collected with the use of three instruments administered in 2014-2015 academic year: the Vocabulary Size Test (Nation & Beglar, 2007), a productive verb-noun collocation test and a receptive verb-noun collocation test-COLLMATCH 3 (Gyllstad, 2007).

In order to find out the vocabulary size of the students and identify which word families they are familiar with, they were given Nation and Beglar's (2007) Vocabulary Size Test-20.000 version. The test mainly consists of 100 items, with 5 items from each 1.000 word family as occurring in BNC. It tests three dimensions of vocabulary knowledge; the knowledge of written word form, the form-meaning connection and, to some extent, concept knowledge. In its multiple-choice format, test-takers are required to select the best definition of each word from among the four choices. The test was used in various studies (e.g. Lin & Morrison, 2010; Mizumoto, 2011) and found to be highly reliable.

Among the several types of collocations, the present study focused on verb-noun collocations since many collocations in English consist of a verb and a noun (Benson et al., 1986) and it has been found as the most problematic collocation type for non-native speakers (Koya, 2005; Nesselhauf, 2003). To this respect, Gyllstad's (2007) COLLMATCH 3 was used to measure the receptive verb-noun collocational knowledge of Turkish EFL students. COLLMATCH 3 includes 100 possible English verb-noun collocations composed according to frequency bands in BNC and JACET (The Japan Association of College English Teachers) list of 8.000 basic words. The test-takers are required to tick the 'yes' box if they think the collocation is an acceptable word combination in English, and to tick the 'no' box if they think the opposite. The original test includes both Swedish and English instructions. For the present study, Swedish instructions were replaced with Turkish instructions and the "yes" and "no" boxes given with their Swedish equivalents 'ja' and 'nej' in the original test were changed to Turkish equivalents 'evet' and 'hayır'. Before administering COLLMATCH 3 to the target group of the study, a pilot study was conducted with 34 students having similar traits to check its reliability. The piloting results showed that the test is highly reliable with a Cronbach Alpha of .921. Then the test was administered to the target group of the study, 326 students. The Cronbach Alpha coefficient was found to be .944.

In order to explore the productive collocational knowledge of the learners, the researchers designed the productive version of Gyllstad's (2007) verb-noun collocation test. The development of the productive version of the test started with

the listing of the real English collocations asked in COLLMATCH 3. The format was modeled on Laufer and Nation's (1999) Vocabulary Level Test of controlled productive ability. Similar to Nizonkiza (2013) who designed a productive collocation test based on this model, the collocations were presented in sentential context and the sentences were selected and adapted from *Oxford Collocations Dictionary for Students of English (2002).* As verb-noun collocations are targeted, after the formation of sentences, verb parts of the collocations in each sentence were deleted while noun parts were kept. Referring to Laufer and Nation (1999), Nizonkiza (2013) provided the first two letters of the verbs in order to avoid varying answers, prevent guessing and to ensure that participants selected only the target word. In the test designed for the present study, only the initial letters of the target collocations were provided as a clue since the required answers also include two letter ones such as 'do'. The participants were instructed to complete the missing verb part and an example was provided to ensure transparency.

Before administering the productive collocation test, a pilot study was conducted to check its validity and reliability. After preparing the test, it was given to four different experts to comment on its validity. Based on their comments, some sentences underwent changes. Then it was given to four fourth year students of an Anatolian high school who did not participate in the actual study. The aim was to ensure that the wording and the instructions given in the test were clear and comprehensible for students. In this process, students suggested that some sentences were complicated for them to understand and they had difficulty in finding the correct word. These sentences were then simplified enough to make the test more accessible to the students. This process was followed by the piloting of the test with 34 students to check its reliability. The results of the pilot study showed that the test has a Cronbach Alpha of .844.

Data Collection and Analysis Procedures

Vocabulary Size Test (Nation & Beglar, 2007) was administered to 326 students in five different Anatolian high schools in 2014-2015 academic year. The test was given and proctored by the classroom teachers of the students during a class hour. The scores of the participants on the test were obtained by taking the number of correct answers into account. To decide the vocabulary size of the participants, the number of correct answers was multiplied by 200 as Nation and Beglar (2007) suggested. The scores were then analyzed quantitatively using a statistical analysis program. Descriptive statistics, namely means and standard deviations were computed to examine the participants' performance on the test.

Later, the same student participants were given the productive verb-noun collocation test. Proctoring was fulfilled by their classroom teacher in a regular class hour. Receptive verb-noun collocation test- COLLMATCH 3 (Gyllstad, 2007) was administered to the student participants after a two-week interval to eliminate the effects of memory across two tests. Similar to the previous tests, it was given in a regular class hour and proctored by the classroom teacher. According to the proctor, the administration of the test took 15 minutes. In collocation tests, the items

were scored as correct and incorrect. The items unanswered were counted as incorrect in both tests. For productive test, morphological errors and spelling errors were not taken into consideration. They were examined with similar quantitative methods. To understand if any correlation exists between students' receptive vocabulary size and their receptive and productive collocational knowledge, Pearson Product-Moment Correlation test was utilized. For the comparison of students' productive and receptive collocation knowledge, Paired Samples t-Test was used.

RESULTS

The Receptive Vocabulary Size

The first research question of the present study focused on identifying the receptive vocabulary size of Turkish EFL students who were in their final year of high school education. To this end, the scores of the participants on Vocabulary Size Test (Nation & Beglar, 2007) were examined through the statistical analysis program and descriptive statistics were computed.

Table 2. The receptive vocabulary size of the students

Groups	N	$\overline{x}$	SD
Total	326	8.449,08	4.437,60

As Table 2 demonstrates, the participants have the knowledge 8.449,08 word families. To understand this result in a detailed way, the scores of the students in each participating school were examined as presented in Table 3.

Table 3. The receptive vocabulary size of the students in each school

Groups	N	$\overline{x}$	SD
S1	68	7.188,24	2.099,86
S2	80	5.172,50	1.797,54
S3	80	13.957,50	4.151,27
S4	68	8.167,65	1.822,83
S5	30	5.993,33	3.478,83

As shown in Table 3, the largest vocabulary size belonged to the learners at S3 with 13.957,50 word families, which has a language preparatory program in its curriculum. While students from S4 knew 8.167,65 word families, students from S1 had the knowledge of 7.188,24 English word families. The relatively lower scores belonged to students from S2 and S5 with 5.172,50 and 5.993,33 word families respectively.

The Receptive Vocabulary Size and Verb-Noun Collocational Knowledge

The second research question was regarding the relationship between the receptive vocabulary size of 12th Grade Turkish EFL students and their verb-noun collocational knowledge. The scores of the participants on COLLMATCH 3

(Gyllstad, 2007) and its productive version were analyzed through the statistical analysis program with the computation of descriptive statistics. Additionally, the relationship between the participants' receptive vocabulary size and the receptive and productive verb-noun collocational knowledge was examined through Pearson Product-Moment Correlation Test.

The average scores of the participants in each test, namely Vocabulary Size Test (Nation & Beglar, 2007), receptive collocation test-COLLMATCH 3 (Gyllstad, 2007) and the productive collocation test, are presented in Table 4. below.

Table 4. The students' receptive vocabulary size, receptive and productive knowledge of verb-noun collocations

Groups	VST	PCT	RCT
Total	8.449,08	12.85	57.76

VST: Vocabulary Size Test (Nation & Beglar, 2007), PCT: Productive Collocation Test, RCT: Receptive Collocation Test-COLLMATCH 3 (Gyllstad, 2007)

As shown in Table 4, the performance of the students in the productive collocation test was 12.85, in receptive collocation test was 57.76 and the overall vocabulary size was 8.449,08. The scores of the students in each school were also examined for a detailed understanding of the results.

Table 5. The receptive vocabulary size, receptive and productive knowledge of the students in each school on verb-noun collocations

Groups	VST	PCT	RCT
S1	7.188,24	13.69	55.10
S2	5.172,50	6.35	57.69
S3	13.957,50	18.69	63.26
S4	8.167,65	18.60	56.03
S5	5.993,33	10.26	52.53

VST: Vocabulary Size Test (Nation & Beglar, 2007), PCT: Productive Collocation Test, RCT: Receptive Collocation Test-COLLMATCH 3 (Gyllstad, 2007)

As shown in Table 5, the highest score on both collocation tests came from the students in S3 who were also found to have the largest vocabulary size. The students from S1 had the knowledge of 7.188,24 word families, and they scored 13.69 in productive collocation test and 55.10 in receptive collocation test. The students from S2 who were found to know 5.172,50 word families scored 6.35 in productive collocation test and 57.69 in receptive collocation test. The vocabulary size of S3 students consisted of 13.957,50 word families. They scored 18.69 in productive collocation test and 63.26 in receptive collocation test. The scores of the students from S4 who had the knowledge of 8.167,65 word families were 18.60 in the productive collocation test and 56.03 in receptive collocation test. Finally, the productive collocation test score of the students from S5 was 10.26, their receptive collocation test score was 52.53 and their vocabulary size was found as 5.993,33 word families.

The Receptive Vocabulary Size and Receptive Knowledge of Verb-Noun Collocations

To determine if any correlation existed between the receptive vocabulary size of Turkish EFL students and their receptive knowledge of verb-noun collocations, Pearson Product-Moment Correlation Test was applied to the participants' performances on Vocabulary Size Test (Nation & Beglar, 2007) and the receptive collocation test-COLLMATCH 3 (Gyllstad, 2007).

Table 6. The correlation between the receptive vocabulary size and receptive knowledge of verb-noun collocations

Tests	N	r	p
VST RCT	326	.42	.000*

$^*p<.01$

As demonstrated in Table 6, Pearson Product-Moment Correlation Test results showed that there was a significant positive correlation between the receptive vocabulary size of the participants and their receptive collocational knowledge (*r=.42;p<.01*). The correlation between two variables was medium since *r* value was .42, between .30 and .49 (Cohen, 1988). The result indicated that the larger vocabulary size a student had, the better the student performed in recognizing collocations.

The Receptive Vocabulary Size and Productive Knowledge of Verb-Noun Collocations

To examine the relationship between the receptive vocabulary size of Turkish 12th Grade EFL students and their productive knowledge of verb-noun collocations, Pearson Product-Moment Correlation Test was applied to the scores of participants on Vocabulary Size Test (Nation & Beglar, 2007) and the productive collocation test.

Table 7. The correlation between the receptive vocabulary size and productive knowledge of verb-noun collocations

Tests	N	r	p
VST PCT	326	.29	.000*

$^*p<.01$

As demonstrated in Table 7, Pearson Product-Moment Correlation Test results showed that a significant positive correlation existed between the receptive vocabulary size of the participants and their productive collocational knowledge (*r=.29;p<.01*). The correlation between two variables was small since *r* value was .29, between .10 and .29 (Cohen, 1988). The result indicated that the students with a large vocabulary size also performed better in producing collocations compared to the students with smaller vocabulary size.

The Productive and Receptive Knowledge of Verb-Noun Collocations

The third research question of the study aimed to explore whether there was a significant difference between the receptive and productive knowledge of Turkish EFL students on verb-noun collocations. The scores of the participants in both collocation tests were compared statistically by utilizing Paired Samples t-Test.

Table 8. Comparison of productive and receptive knowledge on verb-noun collocations

Test type	N	$\overline{\text{X}}$	SD	SE_x	*t* Test		
					t	*df*	*p*
Productive	326	12.85	12.43	.69	-52.17	325	.000*
Receptive	326	57.76	12.32	.69			

*p<.01

As can be seen in Table 8, the results of Paired Samples t-Test indicated a significant difference between the scores of students in productive and receptive collocation tests in favor of receptive collocation test scores (*p<.01*). This showed that receptive knowledge of Turkish EFL students on verb-noun collocations was significantly greater than their productive knowledge on the same type of collocations.

DISCUSSION AND IMPLICATIONS

The Receptive Vocabulary Size

In the current study, 326 Turkish senior students in 5 different Anatolian high schools were given Vocabulary Size Test (Nation & Beglar, 2007) to measure their receptive vocabulary knowledge. The test results showed that Turkish EFL students at Grade 12 have, in average, the knowledge of 8.450 word families. When the results were examined in detail, it was found that the general tendency in vocabulary knowledge was between 5.000 and 8.000 word families; however the students in one of the schools (S3) with a preparatory year outperformed the students in the other four with approximately 14.000 word families.

The previous research measured the vocabulary size of learners in different EFL settings with different tools. Using Meara's (1995) LLEX Lingua Vocabulary Test, Milton and Meara (1998) found a vocabulary size of 1.680 with Greek EFL learners and 1.200 with German EFL learners. The vocabulary size of Omani EFL learners measured by Horst et al. (1998) through a multiple-choice test and a word association test was found as 2.000 word families. Barrow et al. (1999) utilized a self-checking survey and found that Japanese EFL learners had the knowledge of 2.300 word families. In Nurweni and Read's (1999) study, the results of translation test, word associates test and interviews showed that Indonesian EFL learners' vocabulary size included 1.226 word families. Employing Vocabulary Levels Test (Nation, 1990) to determine the passive vocabulary size of Chinese university learners majoring in English, Laufer (2001) found that it was around 4.000 word families. The same vocabulary size measure as in the current study, Vocabulary Size Test (Nation & Beglar, 2007) was utilized by Bungard-Nielsen et al. (2011)

who examined the vocabulary knowledge of Japanese first year college students. They found that the participants had a mean vocabulary size of 6.452 word families. The comparison of the findings with Bungard-Nielsen et al.'s (2011) indicates that Japanese EFL learners have a similar vocabulary size with the Turkish EFL students with 5.000-8.000 word families. Since Bungard-Nielsen et. al.'s (2011) participants were university students, their vocabulary size of 6.452 word families, might be due to their level of education and total number of years they had been studying English. Compared to other previous findings, the Turkish EFL students with 5.000-8.000 word families may be positioned in a better place in terms of their vocabulary size. However, the results should be viewed cautiously due to the role of the data collection tool. The effect of the tool cannot be ruled out since these studies differ in instrument to measure vocabulary. Examining the Vocabulary Size Test (Nation & Beglar, 2007), Stewart (2014) argued that the test may overestimate learners' vocabulary size because of guessing effects in its multiple-choice format and the formula used for calculation, multiplying its raw score by 200, although the test was validated to have high internal reliability.

As Nation and Beglar's (2007) Vocabulary Size Test was used in the present study, it is reasonable to refer to Nation's (2006) calculations to discuss vocabulary-size related findings consistently. According to Nation's (2006) calculations, 98% coverage of vocabulary items is needed to read and enjoy various kinds of texts (e.g. novels, newspapers) without any assistance and this equals to the knowledge of 8.000-9.000 word families. In addition, he claims that the knowledge of 6.000 word families is needed to understand children's movies and 7.000 word families for spoken English like talk-back radio, interviews and friendly conversations between family members and friends. According to the results of this study, Turkish senior high school students with an average knowledge of 8.000 word families might not have much difficulty in understanding interviews, informal conversations, and various types of written texts in English.

When the performances of the students from each participant school are examined separately, it can be seen that students' vocabulary knowledge varied from school to school. The highest scores with around 14.000 word families were obtained by the students in S3. The high scores of these students can be attributed to the coursebook used (Longman TOEFL-IBT) and the language preparatory program they were offered, since S3 was the only participating school having this program in its curriculum. As aforementioned, Anatolian high schools had one year of intensive language education in addition to three years of secondary education until 2005-2006 academic year. The cancellation of that program seemed to have produced negative outcomes according to the results of the current study. This indicated that language preparatory program highly contributes to enhancing word knowledge, and overall proficiency of the students. Therefore, inclusion of a language preparatory program in high school education would serve as a practical and necessary alternative. Another suggestion might be increasing the number of weekly hours dedicated to English language teaching instead of having a preparatory year.

In that case, a teaching program as intensive as the language preparatory year can be prepared and planned to be executed during this education period.

This study indicated coursebook as a strong factor to determine the vocabulary knowledge of students. In the study, the lowest vocabulary size scores came from the students of S2 and S5 with around 5.000 words. These scores are below the required size to achieve the target of reading novels or academic texts and listening to conversations in English with minimum level of comprehension problems that may arise *due to unknown vocabulary.* In both S2 and S5, the coursebook offered by MNE were followed while in the other three schools different coursebooks than the one prepared by the MNE were used. The vocabulary teaching activities in the MNE coursebook *Yes You Can* mainly involved presentation of individual words through matching tasks. This suggests that, in order to expand vocabulary size, a coursebook should provide enough exposure to all the different aspects of word knowledge and opportunities for recycling vocabulary through a wide range of activities such as looking up words and phrases in the word lists, matching them to their synonyms, antonyms or definitions, gap filling exercises and categorizing. Therefore, MNE should consider revising the vocabulary sections of their coursebooks accordingly. Another solution might be the provision of supplementary teaching materials for teachers to present and consolidate vocabulary.

Where the coursebook is insufficient, in order to help students develop a rich mental library of lexicon, teachers could also utilize word formation activities as part of their vocabulary teaching methodology. Those activities may promote students' ability to use suffixes they have learned to reach new words and broaden their vocabulary size accordingly. Extensive reading tasks emphasized by Nation and Anthony (2013) might be also beneficial. They stated that extensive reading plays a large role in vocabulary learning but most graded reading schemes end around 3.000 word-family level. Thus, the researchers designed mid-frequency readers by adapting texts from Project Gutenberg to fill the gap between the end of graded readers and the demands of unsimplified texts at around 8.000 word families. Each text was adapted using word family lists in BNC and COCA (Corpus of Contemporary American English) for three different word family level: 4.000 word families, 6.000 word families and 8.000 word families. These texts, available on Paul Nation's website (http://www.victoria.ac.nz/lals/about/staff/paul-nation), provide an interesting and comprehensible way for learners to improve their vocabulary knowledge. Teachers can easily make use of these readers as an enjoyable way of expanding vocabulary knowledge and test their learners on them.

The Receptive Vocabulary Size and Knowledge of Verb-Noun Collocations

The second concern of the present study was to establish the relationship between receptive vocabulary size of Turkish EFL students at 12th Grade and their collocational knowledge. Collocational knowledge particularly involved identifying students' receptive and productive knowledge of verb-noun collocations.

It was found that the receptive and productive knowledge of the students on verb-noun collocations significantly correlate with their receptive vocabulary size. This finding is consistent with the previous research (e.g. Bergström, 2008; Kadlecova, 2014). The relationship between vocabulary and collocational knowledge indicates that the broader students' vocabulary is, the more collocations they can recognize and produce accurately. The knowledge of collocations in English, a kind of language skill, is enriched by the vocabulary skill of the learners as Meara (1996) posits '…learners with big vocabularies are more proficient in a wide range of language skills than learners with smaller vocabularies' (p.37). The significant contribution of vocabulary size to collocational knowledge underscores the importance of expanding vocabulary size. In addition to this, their close relationship suggests that the focus on lexical items and collocations would promote the students' knowledge on both categories of vocabulary reciprocally. According to Lewis (2000), teachers' focus on new lexical elements with their frequently co-occurring words may stimulate students' acquisition of more collocations and their expansion of vocabulary at the same time.

In the current study, a detailed examination of the relationship between receptive vocabulary size and collocational knowledge revealed that the correlation between receptive collocational knowledge and receptive vocabulary size was moderate ($r=.42$), whereas it was low between productive collocational knowledge and vocabulary size ($r=.29$). The difference in the degree of correlation might be due to the different natures of skills that the students were asked to perform on collocations. That is, the students might be better at utilizing their receptive knowledge on individual words when recognizing collocations than they do when producing collocations because 'the knowledge required for production is greater than the knowledge required for reception' (Nation, 2001, p. 207). Meara (1997) suggests that the most important effect for receptive knowledge to shift towards productive knowledge is the organization of learners' mental lexicon. He explains that if a word can be activated by its links to other items in the learners' lexical network, it then becomes ready for use. Contrarily, if receptively-known lexical item does not have any link in the lexicon, it cannot move to productive stage. Thus, the individual vocabulary items receptively-known by the learners in the study might not connect to a link in their mental lexicon, which may have blocked them to activate their receptive vocabulary size to produce collocations more successfully. The practical implication of these findings is that teachers should utilize vocabulary teaching activities such as vocabulary games, puzzles, and tasks that involve sorting, classifying words to help students to organize their mental lexicon.

Productive versus Receptive Knowledge of Verb-Noun Collocations

The current study also examined if there was a significant difference between the productive and receptive knowledge of Turkish EFL students on verb-noun collocations. The results showed that there was a statistically significant difference between the scores of the students in two tests, which is in line with the results of previous studies (e.g. Bağcı, 2014; Martynska, 2004). Additionally, although the

scores of the students in productive collocation test varied from school to school, the scores in receptive collocation test were similar to each other.

In the present study, students performed better in judging the correctness and incorrectness of the collocations than producing correct collocations, which is an expectable result. Nation (1990) suggested that productive knowledge both includes receptive knowledge and extends it, which implies that receptive vocabulary is broader than productive vocabulary and comprehension precedes production (Ma, 2009). These assumptions have been supported by a considerable amount of evidence (e.g. Laufer, 1998; Melka, 1997). Melka (1997) claimed that after learners meet a new word and learn the pronunciation, spelling and meaning of it, they become ready to use it themselves. An important reason behind this result might be that productive learning is difficult than receptive learning. One of the explanations proposed by Ellis and Beaton (1993) for the difficulty of productive learning is about practice. They believe that receptive use is practiced more than productive use in normal language learning conditions. This leads learners to be more competent in reception and accordingly less successful in production of the collocations. The poor performance of the participants on the productive collocation test, about 18%, may also be attributed to the teachers' tendency to focus on individual words (Henriksen, 2013; Schmitt, 2010). They might have directed students' attention to the synonyms or antonyms of the words rather than their collocates to be used in a certain context. As a result of this, the students may have paid attention to the words in the sentences of the test individually rather than trying to retrieve the message conveyed in the sentence and searched for the possible collocates of the word given near the blank.

The performance of the participants on the collocation tests has aroused some pedagogical implications for the Turkish context. In order to increase the collocational knowledge of the students, EFL teachers should first raise students' awareness regarding the importance of collocations in English. Students who know that most of the expressions in English consist of collocations will be more attentive in learning them. Another suggestion could be promoting the use of collocation dictionaries. The teachers can encourage the students to use collocation dictionaries as an informative guide to learn the possible collocates of words and thus to expand their knowledge on collocations. Besides, the exposure of the students to collocations should be kept at maximum level. If the students are taught collocations repeatedly, they can have more opportunities to expand their collocational knowledge both receptively and productively. Teaching learning strategies specifically for collocations, such as keeping a collocation notebook, listing them with their synonyms or antonyms, can be proposed as another solution to students' problems with learning collocations.

CONCLUSION

The present study examined the vocabulary size and verb-noun collocational knowledge of 326 Turkish 12th Grade EFL students from five different schools. Through the administration of Vocabulary Size Test (Nation & Beglar, 2007), it

was found that students' average receptive vocabulary size was around 8.450 word families, which indicates that they can understand interviews, informal conversations, and different types of written texts in English according to Nation's (2006) calculations. A comparison of students' vocabulary size scores across schools, however, revealed differences between schools. The highest performing students were from a school (S3) that offered a one-year intensive preparatory program. This school also used a Longman TEEFL-IBT coursebook instead of the one offered by the MNE. Following S3, two schools (S1, S4) which had higher scoring students on the receptive vocabulary size test also followed an alternative coursebook (Spark 4-upper intermediate) rather than the one by MNE. Students who had the lowest scores with around 5.000 words, were from schools that used the MNE coursebook. These scores fall behind the size requirements for reading written texts and listening conversations in English. Thus, these students need to broaden their vocabulary size to be able to efficiently operate in English and to pursue further academic studies and professional careers.

The results regarding differences among schools pointed out to coursebook choice as a possible factor that fosters or hinders vocabulary development. While acknowledging the complexity of factors at play in vocabulary teaching and learning, and differences in teaching settings and styles, this finding is striking and worthy of further investigation. Moreover, the results also indicated that a language preparatory program may have a crucial role in expanding the vocabulary size and overall language proficiency of Turkish EFL students at high school level. Hence, it may be fruitful for language planners and policy makers to discuss reintroducing the language preparatory program in the curriculum of Anatolian high schools or increasing weekly hours dedicated to English language.

The second focus of the present study was to measure verb-noun collocational knowledge of Turkish 12th Grade EFL students. For this purpose, a productive verb-noun collocation test and a receptive verb-noun collocation test-COLLMATCH 3 (Gyllstad, 2007) were administered accordingly. It was found that the broader students' vocabulary is, the more collocations they can recognize and produce accurately. Therefore, it is important to expand the vocabulary size of the students to help them to be competent in learning collocations. In addition, the results of the study showed that there was a statistically significant difference between the scores of the students in the receptive collocation test and productive collocation test. In order to increase the collocational knowledge of students, teachers should raise students' awareness regarding the importance of collocations in English, promote the use of collocation dictionaries, and keep the exposure of the students to collocations at maximum level. Similary, to increase students' productive knowledge of collocations, teachers should utilize exercises and activities that will encourage students to use collocations.

With regards to limitations, this study has a few that need to be pointed out. The focus of the study were 12th grade Anatolian High school students. In order to have a more comprehensive picture of Turkish EFL students in terms of their vocabulary size, and collocational knowledge, this study may be validated with

further research including students from different school types, ages, and proficiency levels. Additionally, documentary analysis of coursebooks used, and observation of vocabulary teaching could also give us an in-depth understanding of the differences between schools and students in terms of their vocabulary size and collocational knowledge. Finally, as it was beyond the scope of this study to investigate all types of grammatical and lexical collocations, it reported the findings related to verb-noun collocations. Further studies on other collocation types could be conducted to increase our understanding of students' collocational knowledge.

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