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Morphological Awareness and Vocabulary Knowledge among English Language Learners

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Abstract
This study aims to tackle an answer to the main question; if there is a relationship between the vocabulary size of adult English language learners and their morphological awareness and if their performance would differ in word complexity. The participants were 90 senior BA English Language and Literature students from Jordanian universities. The two empirical research tools were the Vocabulary Size Test and Morphological Awareness Test. The results revealed the mid-frequent level vocabulary size of the participants, and they were unable to form and use new words using morphemes. A positive correlation between the vocabulary size of the participants and their morphological awareness existed. Besides, a positive relationship existed between their performance on word complexity and their morphological knowledge. Pedagogical solutions need to be implanted in *English as a Second Language (ESL)/ English as a Foreign Language (EFL)* classes.

Keywords: English as a Foreign Language, morphological awareness, vocabulary knowledge, vocabulary size
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1. Introduction

Vocabulary is a fundamental linguistic element that affects language learning; as limited vocabulary knowledge has always been a source of lexical disfluency for second or foreign language learners. As maintained by Zimmerman (2005), a strong significant relationship exists between the vocabulary size of language learners and their language competency. Lack of adequate vocabulary is one of the main obstacles that ESL/EFL students encounter, which obstructs their text comprehension (Levine & Reves, 1990). Read (2004) adds that a sufficient number of acquired lexical items lead to good language production.

Thus, an essential part of language learning is language learning strategies used by L2 learners to improve their learning process (Cohen, 2007; Oxford, 2002). Vocabulary learning strategies applied by ESL/EFL learners are regarded as learning strategies. Vocabulary learning strategies are strategies employed by language learners to acquire, to retain, to regain, and to use vocabulary (O'Malley & Chamot, 1995; Schmitt, 200; Schmitt &, McCarthy, 1997). Schmitt (1997) indicates that second language (L2) learners could enhance their vocabulary when they are directed to use vocabulary learning strategies in learning a language. The sources for language learners to learn new words are the morphology and context according to Carlisle (2007).

Morphological awareness is considered a metalinguistic tool for learners to use words effectively (Scott & Nagy, 2004). Y cel-Ko (2015) classifies morphological awareness as a subdivision of metalinguistic knowledge. The use of morphological awareness is one possible vocabulary learning strategy applied by ESL/EFL learners as it enhances their lexical knowledge (Wysocki & Jenkins, 1987). Such knowledge can be developed when they become familiar with word-formation to implement morphological processing, which is adding affixes (prefixes or suffixes) to base words. Several studies have recommended the use of morphological clues as decoding the parts of new words by ESL/EFL students to help them understand the meaning of new words (McBride-Chang et al. 2005; Morin, 2003; Nation, 2001). With the intention of learning and developing the vocabulary of ESL/EFL students, specific attention has to be paid to the use of morphological awareness. As well, morphological awareness will enhance in reading and understanding academic vocabulary by English language learners (Kieffer & DiFelice Box, 2013; Y cel-Ko , 2015; Crosson et al., 2018).

Morphological awareness implies a conscious knowledge of the skill of using free or bound morphemes a of language, in addition to derivational and inflectional morphemes (Deacon & Kirby 2004; Deacon, Kirby, & Casselman-Bell, 2009; Kirby et al., 2012; Kuo and Anderson, 2006). When ESL/EFL learners are aware of English inflectional morphology, this improves their grammatical accuracy. Besides, their awareness of English derivational morphology will promote their lexical knowledge. Koda and Zehler (2008) consider morphological awareness a part of language learners' comprehension of new words by fragmenting complex words into their meaningful parts and assembling their meaningful parts into the new lexicon. As maintained by Kuo and Anderson (2006), morphological awareness resembles language learners' knowledge of the process of words formation of a particular language. For example, when English language learners recognize the word *development* is formed of two morphemes (*develop*, base word, and the suffix *-ment* meaning the action or result of), subsequently, they will be able to form new lexical items such as *retirement*, *establishment*, and *abandonment* by adding the suffix *-ment* to

base words. Consecutively, their comprehension of new words can influence their understanding of reading texts and writing in that language. Several studies have concluded that morphological awareness might be a cornerstone in first language L1 and L2 vocabulary development and reading (see Kuo & Anderson, 2006; Zhang & Koda, 2012). Considerable studies have investigated the practical relationship between morphological awareness and vocabulary knowledge of native-speaking children (see Carlisle & Fleming, 2003; McBride-Chang et al., 2005).

2. Review of Related Literature

Several studies determined that morphological awareness is an indicator of some language abilities which include reading abilities (see Deacon & Kirby, 2004; Kuo & Anderson, 2006), writing skills (see Qian, 2002), and vocabulary growth (see Nagy & Anderson, 1984; Wysocki & Jenkins, 1987). The following section will shed light on a few studies which examined the relationship between morphological awareness of first language or second language learners and their vocabulary growth or size.

First, Bertram, Laine, and Virkkla (2000) investigated the morphological role of learning vocabulary by Finnish elementary school children. They concluded that the more frequent Finnish elementary school children learned affixes, their vocabulary developed more, and they were able to discover the meanings of words.

Next is the study of Wysocki and Jenkins (1987). It examined the ability of school children of 5th, 6th, and 8th grades to use their vocabulary knowledge of morphological analysis to comprehend L1 complex lexical items. The researchers provided the students with a practice session two weeks before they took the test. The first group applied morphological analysis to learn words, while the second group learned words without implementing any morphological analysis strategy. They found that students who applied morphological analysis in learning vocabulary achieved better results than the other party who did not implement the strategy. Additionally, the first party was able to comprehend meanings of new words by morphological speculation of those words having the same roots.

As for Iranian English language learners, Khodadoust et al. (2013) investigated the relationship between vocabulary knowledge and morphological awareness of 89 undergraduate students studying English Translation. The scholars utilized two measuring tools: The Vocabulary levels Test by Nation (1990) to measure the vocabulary size of the participants and the Morphological Awareness Test by McBride-Chang et al. (2005) to measure their morphological awareness. They found a positive correlation between their participants' vocabulary size and morphological awareness. They recommended some pedagogical recommendations such as language instructors using morphological analysis in helping students learning vocabulary in the classroom. Besides, as the outcomes indicated the positive effect of morphological awareness on the growth of the participants' vocabulary, so it was recommended to include morphological activities in textbooks. Language instructors have to include the systemic and analytic aspects of morphological awareness in the classes to increase the students' vocabulary and morphological knowledge. On the other hand, they suggested more research to be conducted to investigate the difference in language learning performance between male and female in language learners.

Akbulut (2017) examined the connection between morphological awareness and lexical knowledge of 52 Turkish university students attending ESL introductory classes. The students were divided into experimental group and control group. Both groups took a pre-test which consisted of Nation's (2001) Vocabulary Levels Test and Morphological Awareness Test, Part 1. After 12 weeks of vocabulary teaching for both groups, they took a post-test of the Vocabulary Levels Test and Morphological Awareness Test, Part 2. The experimental group was instructed for three hours per week morphological knowledge and morphological analysis of lexical items. Whereas, the control group was instructed for three hours of regular vocabulary teaching methods as memorizing strategies and using dictionaries. Based on the outcomes, a significant positive correlation existed between morphological awareness and vocabulary size of the participants. The experimental group scored higher on the tests than the control group after 12 weeks of morphological instruction. This outcome signifies that morphological awareness can motivate students and help them to learn English vocabulary.

Long and Rule (2004) and Alsaeedi's (2017) conclusions were the same as Akbulut's (2017). Their outcomes revealed that ESL/EFL learners could develop their lexical knowledge by using morphological analyses as opposed to regular vocabulary teaching methodologies.

Although limited research conducted with Arab ESL or EFL learners, the relationship between morphological analysis and vocabulary knowledge has been revealed. Al Farsi's (2008) study deducted the inverse of this relationship. It inspected the relationship between vocabulary knowledge and morphological awareness among 54 Omani EFL undergraduate students. The testing instruments were the Vocabulary Levels Test by Nation (2001) and the Morphological Awareness Test by McBride-Chang et al. (2005). The findings showed that there was no relationship between the participants' vocabulary knowledge and their morphological awareness. Moreover, the vocabulary size and morphological awareness of the participants were limited. Conversely, Alsaeedi's (2017) study concerning Saudi EFL undergraduate students and Yasin and Jawad (2015) regarding Iraqi EFL postgraduate students revealed the association between the vocabulary knowledge of the students and their morphological awareness.

Several studies have exhibited a positive association between vocabulary knowledge and morphological awareness. There is a deficiency in the literature regarding the lack of studies conducted on Jordanian ESL or EFL learners. Moreover, no study was found using the Vocabulary Size Test (Nation & Beglar, 2007) to measure the vocabulary knowledge and size of students as this utilized in this study.

3. Purpose of the Study

Research has divulged the significance of morphological awareness in enhancing the vocabulary knowledge of language learners (See Carlisle, 2010; McBride-Chang et al., 2005; Morin, 2003; Schiff & Calif, 2007). As stated by Carlisle (2010), "students do become more able to infer the meanings of unfamiliar words after receiving instruction in morphological analysis" (p. 466). There is a correlation between morphological awareness and learners' lexical development due to morphological awareness that involves recognition of the words' meaning and orthography; consequently, learners will be able to identify words inevitably (McBride-Chang et al., 2008;

Zhang & Koda 2012). Moreover, morphological awareness contributes significantly to L1 vocabulary knowledge, according to Y cel-Ko (2015).

Nevertheless, not many studies have been executed on the impact of morphological awareness on vocabulary in L2 learning (see Akbulut, 2017; Migel, 2012; Y cel-Ko , 2015; Zhang & Koda, 2012). Hence, there is a need for more examinations to delve into the role of morphological awareness in expanding vocabulary in L2. The purpose of the present study is to inspect the relationship between adult English foreign language learners' morphological awareness and their respective vocabulary size. The findings are expected to provide valuable pedagogical implementations to improve vocabulary learning at the university level.

4. Research Questions

This research is an attempt to answer the main question of the study: Is there a relationship between the morphological awareness of BA students from Jordanian universities studying English Language and Literature and their vocabulary knowledge?
The research questions addressed in this study are:

1. What is the English vocabulary size of the participants of the study?
2. What level of English morphological awareness do these participants possess?
3. Is there a relationship between the participants' English morphological awareness and their English vocabulary size?
4. Does English morphological awareness differentiate between the participants' performance on the complex word and simple words of the VST?

5. Methodology

5.1. Participants

The participants of this study were senior university students from three private Jordanian universities studying BA English Language and Literature. The participants were 90 students chosen randomly from third and fourth-year students. The participants' age ranged between 19 and 25, and all were native Arabic speakers and had been learning English as a foreign language for at least 12 years. The participants' gender was not considered although 18 males and 72 females students were represented in the study. They were tested in their universities in the First Term of the 2018-2019 academic year.

5.2. Research Instruments

Two tests were applied to answer the research questions of the study. The first test was the Vocabulary Size Test (Nation & Beglar, 2007). It was adapted as it is widely used, and it functions reliably and constantly, and its results are easy to score and interpret. The second test was the Morphological Awareness Test with its two subtests: The Morphological Structure Test (Synthetic Aspect) and the Morphemes Identification Test (Analytic Aspects) (McBride-Chang et al., 2005).

5.2.1. The Vocabulary Size Test

With the aim to assess the participants' vocabulary size, the Vocabulary Size Test (VST) by Nation and Beglar (2007) was utilized. The test measures the vocabulary size of English language learners based on 14,000-word families extracted from the British National Corpus. Beglar (2010) validated the test using Rasch analysis based on Messick's (1995) validation framework.

Moreover, the test is a reliable measuring instrument of the vocabulary size of non-native speakers of English (Beglar, 2010; Nation & Beglar, 2007). Although the English monolingual version of the test has gained momentum, the bilingual versions of it have been extensively utilized. The multiple-choice options of the items are in the native language of test-takers such as Japanese, Russian, Vietnamese, Mandarin, and Persian. (See Elgort, 2013; Karami, 2012; Nguyen & Nation 2011; Stewart, 2009; Zhao & Ji, 2016).

The VST consists of 14 vocabulary frequency level, composing of 140 multiple-choice items, with ten from each 1,000-word family level. The frequency levels are arranged in frequency order; the first 1000-word level comprises the most frequent word families, and the 14,000-word level contains the least frequent word families. The total vocabulary size of a learner is obtained by multiplying the overall score of a learner by 100.

The VST is an applicable diagnostic test used by language instructors to identify the vocabulary size of their students and which word-frequency level they need to target. Furthermore, the test is useful for research purposes to measure total written vocabulary size for learners of the English language (Beglar, 2010; Nation & Beglar, 2007; Nguyen & Nation, 2011).

The VST used in the present study was modified by having half of the items (five items) complex words, and the other half simple words at each level. The reason for this was to inspect the relationship between morphological awareness and the participants' performance in simple words versus complex ones. Complex words are created by adding some morphemes to test items.

5.2.2. Morphological Awareness Test

The Morphological Awareness Test by McBride-Chang et al. (2005) was used to test the participants' morphological knowledge. This test is composed of two parts: Morpheme Identification Awareness Test (Analytic Aspects) and Morphological Structural Awareness Test (Synthetic Aspects).

5.2.2.1. Morpheme Identification Test (Analytic Aspect)

The Morphemes Identification Test gauges the participants' ability to analyze and break down complex words into smaller units, for example, *adulthood* = *adult* + *hood*. In the present study, the participants were given 13 decontextualized items that were diverged from the items of the original Morpheme Identification Test to harmonize with the participants' age. The participants were asked to write the meaning of each morpheme. Then they were required to segment the words into as many smaller meaningful units as they can identify in each word. The words were out of context as to restrict the potential influence of context in guessing the meanings of words. The morphemes were neutral, in terms of no phonological and orthographical changes were caused to the stem.

The total score of Morpheme Identification Test is 33: three inflectional affixes, 13 derivational affixes, 17 stems in total. The overall score stands for the maximum number of possible morphemes in the test item.

5.2.2.2. Morphological Structure Test (Synthetic Aspect)

The Morphological Structure Test measures students' morphological ability to synthesize morphemes to produce new words. For instance, the word *write* could be attached to many morphemes, such as *writer*, *writing*, and *rewrite*. A modified version of the Morphological Structure Test was used to make the test more appropriate for university students. The test consists of 14 items: nine inflectional affixes, three derivational affixes, and 23 stems. The items are embedded in a sentence frame to inspect two elements: First, the students' level of awareness of lexical structure, second to inspect the relationships between words and how words relate to each other in a sentence. The participants were required to use the frame sentence to create a new word to complete the next sentence.

The total score of Morphological Structure Test is 35 points that signify the maximum number of possible morphemes in the test item.

5.3. Data Collection Procedure

The participants of the study were 90 BA students of English Language and Literature from three Jordanian universities. Data were collected in the participants' classes during the third week of the first term of the 2018-2019 academic year. The tests were carried out on different days to minimize fatigue. The Vocabulary Size Test was administered first to determine the participants' vocabulary size. After two days, The Morphological Awareness Test, with its two subtests (The Morphemes Identification Test and the Morphological Structure Test) were administered to inspect the participants' morphological analytic and synthetic abilities. The participants were instructed for each test, and there was no time limit for the participants to complete the tests.

5.4. Data Analysis

The descriptive statistics and corresponding correlations were used to analyze the quantitative collected data of this study. Mean and standard deviation are used to summarize: the results of the Morpheme Identification Test, the Morphological Structure Test, and the Vocabulary Size Test.

Spearman's rho was used for the collected data to assess: First, the students' morphological knowledge. Second, the relationship between the students' vocabulary size and their morphological awareness. Finally, to find if the morphological awareness differentiates between the students' performance on complex versus simple words.

6. Results

6.1. Vocabulary Size Test

The VST consists of fourteen levels in which each level comprises of ten items, making the overall number of items 140 and the total score is 140 points. The Kuder-Richardson 21(KR-21) formula was applied in assessing the reliability of the total items of the VST (140 items), which the reliability value is 0.812 ($\alpha = 0.812$). This result indicates that the test is a reliable measuring instrument of vocabulary size. The first question of the research was answered based on the students' performance on the VST.

Table 1 presents the descriptive statistics of the students' mean scores for the VST on each level. It displays a decline in the students' mean scores from level 1 to level 14. The highest mean

scores were for the first level (M= 8.65) and the second level (7.47) as those are the highest frequency words in English. Whereas the lowest mean score (M= 0.64) was for the 14,000 words because they are the least frequently used words in English. The students attained higher mean scores for the first seven levels (level 1 – level 7) and lower mean scores for the second seven levels (level 8 – level 14). In general, the mean scores decreased from the first seven levels to the next second seven levels. Accordingly, students perform better on the higher frequency words than the lower frequency words, as they are acquainted with high-frequency words more often.

Table 1. *Descriptive statistics for scores on each level of the Vocabulary Size Test for all Students (N = 90)*

Level of VST	Mean	SD	Range
First 1000	8.65	1.23	7 - 10
Second 1000	7.47	1.30	6 - 10
Third 1000	6.81	1.99	3 - 10
Fourth 1000	5.93	2.68	2 - 10
Fifth 1000	5.06	1.58	1 - 9
Sixth 1000	4.39	2.41	1 - 10
Seventh 1000	3.73	1.97	0 - 8
Eighth 1000	3.85	2.07	1 - 8
Ninth 1000	2.72	2.93	0 - 7
Tenth 1000	1.75	2.69	0 - 6
Eleventh 1000	1.60	2.54	0 - 5
Twelfth 1000	1.43	1.38	0 - 4
Thirteenth 1000	1.62	1.51	0 - 6
Fourteenth 1000	0.64	2.71	0 - 4
Total 1st 7 levels	4,204	13.16	20 - 67
Total 2nd 7 levels	1,361	15.83	1 - 40
Overall score	5,565	28.99	21 - 107

The following calculations were made to gauge the vocabulary size of the students. As there are ten items sampled at each 1,000 word-family level, each item in the test is representative of the

knowledge of 100 word-families. The students' mean scores on the test were multiplied by 100 to estimate the vocabulary size at each level. The total vocabulary size that makes the overall vocabulary size of the students is 5,565 word-families (students' vocabulary size falls within this level).

6.2. Morphological Awareness Test

Morphological Awareness Test is divided into two sub-tests: The Morpheme Identification Test (Analytic Aspect) and Morphological Structure Test (Synthetic Aspect). The reliability of the morphological awareness tests was calculated by using Cronbach's alpha, as presented in Table 2. The reliability of the Morphological Awareness Test of the total test items (27 items) inclusive of both subtests was 0.881 ($\alpha = 0.881$) indicating that the test is reliable. The coefficient reliability for both subtests was obtained separately by using Cronbach's alpha. The Analytic Aspect was reliable at 0.853($\alpha = 0.853$), and the Synthetic Aspect was reliable at 0.901 ($\alpha = 0.901$). In general, the students' scores in the Morphological Awareness Test are reliable.

Table 2. *Reliability for the Morphological Awareness Tests*

	Instruments	Number of Items	Cronbach's Alpha	Total
Morphological Awareness Test	**Morpheme Identification Test**	13	0.853	
		27		0.881
	Morphological Structure Test	14	0.901	

To answer the second research question to determine the degree of the students' morphological knowledge, descriptive statistics for the mean scores obtained from the students' performances on the Morphological Awareness Test with its two sub-tests: The Morpheme Identification Test (Analytic Aspect) and Morphological Structure Test (Synthetic Aspect).

As for a general comparison between the students' scores of the Morpheme Identification Test (Analytic Aspect) and their scores of the Morphological Structure Test (Synthetic Aspect), their mean scores indicate a significant difference between their results in both tests as it is represented in Table 3. There was a significant difference in the scores for the Morpheme Identification Test (Analytic Aspect) (M=23.87, SD=7.34) and the scores of the Morphological Structure Test (Synthetic Aspect) (M= 17.86, SD= 10.26). The overall mean score of the Morphological Awareness Test was 41.21 out of 68 with a significant dispersion among the results (SD= 11.79), which implies that the students have intermediate awareness of word formation rules. The findings have shown that the students' morphological awareness was medium (69%).

Table 3. *Descriptive statistics for Analytic, Synthetic, and Morphological Awareness Test*

	Mean	N	SD	Minimum	Maximum
Analytic Aspect	23.87	90	7.34	7	33
Synthetic Aspect	17.86	90	10.26	4	35
Morphological Awareness Test	41.21	90	11.79	11	68

The results of Table 4 show a direct and significant relationship between the scores of students on the Analytic Aspect and their scores on the Synthetic Aspect. It can be noticed that the correlation index was very significant ($r = 0.651$, $p < 0.05$); it represents a positive correlation between analytic knowledge and synthetic knowledge.

Table 4. *Spearman's Rho for Analytic and Synthetic Tests*

			Analytic Aspect	Synthetic Aspect
Spearman's rho	**Analytic Aspect**	Correlation Coefficient	1.000	.651**
	Synthetic Aspect	Correlation Coefficient	.651**	1.000
		N	90	90

** Correlation is significant at the 0.05 level

The students' knowledge of inflectional, derivational affixes, and stems were obtained to gain more perception of the students' morphological knowledge. One point was given for each morpheme in this test, which makes the total score 68. The total number of morphemes were: three inflectional affixes, 13 derivational affixes and 17 stems in the Analytic Aspect section, while three derivational affixes, nine inflectional affixes and 23 stems in the Synthetic Aspect section.

Table 5. *Means for students' scores in Inflectional, Derivational and Stems of Analytic and Synthetic Aspects*

	Inflectional	Derivational	Stem
Analytic Aspect	M 1.48	M 10.56	M 12.23

	SD 0.601	SD 1.85	SD 1.973
Synthetic Aspect	M 1.53	M 8.07	M 15.58
	SD 0.623	SD 1.014	SD 2.961

It can be indicated from Table 5 that the students' scores were better in inflectional affixes in both the Analytic Aspect (M= 10.56, SD = 1.85) and Synthetic Aspect (M= 8.07, SD= 1.014) than their scores in derivational affixes in the Analytic Aspect (M= 1.48, SD= 0.601) and Synthetic Aspect (M= 1.53, SD= 0.623) of Morphological Awareness Test. Furthermore, the students' performance was relatively good on the Synthetic Aspect stems (M= 15.58, SD= 2.961), and the Analytic Aspect stems (M= 12.23, SD= 1.973) of the test.

6.3. Morphological Awareness Test and its Relationship to the Vocabulary Size Test

The correlation coefficient between the students' morphological awareness and their vocabulary size was calculated using Spearman's rho to answer the third research question. The mean scores of the VST, overall Morphological Awareness Test, and the two Morphological Awareness tests for the students were correlated to measure the strength of association between the variables. The significance of correlations is reported as a one-tail p-value as it is presumed that positive relationships exist between morphological awareness and vocabulary size of the students. The values of the correlation according to Ratner's (2011) interpretation were interpreted as follows: 0 – 0.3 (weak), 0.3 – 0.7 (moderate), and 0.7 – 1.0 (strong).

Table 6. *Spearman's Rho for students' Vocabulary Size, Overall Morphological Awareness Test, and Analytic and Synthetic Aspects (N= 90)*

	VST	Analytic Aspect	Synthetic Aspect	Morphological Awareness Test
VST	1.000	.571 **	.509 **	.461 **
Analytic Aspect	.571 **	---	---	---
Synthetic Aspect	.509 **	---	1.000	---
Morphological Awareness Test	.461 **	----	----	1.000

**Correlation is significant at the .05 level (1-tail)

The outcomes of Table 6 reveal that the Morphological Awareness Test, the Analytic, and Synthetic Aspects were significantly correlated with the vocabulary size of the students. The strength of association, however, was a moderate correlation ($r = 0.571, 0.509, 0.461$, $p < 0.05$). The correlation of the Morpheme Identification Test (Analytic Aspect) and VST means ($r= .571$, $p < 0.05$) was slightly higher compared to the Morphological Structure Test (Synthetic Aspect) and the VST means ($r= .509$, $p < 0.05$). This outcome denotes that the two tests assessed different kinds of morphological knowledge. `

6.4. The Morphological Awareness Test and Complex vs. Simple Words on the VST

The students' performance on the Morphological Awareness Test and their performance on simple vs. complex words on the VST have been scrutinized to answer the fourth research question. Table 7 presents the descriptive statistics of the students' performance in simple vs. complex words of the first seven levels and the second seven levels of the VST. The students obtained better average scores in simple words than complex words, mainly at the first seven levels (M=10.25, SD= 2.68). In in contrast, their lowest average scores were scored on complex words at the second seven levels (M = 2.90, SD =2.61).

Table 7. *Descriptive statistics for the students' scores on simple words vs. complex words for the Vocabulary Size Test*

Level of VST		**Simple words**	**Complex words**
Total 1st 7 levels	Mean	10.25	8.02
	SD	2.68	3.38
	Minimum	29	22
	Maximum	35	32
Total 2nd 7 levels	Mean	5.39	2.90
	SD	2.37	2.61
	Minimum	3	1
	Maximum	30	21

The outcomes of Table 8 display the correlation coefficient between simple vs. complex words of the VST and the Morphological Awareness Test.

Table 8. *Spearman's Rho for simple vs complex words of the VST and Analytic and Synthetic Aspects (N 90)*

Level	**VST**			**Simple words**	**Complex words**
Spearman's rho	**Total 1st 7 levels**	Analytic Aspect	Correlation Coefficient	.704**	.589**
		Synthetic Aspect	Correlation Coefficient	.636**	.435**
	Total 2nd 7 levels	Analytic Aspect	Correlation Coefficient	.637**	.414**

	Synthetic Aspect	Correlation Coefficient	.564**	.324**

**Correlation is significant at the .05 level

It can be deducted from Table 8 that a positive and significant correlation exists between simple vs. complex words of the VST and the two subtests of the Morphological Awareness Test. The students' performance on simple words vs complex words at the first and second seven levels is positively correlated with their performance on the Analytic and Synthetic Aspects. On the whole, this significant association of the students' performance on both subtests of the Morphological Awareness Test make a distinction between their performance on simple vs. complex words.

7. Discussion

The present study aims to detect the relationship between morphological awareness and the vocabulary size of adult English foreign language learners. Four research questions were answered to determine this relationship; the results of these questions are discussed in the following sections.

7. 1. Vocabulary Size

The first research question of the study regarding the students' vocabulary size was investigated using the Vocabulary Size Test (VST) by Nation and Beglar (2007). The test is available from the following website www.victoria.ac.nz/lals/about/staff/paul-nation. As indicated by Nation and Meara (2002), a correlation exists between the number of words language learners know, as measured by the vocabulary tests, and how well they present their reading, writing, and speaking English abilities. Moreover, vocabulary size manipulates the types of reading material that language learners can easily read. Laufer (1997) confirms that a lacking number of words in the second language learner's vocabulary comprises a hindrance to efficient reading.

The current students' performance on the VST indicated that they performed better at the first seven levels (1-7) than the second seven levels (8-14). Their performance was better on the high-frequency words than the low-frequency words. The overall vocabulary size of the students was 5,565-word families. According to Nation's (2016) classification of frequency levels, their vocabulary size can be considered as mid-frequent level. The three main frequency levels are high-frequency level (1000-2000 word families), mid-frequency level (3000-9000 word families), and low-frequency level (10000 on word families).

Nation and Beglar (2007) imply that the outcomes of earlier studies utilized the VST disclosed the vocabulary size of 5,000- 6,000-word families of undergraduate non-native English speakers studying at English-speaking universities. Likewise, non-native postgraduate (Ph.D.) students need the vocabulary size of around 9,000 word-families. Such results denote that learners need to obtain a specific vocabulary size before handling a text without difficulty. Hu and Nation (2000), moreover, advise that learners need to be familiarized with 98% of the words in the text at any level to understand it. Furthermore, Nation (2006) assumes that learners' vocabulary size of around 8,000- 9,000 word families is expected to achieve sufficient perception of 98% written text coverage, and their vocabulary size of 6,000-7,000 word families is required to understand 98% spoken coverage. Contrariwise, Laufer and Ravenhorst-Kalovski's (2010) recommend two

distinctive lexical thresholds for the probable text coverage at which most learners can understand. Learners' vocabulary size of 8,000-9,000-word families is the ideal threshold to comprehend 98% of written text coverage. Whereas their vocabulary size of around 5,000-word families is the minimum threshold required to understand 95% of spoken coverage. However, the vocabulary size needed for learners to understand conversational English is about 3,000- word families (Adolphs & Schmitt, 2003). According to corpus-based studies, learners are required to acquire a large vocabulary size for reading comprehension larger than what is needed for understanding listening English. Additionally, less frequent vocabulary contributes to a nominal percentage of text coverage (Nation, 2006; Stæhr, 2008).

Thinking about 98% coverage of text as indicated by corpus-based studies, the students' vocabulary size in the present study demonstrates that their vocabulary size is below 8000- word families necessitated for receptive tasks as understanding written texts. Considering the students' limited vocabulary knowledge, they will not be able to handle and understand diversified challenging oral and printed texts such as academic texts and novels. A demand for planned teaching and learning and a variety of reading opportunities are required due to the students' moderate vocabulary size. Students, therefore, need more prospects for learning vocabulary with different frequency levels to improve their vocabulary knowledge as it is vital for their academic achievements. As stated by Nation (2001), vocabulary learning strategies can be applied by language instructors to start teaching language students high-frequency words and then progress to low-frequency words.

The vocabulary size of students should be gauged with the purpose to detect the expected number of words to accomplish essential assignments at the university level. Students need to obtain good vocabulary size, so they will be able to understand and infer different written English texts as a part of their study. Hence, increasing their vocabulary size should be their primary focus.

7.2. Morphological Awareness

The second research question of this study examined the students' morphological awareness. The answer to this question was based on the students' performance on the Morphological Awareness Test with its two subtests: The Morphological Structure Test (Synthetic Aspects) and the Morphemes Identification Test (Analytic Aspects) by (McBride-Chang et al., 2005).

The outcomes have revealed that the students' overall morphological awareness was medium (69%). This outcome demonstrates the students' inadequate competency to deal with the morphological structure of words. Language learner's morphological awareness could be counted as a good indicator of vocabulary knowledge (Goodwin et al., 2013; Mahnoosh et al., 2017; McBride -Change et al., 2005). Besides, students performed better in the Analytic Aspect (M=23.87) than they did in the Synthetic Aspect (M= 17.86). Their low performance in the Synthetic Aspect exposes their incapability to use and form new words utilizing free and bound morphemes. According to Bloom's taxonomy- cognitive domain (1956), synthesis necessitates more highly developed skills than analysis. Taking this into consideration, it explains the students' low performance in the synthesizing morphological structure.

The students' results were higher in inflectional affixes than their results in derivational affixes in both subtests of Morphological Awareness Test. These results are incompatible with the findings of the study by Varatharajoo et al. (2015). Such an outcome is in agreement with Carlisle and Stone's (2003) inference that points towards language learners' acquisition of inflection before their acquisition of derivation. As the students of this study were native Arabic speakers, the typological differences between the Arabic language and the English language might have been a reason for the students' inability not being able to identify the morphological structure of complex words.

Referring to the conception of cross-linguistic variation, the morphology of the Arabic language might have caused the students' lack of ability to perceive the morphological structure of English complex words. In the perspective of the fact that Arabic affixes and roots are bound morphemes, then, complex Arabic words cannot be split into its meaningful constituents. Considereing this fact, it might have influenced the students' incapability to part English stems from affixes, thereupon, they were incompetent to code obscure English complex words and were unable to uncover the implications of new complex words.

The English morphological system is a linear or concatenative (Saiegh-Haddad & Geva, 2007) in which word formation employs a sequence of morphemes from the word (Kiraz, 2001). For instance, the word "*unthoughtful*" is split into "*un-*", "*though*t", *"-ful*". As stated by Al-Farsi (2008), the morphological structure of English is regarded as a straightforward structure. Contrastingly, the Arabic morphological system is a non-linear derivational process of a non-concatenative language (Saiegh-Haddad & Geva, 2007). For example, the verb hit /*ḍurib*/ in the past perfect tense is derived from the consonantal root */ḍ-r-b/* (the concept of hitting), and the vocalic sequence /u-i/ used to indicate the past perfect tense. The concatenation of these morphemes will not produce anticipated words if they are added indifferently. The inflection in Arabic is formed by the concatenative process, whereas derivation occurs using a non-concatenative process (Bhuyan & Ahmed, 2008).

Based on the prior mentioned findings of the Morphological Awareness Test, it is essential to apply explicit teaching methodology of morphological instructions and morphological analysis in EFL and ESL classes. Several studies have exhibited that morphological awareness results in mastering oral and written language skills such as reading and writing (Mechta, 2016; Qian, 2002). As maintained by several studies, students have demonstrated their ability in reckoning the meanings of unknown words or complex words after being acquainted with morphological analysis instruction (Gordon, 1989; Morin, 2003; Y cel-Ko , 2015; Zhang & Koda, 2012). Morin's research (2003) deduces that explicit teaching of morphological units enhances both receptive and productive vocabulary knowledge of students as well as facilitating vocabulary learning of unknown words. Another study was conducted by Varatharajoo et al. (2015) concludes that training their 106 ESL secondary students inflectional and derivational morphemic analysis awareness improved their students' vocabulary learning strategies.

7.3. Vocabulary Size, Morphological Awareness and Complex vs. Simple Words on the VST

The third and fourth research questions tackled the probable relationship between the students' vocabulary size and their morphological awareness, their accomplishment on the Morphological Awareness Test, and their performance on simple vs. complex words on the VST.

It was assumed that a positive correlation would exist between the vocabulary size of the students, as estimated by the VST, and their morphological awareness, as evaluated by the Morphological Awareness Test. Additionally, a correlation would be found between the students' morphological awareness and their performance on simple vs. complex words on the VST.

The results of the present research display a positive significant correlation between the vocabulary size of the students and their morphological awareness. This result is in line with the results of the study administered by McBride-Chang et al. (2005) that indicated a positive significant correlation between their participants' morphological awareness and vocabulary grades.

It is noted that the correlation between the students' vocabulary size and their performance on the Morpheme Identification Test (Analytic Aspect) was to some extent higher than the correlation between the students' vocabulary size and their performance on the Morphological Structure Test (Synthetic Aspect). This finding signifies that the two subtests of the Morphological Awareness Test measured different types of morphological knowledge, and the students had different performance on each test.

The fourth question of this study inspected the students' performance on the Morphological Awareness Test and their performance on simple vs. complex words on the VST. The outcomes of the question show that the students' performance on simple vs. complex words of the first seven levels was higher than their performance on simple vs. complex words of the second seven levels of the VST. This correlation indicates the students' performance decreases as the word frequency level of the VST decreases too. A significant positive relationship existed between the students' performance on simple words vs complex words on the VST and their performance on the Analytic and Synthetic Aspects.

This study highlighted the relationship between the students' English vocabulary size and their English morphological awareness and between the students' English morphological awareness and their performance on English words complexity. These focal points are congruent with several pieces of research, such as Singson, Mahony, and Mann, 2000, and Sternberg, 1987.

8. Conclusion

The present study investigated the relationship between the vocabulary size of adult language learners (senior students of BA English Language and Literature) and their morphological awareness. The study inspected the possibility of a correlation between the students' vocabulary size and their morphological awareness and if their performance on the Morphological Awareness Test would be different in word complexity (simple vs. complex words). Two empirical research instruments were used to answer the research questions: The Vocabulary Size Test adapted from Nation and Beglar (2007), and the Morphological Awareness Test with its two subtests: The

Morphological Structure Test (Synthetic Aspect) and the Morphemes Identification Test (Analytic Aspects) modified from McBride-Chang et al. (2005).

The outcomes indicated that the students demonstrated medium overall morphological awareness, which can be considered ineffective managing the morphological structure of words. As for their achievement in word formation, they performed better in the Morpheme Identification Test (Analytic Aspect) than the Morphological Structure Test (Synthetic Aspect). This result reflects the students' inability to form and use new words using free and bound morphemes. Regarding their vocabulary size, the findings of the study revealed that their vocabulary size is 5,565 word-families (mid-frequent level size). They performed better on the high-frequency words than the low-frequency words. Besides, they scored higher in simple words than complex words on the VST.

To conclude, the findings of the study illuminated a positive correlation between the vocabulary size of the students and their morphological awareness. The students' morphological awareness, moreover, correlated positively with their performance on simple vs. complex words on the VST and their performance on the Analytic and Synthetic Aspects. These outcomes imply a need for pedagogical implications to be implemented in ESL/EFL classes.

To improve the morphological awareness and vocabulary size of the students, explicit teaching of morphological awareness in the classes has to be put into practice, in addition, including morphological knowledge in the English language curriculum used in classes. Language instructors can endorse diversity of morphological activities to help students to analyze and build the morphological structure of new lexical items. Carlisle and Stone (2003) indicate that morphological units can be used by language learners to know the meaning of words to improve their lexical knowledge. Moreover, teaching students affixes will increase their vocabulary size as stated by Baumann et al. (2003), and Kuo and Anderson (2006) and will improve their reading comprehension due to the increase in their vocabulary knowledge according to Mechta (2016), and Fowler et al. (1995).

The pedagogical insinuation of this study is that morphological awareness is essential for vocabulary learning and vocabulary size of English language learners. Language instructors and curriculum planners have to focus on using morphological knowledge and activities in the classes of ESL/EFL due to their significance in learning English language skills as writing and reading in addition to vocabulary learning and academic success.

Future research may investigate some aspects that were not taken into consideration in this study. This study investigated the vocabulary size of the students, while other language skills such as reading, or writing can be examined in future research. It would be useful if other factors were considered in the study as age, gender, or learning motivations of the students.

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