

Morphological Awareness and Its Relationship to Vocabulary Knowledge Complexity among Iraqi EFL University Students

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Abstract

This paper examined the relationship between morphological awareness and vocabulary knowledge in Iraqi EFL University Students. The study was conducted on 30 postgraduate students, majoring in School of Language Studies, and Linguistics, from The National University of Malaysia (UKM). Two morphological awareness tasks (morpheme identification task and morphological structure test) were used to assess the students' morphological awareness. The Vocabulary Level Test (VLT) is adapted from Nation (Nation 2013), to examine the students' knowledge of words drawn from the 2000, 3000, 5000. Then the results were correlated in order to find out whether morphological knowledge plays any role in vocabulary knowledge of Iraqi students or not. The results showed that there is a significant relationship between the students' overall morphological Knowledge and their vocabulary Knowledge. The results also shown that students performed better in analysis section than what they did in synthesis section but the differences between them were low and there was a high correlation between analytic and synthetic knowledge so that analytic knowledge could highly predict synthetic knowledge and vice versa. The findings of this study led to the suggestions to improve Iraqi students' English learning in general and their vocabulary Knowledge in particular through using morphological Awareness as a very useful vocabulary learning strategy. Moreover, morphological awareness didn't differentiate between the students' performance on complex words and simple words.

1) INTRODUCTION

Morphological awareness is defined as the ability to use the knowledge of word formation rules and the pairings between sounds and meanings (Kuo and Anderson 2006). With morphological awareness, learners are able to learn morphemes and morphemic boundaries by disassembling complex words into meaningful parts (e.g. childhoods= child + -hood + -s), learning the meanings of roots, affixes (child= baby, -hood= the state of being, -s= to indicate plural nouns), and reassembling the meaningful parts into new meanings (motherhood, fatherhood, brotherhood). The practice of dissembling-reassembling method is called morphological analysis.

Vocabulary knowledge is one of the skills crucial towards fluent language use, the knowledge of around 3,000 word families is the threshold needed for tapping skills related to other languages. (Nation 1993). The size of one's vocabulary is an indicator of how well a second language (L2) learner can perform academic language skills, such as reading, listening, and writing (Treiman and Cassar 1996, Bear, Invernizzi et al. 2000). Barring this threshold, learners will encounter problems understanding a language they are being exposed to (Fulcher and Davidson 2007). Argues that vocabulary knowledge is a predicator of learners' discourse comprehension, which allows grammatical rules to be patterned in the learners' mind (Ellis 1997). Having inadequate vocabulary hampers learners' reading comprehension in a way that makes it more likely that the learners will face difficulties in the path of academic achievement.

As such, vocabulary learning and teaching is a central activity in an L2 classroom. One way in which vocabulary learning can be fostered is through learning strategies. These strategies are consciously or unconsciously learned techniques for processing information in order to enhance learning, comprehension, and retention (O'malley and Chamot 1990). One potential vocabulary learning strategy is the use morphological awareness to learn new vocabularies.

Studies show that language learners encounter complex words during the early stages of their lessons. For instance, demonstrate that 60% of newly encountered words by children are morphologically-transparent complex words (Nagy and Anderson 1984). Learners are found able to use their morphological knowledge to uncover the meaning of newly encountered words (Gordon 1989, Carlisle and Stone 2003).

The fact that late-elementary graders encounter many derived words in their reading has motivated researchers to further explore the role of morphological awareness in the context of vocabulary growth.

2) PROBLEM STATEMENT

The aim of the present study is to assess the morphological awareness as a learning strategy for promoting learners' vocabulary size. It will first examine previous research that has analyzed on the role of morphological awareness vis-à-vis vocabulary development. Of particular interest will be the relationship between morphological awareness and vocabulary size, as well as how it relates to the learners' ability to deal with morphological complex words. The study will then investigate the relationship between English as foreign language learners' morphological awareness and their respective vocabulary size. It will assess the relationship between their vocabulary size and overall morphological awareness, particularly their ability to deal with morphologically complex words in L2 learning. The results are expected to provide insightful evidence into how to improve vocabulary instruction at university level. Two key aspects of morphological awareness will be studied: analytic and synthetic word formation. Analytic words formation refers to breaking words down into its meaningful components. In contrast, synthetic word formation refers to bringing the smallest pieces (morphemes) together to form words (Aronoff and Fudeman 2011).

The crucial problem for Iraqi EFL postgraduate students with regards to their academic life in Malaysian universities is the fact that they experience poor vocabulary knowledge in speaking English, as it is considered a foreign language by Iraqis, where the aural and oral skills are not subjected to focus in school, or even universities.

When these students move to Malaysia to pursue their postgraduate studies, they are expected to possess good enough vocabulary to present topics and courses in front of their peers, or even hold discussions with their supervisors on assignments, proposal, and theses, all of which require high levels of listening and speaking skills. However, their already insufficient level of spoken and written English will be problematic, alongside other inherent problems such as morphological awareness and its relation to vocabulary knowledge and morphological complexity.

3) RESEARCH OBJECTIVES

The main objectives of this study are:

- 1- To investigate to what extent the students are aware of analytic and synthetic word formation rules.
- 2- To determine the relationship between awareness and vocabulary size.
- 3- To differentiate the morphological awareness between the students' performance on complex and simple words.

4) RESEARCH QUESTIONS

Based on the body of literature on morphological awareness and vocabulary learning, the study aims to answer the following questions:

1. To what extent are the students aware of analytic and synthetic word formation rules?
2. How does this awareness relate to vocabulary size of the students?
3. Does morphological awareness discriminate between the students' performance on complex and simple words?

5) LITERATURE REVIEW

5.1 Morphology and Morphemes

Morphology refers to the study of forms. Linguistics *morphology* refers to the study of words, their internal structure, and the mental process involved in word formation (O'Grady and De Guzman 1997, Aronoff and Fudeman 2011). It is '... the study of the hierarchical and relational aspects of words and the operation on lexical items according to word formation rules to produce other lexical items' (Laufer and Nation 1995). Traditionally, a word can be divided into the minimal linguistic units that bear meanings or grammatical functions (i.e. *morphemes*). In line with the traditional definition, (Coates 1999) identifies three criteria of what it takes to be a morpheme. A morpheme should have a meaning or function, recur in other words with a related meaning (e.g. *un-* in *unbelievable* and *unhappy*), and be involved in a pattern of interchange (e.g. *-est* in *longest* can be substituted with another morpheme such as, *-er*). Morphemes can be classified as free or bound. Simply put, *free morphemes* are those that can exist on their own (e.g. *book* in *notebooks*), whereas *bound morphemes* cannot (e.g. *-s* in *notebooks*) (Coates 1999). The word *reestablishments* can be broken into four morphemes: *re-*, *establish*, *-ment*, *-s*. *Establish* is called the *root*.

The root is the core of a word to which other morphological units are attached. *Establish* can also be a *stem* (i.e. a base morpheme to which other elements are attached). A stem can be simple (*establish*) or complex (*establishment*). *Re-* and *-ment* and *-s* are called *affixes*. Affixes can appear in the forms of:

- prefixes (e.g. *re-*): bound morphemes attached in front of a stem.
- suffixes (e.g. *-s*): bound morphemes attached at the end of a stem.
- circumfixes: bound morphemes attached simultaneously before and after the stem (not applicable to English language).
- infixes: bound morphemes that are attached in the middle of a stem (not in English).

Morphemes are further categorized into *lexical morphemes* (e.g. *-full*, *-ness*, etc) or *grammatical morphemes* (e.g. *-ed*, *-s*). Grammatical morphemes are part of *inflectional morphology* that underlies the processes involved in building grammatical word forms. Words that contain inflection are called *inflected words* (e.g. *larger*, *willing*, *biggest*, *bottles*, etc). Lexical morphemes are part of *derivational morphology* concerned with the processes involved in building lexical word forms (Coates 1999). Derivational morphemes are of two types: classes 1 and 2. Class 1 morphemes trigger changes to the base and/or changes to stress assignment (e.g. *-ity* in *sanity*, *-ive* in *productive*), while class 2 morphemes do not (e.g. *-ness* in *promptness*, *-less* in *hairless*) (O'Grady and De Guzman 1997). Words that contain derivation are called *derivatives* or *derived words* (e. g. *dehumanize*, *unsatisfactory*, etc).

The study of morphology has been approached by two complementary approaches: analytic and synthetic (Aronoff and Fudeman 2011). These approaches reflect two dimensions of learners' morphological knowledge of word formation. The analytic approach is concerned with morpheme identification or breaking words down into its meaningful components. For example, *notebooks* can be recognized as *note-book-s*. Learners can segment different meaningful chunks constituting a word (Mcbride–Chang, Wagner et al. 2005).

The synthetic approach, on the other hand, is concerned with the productivity of morphological structure or bringing about the smallest pieces (morphemes) together to form words. It is assumed that learners are aware of what the pieces are in order to be able to construct new meanings into words. Therefore, analysis is subsequent to synthesis, or synthesis presupposes analysis, and a structuralists' or connectionists' views. For the purpose of the current study, the traditional structuralists' view of morphology is assumed.

5.2 Morphological Awareness & Vocabulary Knowledge

The role of morphology in vocabulary knowledge is well documented. Many studies show the benefits of utilizing morphological information (i.e. morphological awareness) in determining the meaning of a word(s) (e.g. (Bertram, Laine et al. 2000), therefore in maximizing vocabulary threshold (Wysocki and Jenkins 1987, Sandra 1994). Below is a discussion on the nature of morphological awareness, followed by a discussion of the morphological awareness and its relationship to vocabulary growth.

Morphological awareness refers to the learners' knowledge of morphemes and morphemic structure, allowing them to reflect and manipulate morphological structure of words (Carlisle and Feldman 1995, Carlisle and Stone 2003). Awareness of inflectional forms is gained earlier than awareness of derivational forms (Carlisle and Stone 2003). The construct of morphological awareness has been extended to entail other subcomponents (orthographic, semantic aspects) (Kuo and Anderson 2006).

It should be noted that many people confuse morphological acquisition and awareness. While the concept of morphological awareness implies learners' use of met cognitive strategies of reflecting and manipulating word formation rules to derive the meaning of new words in the absence of communicative context, the concept of *morphology acquisition* does not necessarily entail meeting cognitive strategies. Morphology acquisition means the cognitive abilities to use and comprehend morphological structure in natural speech (Kuo and Anderson 2006). In this sense, morphological awareness falls under the umbrella of morphological acquisition.

Morphological awareness delineated in this study hinges upon learners' knowledge of morphemes that enables them to recover the meaning of new complex words by means of morpheme identification or decomposition (i.e. analysis), and to recombine morphemes to construct new meaning by means of morphological structure (i.e. synthesis).

Morphological awareness is contrasted with phonological awareness. The latter refers to the phonological sensitivity to syllable segmentation, rhyming, and phoneme segmentation (Carlisle and Stone 2003). Some researchers have explored the nexus between morphological awareness, reading comprehension, and vocabulary knowledge independently of phonological awareness (e.g. (Fowler and Liberman 1995, Carlisle 2000), whereas others compared the effect of morphological awareness with the effect of phonological awareness on promoting reading skills and proficiency after controlling for short-term memory and vocabulary (Singson, Mahony et al. 2000, Mcbride–Chang, Wagner et al. 2005) and for verbal and nonverbal intelligence (Deacon and Kirby 2004). In

the present study, morphological awareness is addressed independently of phonological awareness; however, this study does not propose that phonological awareness is completely detached from morphological awareness. There are quite a number of methods for the instruction of morphological analysis.

For example, disassembling and reassembling words is one of the MC methods in which learners are trained on how to chunk meaningful parts of complex words and use those parts to create new words (Edwards, Font, Baumann, & Boland, 2004).

Another method is direct instruction with posters (Graves, 2004). This method is more suitable for children, where stems and highlighted affixes are presented on posters alongside pictures. The method of affixes removal and replacement can be used to introduce morphological analysis to adult learners. Disassembling and reassembling words is concerned with dissecting complex words into small meaningful units, finding the meaning of stem and affixes, and finally reassembling the meaningful parts to come up with new complex words. In this sense, morphemic analysis instruction can make the learners independently learn new vocabulary and take charge of their own vocabulary development, translating into autonomy.

Overall, the research showed that teaching morphological units explicitly is effective in encouraging the learners to unlock complex word meaning. Teaching morphological information can be done in various ways, such as morphological analysis, posters of affixes, and related word pictures. Teachers should utilize the methods that better suit the students' level and needs. Before deciding whether the learners need an explicit morphological analysis to boost their vocabulary size, the learners' morphological awareness and their vocabulary size should be investigated.

The next section describes the present study, participants, research instruments, procedure, and data analysis.

6) METHODOLOGY

6.1 Participants

The study was conducted on 30 Iraqi university students of both genders, randomly selected from MA students in School of Language Studies, and Linguistics, from The National University of Malaysia (UKM). The age of the participants were within 23-45.

6.2 Morphological Awareness Test

The Morphological Awareness Test, which was adopted from (Mcbride–Chang, Wagner et al. 2005), was applied to measure the students' ability to reflect and manipulate morphemic units in English. This test is of interest to the researchers, as it encompasses both the analytic, as well as synthetic aspects of word formation rules. Some items of the test produced by other authors and the other ones were taken from Chang et al. (2005) morphological awareness test battery. This test divided of two parts: **A morpheme identification awareness test** and a **morphological structure awareness test**, which are discussed below.

6.3 Morpheme identification test

The morpheme identification test, consisting of 14 items, was administered to determine the participants' ability to analyze and break down complex words into smaller meanings (eg. *Childhoods= Child + hoods*). The items of the test were derived from the items used in Chang et al. (2005) morpheme identification test in order to make it more appropriate for university students.

The original morpheme identification test consisted of 13 test items. In this study, the participants are given a set of complex words out of context, and are asked to segment them into as many smaller meanings as they can identify in each word. The words are decontextualized to control for the possible effect of context in guessing the meanings of words.

In the current study, the original test modified by Al Farsi (Al Farsi 2008) was administered to the subjects to measure their analytic ability. As previously mentioned, the modified version of the test consisted of 14 complex words out of context. The words were used out of context in order to control the possible effect of context in guessing the meanings of words (Al Farsi 2008).

6.4 Morphological structure test

The morphological structure test was used to measure the subjects' ability to synthesize morpheme to create new meanings. This morphological structure requires students to combine morphemes in a quite productive manner. The test consisted of 15 items. Some of the items were created by Al Farsi. The participants were provided with a frame sentence containing the usage of the target morpheme, and were asked to complete another sentence. In other words, the test task requires test takers to use the frame sentence for completing the next sentence. The 15 items tested were inclusive of inflectional and derivational affixes. The test is important because it can measure their synthesis ability (Al Farsi 2008).

This test examines the students' knowledge of lexical structure and the relations among words and within words and their constituents. Again, all of the items contain neutral morphemes.

6.5 Vocabulary Level Test (VLT) Version 1

The Vocabulary Level Test (VLT) is adapted from Nation (Nation 2013). It is widely used to measure vocabulary size based on word frequency. The VLT test is designed to measure learners' receptive vocabulary size that can be considered as an indicator of the coverage of vocabulary in a text. The original test consists of five sections (the 2,000, 3,000, and 5,000 - word levels) alongside a section of academic vocabulary.

According to Nation (Nation 2013), the 2000 and the 3000-word levels contain the high frequency words that all learners need to know in order to function efficiently in English; the 5000-word level is a boundary level between the high and low frequency word levels (Nation 2013). The students were asked to match the three meanings in each item with the words. The first level contains the most frequent words, while the second level contains the second most frequent words.

6.6 Procedure

The participants of the study were a sample of 30 master students in the School of English Language and Linguistic - UKM. To achieve the objective of the study, a few procedures were followed. First, two morphological awareness tasks (a morpheme identification test and morphological structure test) were administered to assess the students' ability to reflect and manipulate morphemic units in English. The next Vocabulary Level Test was distributed among the participants to determine respondents' receptive vocabulary knowledge. The Morphological Awareness Test was divided into sub-tests of morpheme identification versus morphological structure tests in order to investigate the morphological performances of all the participants according to their analytic and synthetic abilities. The tests were administered over two days to minimize fatigue. The first day of the Morphological Awareness Test and the second day of the VLT testing involve two parts of analysis and synthesis. The participants received instruction for

each part only on the day the particular test was administered, and they were allowed to complete the tests on their own pace on the second test day.

6.7 Data Analysis

As the data collected in this study is quantitative, the descriptive statistics and corresponding correlations are used to report the data. Mean and standard deviation are used to summarize the results of the Morpheme Identification Test, the Morphological Structure Test, and the Vocabulary Level Test.

7) RESULTS

a) Morphological Awareness Test & Vocabulary Knowledge

Morphological awareness of analytic and synthetic word formation rules. The Morphological Awareness Test is administered, and descriptive statistics and correlation coefficient are reported to answer the first research question. This test is divided in two sub-tests: the Morpheme Identification Test (analysis part) and Morphological Structure Test (synthesis part).

The correlation coefficient has been investigated to explore the relationship between students' morphological awareness and their knowledge of vocabulary when they did the two tests (Awareness and vocabulary level test). The correlation index turned out to be very significant ($r = 0.705$, $P < 0.05$). This means that there is a positive relationship between the two variables moderate. Given the descriptive statistics and the results of the analyses is presented in Tables 1-3.

Table 1. Reliability indices for the morphological awareness tests

Instruments	Number of Items	Cronbach's Alpha	Total
Morpheme Identification Test	13	0.795	
Morphological Awareness Test	30		0.8284
Morphological Structure Test	17	0.854	

Table 2. Descriptive statistics for the morphological awareness test and the vocabulary level test

Instruments	N	Mean	SD
Vocabulary Level Test	30	82.65	15.68
Morphological Awareness Test	30	51.68	10.36

Table 3. Pearson correlation between the receptive vocabulary knowledge and morphological awareness

Instruments		Vocabulary Level Test	Morphological Awareness Test
Vocabulary Level Test	The correlation coefficient	1	0.705
	N	30	30
Morphological Awareness Test	The correlation coefficient	0.705	1
	N	30	30

This question was answered on the basis of the students' performance on the morphological awareness test with two subsets of morpheme identification (analysis section) and morphological structure (synthesis section). The findings have shown that the students' morphological awareness was medium (67%).

b) Morphological Awareness & Vocabulary Size

As shown in tables below the correlation factor of morphological awareness and size for students at each level. the factor of each analytic and synthetic of morphological awareness, and each level of vocabulary are calculated to present a better idea of the relationship between morphological awareness (MA) and vocabulary size (VS). The reliability of total items of the test was 0.89.

Table 4. The mean, Standard Deviation and Variance of Students' Scores for each level of VLT.

VLT	M	ST	Variance
2000 Word Level	26.54	3.85	14.35
3000 Word Level	16.8	4.65	18.8
5000 Word Level	8.6	4.25	18.36
Sum VLT	51.94	12.75	51.51

Spearman's Rho (r_s) is a non-parametric test used to measure the strength of association between two variables. assumed that the relationship between morphological awareness and vocabulary size would be positive. The correlation factor of morphological awareness and vocabulary size as shown in table 5.

Table 5. The Spearman's Rho for the variables of vocabulary size and morphological awareness, Analytic and Synthetic Aspect

Spearman's rho	2000-word level	3000-word level	5000-word level
Analytic	0.44	0.425	0.5
Synthetic	0.574	0.568	0.462
Morphology	0.555	0.515	0.491

The morphological awareness and vocabulary size have been examined using the Nation's VLT Nation (2013). According to Nation (2013) a learner needs to learn a 90% of the vocabulary level; in order to achieve 80-90% coverage of text coverage. This study present study' student' vocabulary

knowledge represented a potential coverage of only 58% of a text vocabulary. It was clear that students have not reached this level.

c) Morphological Awareness & complex vs. simple words on the VLT

The performance on morphological awareness between students' performance on complex vs. simple words on the VLT have been examined. As shown in table 6, the descriptive statistics of the students' performance in complex vs. simple words of 2000, and 3000 levels of VLT because the performance in 5000 was very low, researcher ignored more study in these levels and examined simple vs. complex words of 2000 and 3000 word levels of the VLT. Looking at the average scores and their dispersions, the students performed better in simple words than what they did in complex words.

Table 6. The students' scores on complex vs. simple words for 2000, 3000 levels of VLT.

Level		Complex words	Simple words
2000- VLT	M	9.53	13.21
	SD	3.125	2.502
	Min	4	8
	Max.	17	20
3000- VLT	M	6.51	9.87
	SD	3.21	3.65
	Min.	2	5
	Max.	16	19

Table 7 shows the correlation of simple vs. complex words of 2000 and 3000 vocabulary level and analytic and synthetic aspects.

Table 7. The Spearman's Rho of complex vs simple words of 2000 and 3000 VLT and analytic and synthetic aspects.

	Spearman's Rho			
	2000 VLT		3000 VLT	
	Complex words	Simple Words	Complex words	Simple Words
Analytics	0.721	0.795	0.653	0.684
Synthetic	0.652	0.651	0.792	0.812

The present study demonstrated on complex vs. simple words and morphological awareness & vocabulary size. The results of the current study were consistent with a number of studies done by (Singson, Mahony et al. 2000), indicating that vocabulary size and morphological awareness have significant positive correlation. From the results for 2000 and 3000 levels, there was a significant relationship between students' analytic and synthetic morphological awareness on the one hand and their performance on simple and complex word comprehension on the other hand. Totally, it was evident that the morphological awareness didn't differentiate between the students' performance on complex vs. simple words.

8) CONCLUSION

The present study aimed to measure the potential relationship between vocabulary knowledge and morphological awareness of Iraqi EFL University Students. Whether performance on morphological awareness discriminates between the students' performance in complex words vs. simple words. With respect to this relationship, a high moderate and positive correlation was obtained. To answer this, Morphological awareness Test (Mcbride–Chang, Wagner et al. 2005) along with its two subsets of Morphological Structure test and Knowledge of Derivational prefixes and Suffixes test and Nation's (Nation 2013) Vocabulary word Level Test were employed. The finding of this study shwon that the students perform somewhat better in the morpheme identification than in morphological structure.

After comparing the results of the morphological awareness test and vocabulary level test, the authors found these two factors were significantly correlated and the relationship between them was linear and positive. Additionally, the results revealed that the students better familiar with knowledge of inflections than knowledge of derivations. In fact, they should consider the possible benefits of vocabulary instruction that focuses on developing morphological knowledge. The findings of this study led to some suggestions to improve Iraqi students' morphological knowledge, increase their vocabulary learning and vocabulary size, and their English learning.

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