



MORPHOLOGICAL AWARENESS AND ITS ASSOCIATION WITH READING COMPREHENSION OF EFL SAUDI UNIVERSITY STUDENTS

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Abstract:

In the past ten years, there has been a research interest in morphological awareness, which refers to an individual's ability to decode the morphemic structure of words and further analyze them. The current study is an attempt to investigate levels of awareness of EFL Saudi university students and also to discover any potential relationship between their morphological awareness and successful reading comprehension. To this end, the researcher administered a modified version of Morphological Awareness Test (McBride-Chang et al. 2008) to 35 undergraduate students at the Department of Foreign Languages at Faculty of Arts and Humanities of Al Baha University in the academic year 2016/2017. The test included the analytic and synthetic aspects of word formation rules. Instruments of the study also included an adopted version of Reading Comprehension Test for Smart Choice Learners (Oxford, 2007). Results of the study indicated that the average score of the Morpheme Identification section (the analytic aspect of morphological awareness) was the highest among the students ($M= 27.11$, $SD= 6.20$) in comparison to the synthetic aspect of morphological awareness ($M= 14.66$, $SD= 11.91$). The students noticeably scored better in the Morpheme Identification Test (88.57%) than they did in the Morphological Structure Test (57.6%). The overall mean score of the Morphological Awareness Test was 41.77 out of 68 with a considerable dispersion among the results ($SD= 14.63$) with overall percentage (65.71%) which indicated that the students had intermediate awareness of word formation rules. In addition, EFL students scored better in the Inflectional affixes in both the analysis section (63%, $SD= 5.32$) and the synthesis section (50%, $SD=9.85$) than they did with the

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Derivational affixes (59.15%, SD= 7.38 in the analysis section, 46.33%, SD=13.72 in the synthesis section). Furthermore, there is high positive correlation between total students' scores on analytical aspect section of the morphological awareness test and reading comprehension test (0.871) (0.009). There is positive correlation between students' scores on synthetic aspect section of the morphological test and reading comprehension (0.841) (0.005), but it is weaker than that of the first section of the test. The total scores of students on morphological test positively correlate with their total scores on reading comprehension test (0.869) (0.005). The present study ended up with a set of pedagogical implications and recommendations to include training on rules of word formation in EFL curriculum so as to increase their morphological awareness and to develop their successful reading comprehension endeavors. Future research themes were also recommended such as the role of morphological awareness in tracing semantic irregularities to enhance learners' understanding of different English words and to explore the relationship between morphological awareness and other language learning skills including listening and speaking.

Keywords: morphological awareness, reading comprehension, vocabulary learning, EFL

1. Introduction

With regard to English language, a new vocabulary word can be formed by adding a prefix or a suffix to a base word. This word formation process, in linguistics, is called morphological processing. Graves reported that (2004) L2 pre-university and tertiary learners should be taught strategies that enable them to uncover word meaning in order to develop the needed vocabulary knowledge so as to comprehend academic texts. Bellomo (2009) gave a definition to morphological awareness as the consciousness of the structural and analytical process of breaking down morphologically complex words into their constituent morphemes (word meaning parts). This in turn can increase their extended understanding of newly encountered words which may have an impact on developing elaborated comprehension of reading texts and writing in the target language.

Furthermore, as far as EFL/ESL is concerned, reading comprehension is highly based on a set of special linguistic and cognitive capabilities (Perfetti, Landi, & Oakhill, 2005). Morphological awareness has been defined as one of those important capabilities (Kuo & Anderson, 2008). Furthermore, morphological awareness is equal to one's understanding of the rules of word formation of a given language (Kuo & Anderson,

2006). For example, *skillful* is derived from *skill*, and the suffix *-ful* denotes that *skillful* is an adjective. Morphological awareness may have a direct relationship with reading comprehension in English. That's may be because morphologically-complex words represent 60-80% of the new words in English academic texts (Anglin, 1993; Guz, 2010; Nagy & Anderson, 1984). Results from empirical studies in language learning and pedagogy have stated that morphological awareness has a significant contribution to L2 reading comprehension and vocabulary learning (Zhang & Koda, 2012; McBride-Chang; Tardif; Cho; Shu; Fletcher; Stokers, 2008)). However, previous research on the topic has basically focused on children (e.g. Kieffer & Lesaux, 2012). Only few studies have been carried on adult L2 learners (e.g., Miguel, 2012; Zhang & Koda, 2012).

In addition, morphological analysis is highly regarded as a way in which vocabulary knowledge can be improved so that language learners are able to comprehend a reading text through successfully using and being aware of morpheme constituents and word formation rules to realize the meaning of new words. As reported by Farsi (2008), morphological analysis is the process of deformation of complex words into meaningful parts (prefix, suffix, and root), such as *motherhoods* = *mother* + *-hood* + *-s* and rearranging the meaningful parts into new meanings (*childhood*, *manhood*, *fatherhood*). This is supported by Arnoff and Fudeman (2005) who pointed out that there are two streams of morphological analysis. The analytic approach is concerned with morpheme realization or breaking words down into its meaningful parts and the synthetic approach that is concerned with the production of morphological structure or bringing the smallest pieces (morphemes) together to form words.

Thus, EFL/ESL university learners should have enough academic vocabulary in order to be able to comprehend the academic texts which are one of the primary sources through which those learners acquire content area knowledge in their majors. It has been assessed that adult language learners should acquire a lexical size of 5,000 words to successfully read authentic texts and about 10,000 words to comprehend demanding academic materials (Schmitt, 2000). Therefore, adult L2 learners should learn the amount of vocabulary necessary to comprehend academic texts in English. Research findings have indicated that most of the learners depended on rote memorization to learn newly encountered vocabulary (e.g. Huang, 2001), which may be uninfluential as well as unsuccessful and impractical, with regard to the limited time available for direct instruction.

Therefore, enhancing adult L2 learners' capabilities to increase vocabulary and infer the meanings of new words through morphological analysis may give a practical alternative. With extended morphological awareness, learners of the target language

may be able to acquire new vocabulary more efficiently (Kieffer & Lesaux, 2008), which may improve their reading comprehension and foster their academic studies. In addition, one of the various types of morphological awareness that have been investigated is knowledge of derivational morphology which has received the most attention as it is effective and productive in comprehending English academic texts (Proctor, Silverman, Harring & Montecillo, 2012). Derivational morphology refers to forming a new word with prefixes (e.g. clean and unclean) or changing a word's grammatical category with suffixes (e.g. cleanly is an adverb; cleanliness is a noun).

2. Context of the problem

EFL Saudi students in the Foreign Languages Department at the Faculty of Arts and Humanities of Al-Baha University in the Kingdom of Saudi Arabia have difficulties in reading texts written in the target language, especially when they try to uncover newly encountered vocabulary. In addition, they are more confused when new words are derived or inflected ones. The above remark has been noticed by the researcher himself and other instructors who taught reading and morphology courses at the Department. During an interview with students, they showed their inability to disassemble or reassemble a set of words or correctly infer the meaning of these words when occurred in a context.

The current study is an attempt to find out any potential relationship between EFL learners morphological awareness and successful reading comprehension. Furthermore, it is an investigation of learner's awareness of analytic and synthetic rules of English word formation. Thus, it is an endeavor to shed light on a linguistic variable, morphological awareness, that may be effective in increasing students' capabilities of reading academic texts written in English which can enhance their language learning usage and outcomes.

3. Statement of the problem

Results from experimental studies in language learning have pointed out that morphological awareness has a correlation with ESL/EFL reading comprehension and vocabulary learning (Zhang & Koda, 2012; McBride-Chang, *et al.* 2008)). However, the studies primarily focused on children (e.g. Kieffer & Lesaux, 2012). Only few studies have been conducted on adult L2 learners (e.g., Miguel, 2012; Zhang & Koda, 2012). Thus, the present study is an exploration of the relationship between morphological awareness and reading comprehension and an identification of Saudi EFL university

students consciousness of rules of word formation at the analytic and synthetic levels. Furthermore, it is an effort to reach conclusions that can have pedagogical implementations that may enable them to successfully learn their FL and develop their use of rules of word formation and morpheme identification as a facilitative strategy to increase their extended reading academic texts written in the target language. This raises the following questions:

1. To what extent EFL Saudi university students are aware of analytic and synthetic word formation rules?
2. Is there any significant correlation between morphological awareness of EFL Saudi university students and their successful reading comprehension?

4. Definition of terms

Morphological awareness: The ability to understand morphemic structure of words, has been reported to affect various aspects of second language performance including reading comprehension ability, spelling performance, etc. (Karimi, 2012).

ESL/EFL Reading Comprehension: Reading comprehension is important for all new English learners. To understand the basics of everyday life—from newspapers to job applications—a person will need to gain adequate English reading skills (Schmitt, 2000).

5. Review of literature

5.1 Morphological awareness and successful reading comprehension

A number of studies conducted on reading and morphological awareness indicated that L2 learners who are able to break words into their meaningful parts not only increase their vocabulary but also have an extended enhanced comprehension of reading and hence develop their writing skills in the target language (Kieffer & Lesaux, 2007; Karimi, 2012). That's because being aware of derivational morphemes often offers students a reference to successfully inferred word meaning and so works as a guide to better comprehension of words and texts (Kieffer & Lesaux, 2012). It has also been debated that morphological awareness has a relationship with learners' ability to, not only analyze complex words, but also show their abilities in accomplishing reading and writing tasks (Ginsberg, Honda & Neil, 2011).

Moreover, theoretically there were some reasons to incorporate morphological awareness in learning to read texts efficiently by ESL/EFL learners (Kuo & Anderson, 2006). First, the smallest units of a language which are morphemes have semantic,

phonological, and orthographic characteristics, so awareness of these units necessitates using information from these linguistic systems in a way that shows numerous integrative processes included in reading comprehension (Carlisle, 1995; Perfetti, Landi, & Oakhill, 2005). Second, the mental lexicons of efficient readers are morphologically ordered and categorized (e.g., Nagy *et al.* 1989) children with better enhanced morphological awareness may have better organized mental lexicons and therefore may have the abilities to successfully acquire, store and retrieve morphologically complex vocabulary. Third, morphological awareness may help readers have information about the isomorphic principle of the English writing system, i.e., that English morphemes retain their spelling despite shifts in sound accompanying suffixation (e.g., *similar* and *similarity*). The aforementioned reasons support the probability that children with less developed morphological awareness will have difficulties with reading, as they are less efficient in incorporating semantic, phonological, and orthographic information into their mental lexicons. Therefore, they have less insight into the English writing system which may hinder their L2 reading comprehension endeavors. All of these reasons relate to both native and non-native English speakers learning to read in the target language. Thus, most of the studies that investigated the potential effect of morphological awareness on a set of closely related language learning variables (reading, writing, vocabulary learning, etc.) have primarily focused on children learning L1 and L2. So, the current study is an effort to find out any possible correlation between morphological awareness and efficient reading comprehension of adult Saudi EFL university students which may have some pedagogical implications that can increase their language learning outcomes.

Research findings in L2 learning and pedagogy made clear that there is a connection between morphological knowledge and reading comprehension. These studies have investigated this relationship among different language groups, different age groups, different proficiency levels, different social contexts, and using different strategies and methodologies. With regard to social context, for instance, learners' achievement depended on time of the instruction of L2 and on whether learners were learning English in a monolingual or bilingual context. Wang, Cheng and Chen (2006) and Qian (1999) tested students who learned English in an English speaking context. Their language learning experience was therefore deeper and broader than the EFL learners who were investigated by Zhang and Koda (2012; 2013) and Jeon (2011). Wang *et al.* (2006) clarified that their Chinese-English speaking students all enrolled at an English-medium school and had in particular caring supportive parents who deliberately spoke English at home. Their results showed a strong link between morphological awareness and reading comprehension.

Therefore, the success of morphological awareness training assumes that ESL/EFL teachers are proficient in the area of morphology and as Tong, Deacon, Kirby, Cain and Parilla (2011) declared in their article, this has regrettably not always been the case. They contended that numerous teachers were much more accustomed to phonology than with morphology, which, according to Carlisle, led in an observable “neglect of attention to instruction in the morphological structure of words” (p. 311). Enhancing the informative instruction of morphology thus also needs a more comprehensive training of teachers with respect to morphology. Nagy (2005) pointed out that teachers have to assist students in building word consciousness and realize morphological and semantic relationships between words. Goodwin, Huggins, Carlo, August and Calderon (2012) presented more feasible solutions and suggestions for the teaching practice. In their perspectives, to effectively develop and enhance morphological awareness, it has to be incorporated in the teaching of the meaning of affixes and roots (Jeon, 2011), practicing word formation using morphemic units, teaching students affix patterns and providing students with information on the origin of words (Droop & Herhoeven, 2003).

The aforementioned results also present guidelines for specific focuses on morphological training. Referring to that, many scholars have indicated that the students’ reading comprehension was most primarily affected by their knowledge of derivational morphology. Therefore, as Kern (2002) clarified, teachers have to work on suitable classroom learning activities and customized multimedia packages to increase students’ attention to the use of English derivational affixes and to the construction of English derivational words. Appropriate exercises could include extracting affixes from derived words and identifying base morphemes, gathering derived words based on suffixes, and uncovers meanings of the newly encountered derived words with the previously known base words. Droop and Verhoeven (2003) stated that it is necessary to motivated L2 learners to realize those apparently more complicated and unfamiliar words, and accurate instruction in derivational morphology can definitely take part in reducing their tension of such obviously difficult words.

Thus, when instructors teach morphology, they should consider that ESL/EFL morphological awareness is highly regarded as the outcome of the influences of learners’ L2 lexical input and their knowledge of morphology of their L1 (Zhang & Koda, 2013). The first function of instruction is to make use of L1 transfer. That's to say language teachers should support their L2 learners to be able to make comparisons between L1 and L2 as possible as they can. There is research to support the view that transfer can work for the student. While Zhang and Koda (2013) assured that Chinese students could benefit exceptionally from the differences and similarities between

English and Chinese compound structure. Goodwin et al. (2013) reported comparable results for Spanish EFL learners. They concluded that students are able to use chunks of meaning in their L1, such as the affix *mal-*, to infer the meaning of low frequent English words such as *malfunction*. Nonetheless, as indicated before, language learners are conceivably not to do these parallels autonomously and so it is the teachers' role to train them to be aware of these useful links between L1 and L2.

The development of morphological knowledge basically depends also on exposing students to sufficient oral and written language activities and experiences. Nagy (2005) affirmed the important role of profound and various vocabulary instructions was for students' progress in comprehending texts, given the causative but complex connection between vocabulary knowledge and reading comprehension. Moreover, successful instruction should not only increase students' general word knowledge, but has to develop their knowledge of individual words, as well. Similarly, knowledge of phonology is required for increasing L2 learners' morphological awareness, it is necessary to provide students with a variety of written and spoken language activities and drills. Also, Droop and Verhoeven (2003) recommended that language learners should improve vocabulary learning so as to automatically have an access to lexical meanings and so facilitate reading comprehension. They are convinced that it is essential to particularly train ESL/EFL learners on low-frequency words and to study their usage in different contexts. Extended vocabulary knowledge, which includes both vocabulary breadth and depth, is fundamental to advance students' reading comprehension. Definitely, knowing vocabulary is not enough in itself, but it largely contributes to understanding of reading texts written in the target language (Nagy, 2005).

6. Morphological awareness and English language teaching

Morphology of English has knowledge of both derivational and inflectional morphemes. Whereas an awareness of inflectional morphology promotes grammatical accurate production, an awareness of derivational morphology is considered to have a remarkable role in developing learners' lexical knowledge. Nagy and Anderson (1984) supposed that 60% of the new words which English readers find in texts have noticeable meanings that may be inferred based on their component morphemes. In line with this, Kieffer and Lesaux (2012) reported that ESL/EFL learners who can figure out how words are produced by combining suffixes, prefixes, and roots have greater knowledge of vocabulary. This feature of awareness is directly related to students' capability to increase their vocabulary. That's because the majority of English words

have meanings that can be predicted based on the individual units of the word (Kieffer & DiFelice Box, 2013).

It is also feasible to propose that morphological awareness may be useful specifically for promoting learning English vocabulary in academic settings. Despite a good number of scholars consider it difficult and complicated to give a definition to academic vocabulary, they think that this area includes words which 1) are regarded as a means to achieve academic purposes, 2) include abstract meanings, 3) have Greek or Latin origins, 4) are opaque, 5) include interdisciplinary words as well as content area words, and 6) are used for grammatical function (Kieffer & DiFelice Box, 2013). So, L2 learners with advanced derivational morphological awareness who encounter such words as *enlargement*, *variability*, or *deactivation* may be better able to infer meaning by understanding their relationship with the more common words *large*, *vary*, and *active*, so that expanding their vocabulary items.

An increased awareness of morphology and phonology as well has an influence on learners' ability to both listen and speak competently in English. Definitely, there is a link between learners' knowledge of the base form of the word and their ability to understand words sufficiently to be able to speak in a comprehensible coherent manner (Kieffer & Lesaux, 2007). Referring to that morphology plays a crucial role in helping language learners efficiently learn vocabulary; sufficient knowledge of derivational morphemes will enable them to improve their listening and speaking skills as well. Certainly, ESL/EFL learners benefit remarkably from the use of morphology to successfully determine word meanings that are important towards making sure that they develop their listening and speaking skills. Furthermore, morphological awareness enables students to identify semantic irregularities and so increase their understanding of the meaning associated with different words in English.

Depending on the previous research findings and reports on morphological awareness some scholars suggest a set of strategies that can promote language learners awareness in classroom settings. These can be summarized as follows:

- Teaching morphology plainly as a separate component of vocabulary instruction.
- Using learners' morphological awareness *as a cognitive strategy* through clear straightforward steps and procedures in which learners: 1) realize that they do not know the word, 2) analyze the word for recognizable morphemes, both in the roots and suffixes, 3) infer of a potential meaning utilizing the parts of the word, and 4) monitor understanding the meaning of the word in the context.
- Teaching students to realize the use of prefixes, suffixes, and roots, and how words are transformed.

- Training learners on identifying true cognates – words with similar spelling and meanings in English and the native language –to promote their reading comprehension (Kieffer & Lesaux, 2009; Yopp, Yopp & Bishop, 2009; Kieffer & Lesaux, 2012; Kieffer & DiFelice Box, 2013).

When ESL/EFL learners are taught these strategies such as recognizing morphemes in logically common vocabulary, they may be able to transfer their knowledge of morphology to the unfamiliar words or familiar ones but they come upon in a different morphological form. To improve the learners' morphological awareness, language teachers can use a variety of activities (e.g., semantic maps; cut, mix, and match; find the word; find the word that begin with *un-*) that can be modified to be suitable for each age group. For instance, they could start morphology instruction for young learners with simple words and go on with more complex ones (Graves, 2006; Yopp *et al.* 2009). Therefore, instructors could start teaching adults morphological awareness using more complex words.

Thus, Morphological awareness is meant to say that language learners use their accurate explicit knowledge of the internal structure of words to recognize and manage that structure (Carlisle, 1995). It includes learners' knowledge of both derivational and inflectional forms of the target and the source languages. As a current research focus in L1 and L2 literacy development, it has especially been investigated with reference to skills such as reading, writing, spelling development as well as a student's ability to learn vocabulary. Language learners who are able to realize how English words are formed by joining prefixes, suffixes, and roots are expected to learn more words, comprehend texts in better ways, and so become more experienced in writing (Jeon, 2011). A number of researchers have argued that the use of derived words is key to ensuring that learners are able to understand and practice vocabulary (Kieffer & Lesaux, 2009; Yopp, Yopp & Bishop, 2009; Kieffer & Lesaux, 2012; Kieffer & DiFelice Box, 2013).

To sum up, Language teachers can use different strategies and activities to teach learners morphological awareness in classroom settings. One way is to incorporate derivational morphology in their daily vocabulary instruction. Second, students are asked to break down words into their possible morphemes as a cognitive strategy which can be used to advance their morphological awareness of English. Third, language teachers could teach their learners how prefixes, affixes and roots are used in forming new words from existing ones. To conclude, implications for ESL/EFL teaching and learning are significant as recent research findings indicate that language learners with morphological awareness have better language production as well as larger vocabulary and extended comprehension. L2 vocabulary instruction lessons, drills and

activities should include teaching morphological awareness as in L1 literacy development attempts.

7. Objectives of the study

The objectives of the study were as follows:

- a) To investigate EFL Saudi university students levels of awareness of analytic and synthetic rules of word formation.
- b) To explore the relationship between morphological awareness of EFL Saudi university students and their successful reading comprehension.
- c) To provide language instructors with empirical evidence on how to incorporate morphological awareness into reading comprehension instruction.

7.1 Limitations of the study

Administration of the study instruments included the randomly selected EFL learners' sample (level 7 students) in the Department of Foreign Languages at the Faculty of Arts and Humanities of Al-Baha University in the Kingdom of Saudi Arabia (KSA) in the academic year 2016/2017. The reason behind choosing level 7 students was because they already had a morphology course in level 6, and so they were ready to have the morphological awareness test which is one the primary instruments of the current study.

7.2 Significance of the study

- The present study examines EFL Saudi university learners levels of morphological awareness with regard to analytic and synthetic rules of word formation.
- It examines the correlation between learners morphological awareness and successful reading comprehension endeavors.
- It offers guidelines to include activities on morphological awareness in reading comprehension curricula and teaching.

8. Method

8.1 Sample of the study

The study was conducted on 45 EFL Saudi university students randomly selected from undergraduate students, majoring in English language and Literature at Al Baha University, KSA. The age of the participants ranged from 19 to 25. In order to select a

homogeneous group as the participants of the study, the researcher administrated the Overall English Proficiency Test (Shoeib, 2004) to determine the language proficiency of the subjects. Based on the Z-distribution of the test, those subjects whose scores fell within one standard deviation above and below the mean were designated as the study subjects who turned out to be 35 in number. Consequently, the participants of the study consisted of 35 at the Department of Foreign Languages at Faculty of Arts and Humanities of Al Baha University in the academic year 2016/2017, KSA.

8.2 Instrumentation

A. Overall English Proficiency Test (Shoeib, 2004): The test developed by the researcher, comprised four sections; cloze (40), multiple choice vocabulary (20%), grammar (20%), translation into Arabic (10%) and translation into English (10%). It was used to determine the subjects' levels of proficiency before administering the other instruments of the current study. The mean time computed for the test was 2 hours and forty five minutes. The acquired reliability for the test was calculated at .84, indicating a reasonably dependable measure of reliability.

B. Morphological Awareness Test: It was adapted from McBride- Chang *et al.* (2008) and used to test learners' ability to reflect and recognize morphemic units in English. The test included the analytic and synthetic aspects of word formation rules. Some of the items of the test were created by the researcher, and others were taken from McBride- Chang's *et al.* (2008) test. The mean time computed for the test was one hour and half. Reliability for the test was calculated at .86, showing a logically reliable measure. The test was divided in two sections: Morpheme Identification and Morphological Structure.

a. Morphemes Identification Test (Analytic Aspects)

The test assessed students' ability to recognize, analyze and break down complex words into smaller meaningful parts. It consisted of 14 test items. These items originally came from the items used in original Morpheme Identification Test to be suitable for the students' age and level. In the original morpheme identification test McBride- Chang's *et al.* (2008), every item has two orally labeled pictures that are introduced simultaneously. The children are then given a word or phrase including the target morpheme, and are asked to circle the most suitable picture that matches the word/phrase. The researcher has omitted the pictures to and translated instructions into Arabic. The present study subjects were then given a set of complex words out of context, and were required to break them down into as many smaller meanings as they could recognize in each word. The words were decontextualized to monitor the potential impact of context in uncovering the meanings of words. The morphemes were

neutral in the sense that they neither led to phonological and orthographical change nor stress assignment changes in the stem.

b. Morphological Structure Test (Synthetic Aspect): The test measured students' morphological productivity that is the ability to combine or synthesize morphemes to form new meanings. The test included of 14 items. The items had 9 inflectional affixes, 3 derivational affixes and 23 stems. All of items were incorporated in a sentence frame in order to find out whether the participants can derive different forms of the base word quickly and precisely when being given that base form in sentence context. So, this test examined the students' knowledge of lexical structure and the relations among words and within words and their constituent parts. Again, all of the items contained neutral morphemes.

8.3 Reading Comprehension Test for Smart Choice Learners (Oxford, 2007)

The test measures ESL/EFL students' ability to understand texts written in the target language. It is a standardized test that doesn't need reliability, validity or piloting. It has a reading passage for intermediate EFL learners and five exercises; true or false statements, complete sentences questions, multiple choice, using underlined words to complete sentences and open ended questions. The time for the test was one hour.

8.4 Pilot Administration

All instruments of the study were piloted for validity purposes so as to determine their convenience to fulfill the study objectives and answer its questions. The randomly selected 10 students showed their satisfaction for clarity of the tests which indicated that the instruments were valid and suitable for the study objectives. In addition, the study instruments were distributed to a number of jury members from Al Baha University who reported that the study instruments were acceptable to achieve its purposes.

9. Results

9.1 Results of the Morphological Awareness Test

The Morphological Awareness Test is divided in two sub-tests: the Morpheme Identification Test (analysis section) and the Morphological Structure Test (synthesis section). The total score for the former is 33 points and the latter is 35 points.

The Table 1 below indicated the means, standard deviations and ranges for the students' scores in the Morpheme Identification section and Morphological Structure section of the Morphological Awareness Test as taken by the Saudi EFL learners (N=

35). Examining the means of both sections of the test, the average score of the Morpheme Identification section (the analytic aspect of morphological awareness) was the highest among the students ($M= 27.11$, $SD= 6.20$) compared to the synthetic aspect of morphological awareness ($M= 14.66$, $SD= 11.91$). The students remarkably scored better in the Morpheme Identification Test (88.57%) than they did in the Morphological Structure Test (57.6%). Concerning the Morpheme Identification Test, the highest score was 32 while the lowest was 13. Regarding the Morphological Structure Test, the highest score was 30 and the lowest was zero as five students scored 0% showing a floor effect in that test. The overall mean score of the Morphological Awareness Test was 41.77 out of 68 with a considerable dispersion among the results ($SD= 14.63$) with overall percentage (65.71%) which indicated that the students had intermediate awareness of word formation rules.

In an attempt to get more information on EFL Saudi college learners' morphological knowledge and how they attended to complex words, the knowledge of inflectional, derivational affixes and stems were sought. To restate, the total number of morphemes were 3 inflectional and 13 derivational and 17 stems in the analysis section and 9 inflectional, 3 derivational and 23 stems in the synthesis section. **Table (1)** reported the average percentage of the students' scores (standard deviation) in the test items' inflection, derivation and stems.

Table 1: The Average Percentage of EFL Students' Scores (Standard Deviation) in Inflectional Affixes, Derivational Affixes and Stems of Both Analysis and Synthesis Sections of Morphological Awareness Test

	Inflection	Derivation	Stem
Analytic Aspects*	63% (5.32)	59.15% (7.38)	87.11% (5.94)
Synthetic Aspects**	50% (9.85)	46.33% (13.72)	57.65% (12.16)

*Number of morphemes: 3 inflectional, 13 derivational, 17 stem

**Number of morphemes: 9 inflectional, 3 derivational, 23 stem

EFL students scored better in the Inflectional affixes in both the analysis section (63%, $SD= 5.32$) and the synthesis section (50%, $SD=9.85$) than they did with the Derivational affixes (59.15%, $SD= 7.38$ in the analysis section, 46.33%, $SD=13.72$ in the synthesis section). Granted that, the students' highest achievement was found on the stems (87.11%, $SD= 5.94$ in the analysis section, 57.65%, $SD=12.16$ in synthesis section).

9.2 Results of the Reading Comprehension Test

Table 2: Pearson Correlation Coefficient between the Mean Morphological Awareness Test and Reading Comprehension Test

Morphological Awareness test	Analytical Aspect	Synthetic Aspect	Total
Pearson	0.871 **	0.841 **	**0.869
Sign.	0.009	0.005	0.005

N = 35, r = ** 0.01

The above results Table 2 indicate that there is high positive correlation between total students' scores on analytical aspect section of the morphological awareness test and reading comprehension test (0.871) (0.009). In addition, there is positive correlation between students' scores on synthetic aspect section of the morphological test and reading comprehension (0.841) (0.005), but it is weaker than that of the first section of the test. The total scores of students on morphological test positively correlate with their total scores on reading comprehension test (0.869) (0.005)

10. Discussion and Conclusion

The first question of the current study concerned with EFL Saudi university students awareness of the analytic and synthetic aspects of the rules of word formation. The answer of this question depended on the learners' achievement on the Morphological Awareness Test with two subsets of Morpheme Identification (analysis section) and Morphological Structure (synthesis section). The findings made clear that the subjects' overall morphological awareness was rather low (66% with a considerable variation among the results- see *the above results*). This is in comparison with Mc- Bride Change *et al.* (2005) who explained that morphological awareness could be considered as a good indicator of vocabulary knowledge. That's to say morphological knowledge can be used as a possibly facilitative vocabulary learning strategy to learn new English words. Thus, the above result shows the students' limited abilities to recognize, analyze and manage the morphological structure of words.

EFL learners in the present study were unable to identify and recognize the morphological structure of complex words. With regard to cross-linguistic variation, Arabic morphology might have prevented them from reading and comprehending English complex words. That's because the affixes of Arabic complex words are undividable from the root (i.e. both affixes and roots are bound morphemes). Breaking Arabic complex words into its meaningful constituents is not feasible, bearing the fact that Arabic morphology is of root- and- pattern morphology. Incapable of recognizing

the possibility of splitting bases from affixes, the students realized an unfamiliar English complex word as a whole and so, they could not uncover the meanings of new complex words.

Furthermore, those students have done better with inflectional affixes than derivational ones, which is in line with the previous studies that clarify that the attainment of inflection precedes attainment of derivation (Carlisle & Stone, 2003). The aforementioned results also indicated that the students performed better in the analysis section than they did in synthesis section. On the other hand, the results also referred to a floor effect in the synthesis test with five students' scoring the minimal score of 0%. This in turn proposed that students were unable to use the parallel sentence and the morphological structure of known words to produce new ones. Moreover, synthesis needs more advanced skills than analysis as indicated by Bloom's taxonomy- cognitive domain. The analytic aspect of morphological awareness is consequent to synthetic aspects (Arnoff & Fudeman, 2005; Mc-Bride-Chang *et al.*, 2005). Relating this fact perfectly to EFL learners' linguistic level in the current study can explain students' lower achievement in the synthesizing morphological structure.

Incompetence to realize the morphological structure of complex words and the incapability to use morphological structure of previously known words indicate that there is an immediate necessity for morphological awareness training and intervention and direct teaching of morphological units. That's to say morphological awareness is likely to lead to better learning outcomes as it can be associated with numerous language skills such as, spelling (Bear, Invernizzi, Tempelton Templeton, & Johnston, 2008) vocabulary building and expansion, and reading comprehension (Fowler & Liberman, 1995; Qian, 2002). Furthermore, it has been found out that learners can use their morphological knowledge to uncover meanings of the newly encountered complex English words (Gordon, 1989; Carlisle, 2000; Carlisle & Stone, 2003; Wysocki & Jenkins, 1987).

In accordance with this, Chandrakala Varatharajoo, Adelina Binti Asmawi, Nabeel Abdallah Mohammad Abedalaziz (2015) examined the effect of inflectional and derivational morphemic analysis awareness on ESL secondary school students' vocabulary learning strategy. Participants of the study were 106 low proficiency secondary school students in two experimental groups (inflectional and derivational) and one control group. The learners' vocabulary learning was assessed through two instruments: Morphemic Analysis Test and Vocabulary- Morphemic Test in the pretest and posttest prior to and after an intervention. Findings of ANCOVA clarified that the two experimental groups had a significant score in Morphemic Analysis Test and Vocabulary-Morphemic Test. Moreover, the inflectional group achieved a higher score

than the derivational group. Therefore, the findings showed that ESL low proficiency secondary school students did better on inflectional morphemic awareness in comparison to derivational measure. The results also indicated that ESL students' awareness of inflectional morphology added more on the vocabulary learning. Significantly, acquiring rules of inflectional morphology can enable ESL low proficiency secondary school students to enhance morphemic awareness and vocabulary acquisition. Accordingly, the study findings denote that not all morphemes are of equal importance to learners to develop for their language learning. Pedagogically, these results clarify that instruction on morphology should be incorporated in ESL classroom activities and curricula, especially with low achievers at least in all grades in secondary schools. This is basically done to train students to uncover newly encountered vocabulary prior to attempting the text to enable them to successfully comprehend the text in hand.

In line with this, Ying Guo *et al.* (2011) attempted in their study to investigate any potential relationship among vocabulary knowledge, morphological awareness, syntactic awareness and reading comprehension in English-speaking adults. Analysis of data collected from 151 students indicated that there a direct connection between morphological awareness and reading comprehension. In addition, syntactic awareness directly and indirectly affected reading comprehension through vocabulary knowledge. That's to say vocabulary knowledge and rules of word formation remarkably enabled successful reading comprehension.

The second question of the current study concerned with the relationship between EFL Saudi university students awareness of the analytic and synthetic aspects of the rules of word formation and reading comprehension. The answer of this question relied on the learners' performance (scores) on the Morphological Awareness Test with two subsets of Morpheme Identification (analysis section) and Morphological Structure (synthesis section) and their scores on reading comprehension test. The findings indicated that EFL Saudi university students' scores on analytical aspect section of the morphological awareness test highly correlated with their scores on reading comprehension test. Furthermore, their scores on synthetic aspect section of the morphological awareness test correlated with those on reading comprehension test. In addition, students' scores on morphological test correlated with their scores on reading comprehension test. This is similar to Nagy *et al.* (2006) and Kieffer and Lesaux (2012) who found both direct and indirect impact of morphological awareness on reading comprehension. Kim, Kim and Cho (2015) identified an effective role of morphological awareness in successful reading comprehension among Korean EFL learners. Thus, the above result indicates that student's awareness of rules of word formation, especially

analytic aspects, (morphological awareness) has a direct relationship with their success in reading comprehension.

In relation to this, Goodwin *et al.* (2013) clarified that there is a connection between morphological knowledge and vocabulary depth on the one hand and between morphological knowledge and phonology on the other hand (pp. 1405-1406). This in turn proposes that morphological knowledge increases vocabulary depth, which eventually improves reading comprehension. That's to say that morphological and phonological awareness positively contributes to ESL vocabulary increase that can lead to enhancement in reading comprehension.

Similarly, Mahnoosh *et al.* (2017) investigated the morphological dynamic assessment influence on EFL reading comprehension. They also examined the method of assessing morphological knowledge which could expect and contribute to the reading ability of EFL learners. The study sample consisted of 50 intermediate EFL learners represented experimental and control groups. Students in the experimental group were evaluated utilizing a dynamic assessment procedure, while those in the control group were taught morphology using static assessment tasks. The study instruments included Nelson–Denny Reading Test and Test of Morphological Structure which were administered as posttests. The results clarified that dynamic assessment of morphology enhanced EFL learners' reading comprehension. Moreover, the dynamic assessment task could better expect EFL learners' reading comprehension than the static assessment task of morphology. The study findings support the potential prospective usability of dynamic assessment of morphological awareness in EFL contexts.

In addition, Mehta (2016) in his study introduces a qualitative and quantitative exploration of the relationship between teaching morphemes (roots, prefixes and suffixes) and second year EFL students' reading comprehension level by using two research instruments, namely a test and a questionnaire. The main purpose of the test is to understand the morphology level of the students and their morphological awareness (MA) as well identifying their comprehension problems and their abilities to adopt and use prediction strategy with regard to affixes. The students' questionnaire aimed to increase learners' knowledge of the strategy use of morphemes. The researcher proposed that students reading comprehension can be developed through teaching affixes and English roots systematically. They made predictions upon them to uncover the meaning of newly encountered words. However, in case that morphological analysis can plainly enable EFL learners figure out unfamiliar words and whether morphological analysis can have a long term influence on vocabulary learning are issues still being studied and researched. The study results indicated that learners were

perfectly able to guess words' meaning from their affixes, but they absolutely lacked for morphological awareness and rules of word formation.

In connection with this, [Hélène Deacon](#), [Michael J. Kieffer](#) and [Annie Laroche](#) (2014) studied the potential impact of morphological awareness on reading comprehension or the consciousness and ability to recognize and understand the smallest meaningful units or morphemes. The study was a longitudinal one in which they assessed native speakers of English morphological awareness, word reading skills, and reading comprehension at Grades 3 and 4. The study findings indicated that word reading skills to some degree enabled the relationship between morphological awareness and reading comprehension at each grade. Furthermore, learners' early morphological awareness partially increased children's outcomes in reading comprehension, and their early reading comprehension partially resulted in their gains in morphological awareness. These results are compatible with the explanations of recent models of reading comprehension: that morphological awareness affects reading comprehension both primarily through word reading skills and secondary through the language system and that morphological awareness leads to enhancing reading comprehension (e.g., Perfetti, Landi, & Oakhill, 2005).

Unlikely, Saiegh-Haddad and Esther (2008) in their study tested the link between phonological and morphological awareness in English (L1)–Arabic (L2) bilingual children in Canada ($N = 43$), and the pertinence of these skills to word and pseudo-word reading precision, and to complicated word reading fluency. The findings indicated a positive significant correlation between phonological awareness in English and in Arabic. However, morphological awareness in the two languages was not correlated. Phonological awareness predicted reading cross-linguistically, but only Arabic morphological awareness could predict word reading in English. Furthermore, while both phonological and morphological awareness in English explained independent outstanding variation in English word reading, only phonological awareness in Arabic explained Arabic word reading. Complex-word reading proficiency was anticipated by morphological awareness within both languages. Similarly, in both languages, phonological awareness was the single indicator anticipating pseudo-word decoding accuracy. Thus, their results were commented on from the perspectives of cross-linguistic differences between English and Arabic in orthographic rules and in morphological awareness and structure.

Unlikely, Norah Alsalamah (2011) in her study reported there is some uncertainty on the relationship between morphological knowledge, vocabulary size and reading comprehension to be possibly beneficial for both theory and practice. As she introduced premises for more deeper and enhanced future research into L1 and L2

language processing and the connection between language and the written word. However, the numerous aforementioned research findings assert that training on morphological awareness could introduce teachers to guidelines for their pedagogical approaches in ESL or EFL classroom settings. A number of studies have underestimated the immediate need for intervention to teach and increase morphological awareness, as L2 English learners still have remarkable weaknesses in their reading success (Carlisle, 2010). Therefore, the findings of the current study cannot be taken for granted as there is still a need for further research in this area to add more linguistic variables in addition to rules of word formation and reading comprehension such as asking whether morphological awareness in one language is able to predict morphological awareness in the other in order to come to potential implications that may eventually help EFL/ESL learners master the target language and increase their language learning outcomes.

Anyway, practically all the aforementioned studies assure incorporating training on morphological awareness in vocabulary teaching classroom activities. That's because increasing EFL/ESL learners' vocabulary knowledge is likely to promote morphological awareness and so reading comprehension. Thus, giving students advanced training on vocabulary learning including complex words structure and the relationships among them may be considered the most crucial pedagogical implications of the above studies.

The researcher in this study has considered an important feature in EFL/ESL teaching and learning by attending word-formation processes to L2 curricula. Practically, learning rules of word formation and using them in academic contexts can help ESL/EFL learners in their course of study and also in his future career life. In the above mentioned studies, argumentations have been raised favoring the incorporation of word formation rules and strategies namely morphological awareness in ESL/EFL teaching and learning. Therefore, the current study findings assert that training learners on rules of word formation is fundamentally important for their independent learning and classroom success, especially vocabulary usage, understanding of meaning and so reading comprehension. The objection might be that including word-formation rules training processes in ESL/EFL curricula is an imperfect approach. These rules are basic elements of the English language that no teaching approach could disregard them. Consequently, it is reasonable poor performance in English among Arab EFL learners might be partially attributed to their English curriculum that does not include teaching rules of word formation which is usually. To conclude, teaching word formation processes is a necessity to enable students to learn English vocabulary words sufficient for the level of proficiency and knowledge they want to achieve. It should be anticipated that only small amounts of incidental vocabulary learning EFL learners can

have from reading. Furthermore, students are likely to conclude an incorrect meaning of a newly encountered English word in a reading comprehension text when no clue is given to its meaning. Hence, and to this close, Arab EFL teaching curricula should be reassessed and revised by curriculum writers in order to include activities on rules of word formation to help them increase their vocabulary gains and hence reading comprehension. The present study is an exploratory one which may offer guidelines to teachers and curriculum planners to draw their attention to the importance of morphological awareness in English vocabulary learning and successful reading comprehension. That's to say, word-formation rules are very necessary for EFL teaching, therefore, curriculum planners, book writers, designers and English language teachers should ascribe more importance to designing activities that can help learners develop their vocabulary usage in order to enhance their reading comprehension skills and increase their language learning outcomes.

Thus, the principle pedagogical implication of the current study is that morphological awareness classroom activities are crucial for Arab EFL learners' success in vocabulary learning and consequently reading comprehension, writing performance and other language learning related skills. So, future research may investigate the role of derivational and inflectional morphemes in developing their listening and speaking skills. In addition, future research may also examine the impact of morphological awareness on tracing semantic irregularities and increasing understanding of the meanings of different words in English.

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