How Does Morphological Awareness Have an Impact on Taiwanese Learners’ Word Identification and Reading Comprehension?

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Taiwanese students’ knowledge of derivational affixes (e.g. *able, ability*) and inflectional affixes (e.g. *learn, learning*) during EFL learning seem to fall far below teachers’ expectations. This may be related to the nature of word formation of Chinese as an analytic language in which there are far fewer derivational and inflectional morphemes. A number of studies have focused on English native-speaking learners’ acquisition of morphological awareness; however, few crosslinguistic works have convinced that morphological awareness could be flexible if used across languages. This study tried to explore whether, as a result of receiving morphological instruction, morphological awareness could be acquired by Chinese-speaking EFL learners in the context of a language system different from English. The study also tried to examine to what extent could morphological awareness be a predictor of vocabulary knowledge and reading comprehension. Two groups of Taiwanese college students were tested. Firstly, the results indicated that learners who received morphological instruction outperformed the other group when asked to (1) discriminate meanings and functions of morphemes; (2) select correct words to fill in the passage, and (3) identify derivationally complex words. Secondly, the data indicated that the ability of word identification made a significant contribution to learners’ reading comprehension. Lastly, the present study is clear in demonstrating that morphological awareness is a development of scaffolding cognition, separable from learners’ mental L2 lexicon knowledge, in predicting simultaneously measured recognition of morphological complex words.
Introduction

One of the major differences between adults learning a second/foreign language and children acquiring their first language is that the former have a fully developed language system before they start to learn the second one. Thus, one of the important issues concerning second/foreign language learning for high school and college students is the extent to which L1 has an impact on their acquisition of L2. For the past few decades, much research has drawn attention to this issue, and a number of results have proven that the first language does play a role in second/foreign learning and processing (e.g. Dulay & Burt, 1974; Dulay, Burt, & Krashen, 1982). Many previous studies involving L1 reading have produced strong evidence of a direct correlation between reading ability and vocabulary recognition skills, from the early stages of reading in children to advanced levels of reading in adults (Cunningham, Stanovich, & Wilson, 1980; Stanovich, 1982, 1991a, 1991b).

In contrast to the schema-theoretic, top-down processing of reading dominated reading research during the 1970s and ‘80s, recent research in the area of word recognition has shifted the essential role to bottom-up and word inference based on morphological information for successful L2 reading (Chikamatsu, 2003; Grabe, 1991; Haynes & Carr, 1990, Koda, 1992, 1994, 1996). There are many words in English (as in other written languages) whose spellings cannot be predicted from phonology but are entirely regular if analyzed into morphemes; thus, many studies have started to conduct examinations of cross-linguistic differences, and have shown significant degrees of morphological awareness in the recognition of words. In the EFL (English as a Foreign Language) environment, such as in Taiwan, students' acquisition of derivational and inflectional morphology in English seems to fall far below teachers’
expectations. This might be related to the nature of word formation in Mandarin Chinese, which is an analytic language in which there are far fewer derivational and inflectional morphemes than in the English spelling system. Based on EFL learners’ L2 morphological awareness in the lexical processing involving transferring L1 morphological knowledge, which differs from L1 native speakers’, two specific hypotheses are formulated in this study. (1) In the EFL setting, apart from the variables of phonological and morphosyntactic processing, morphological awareness has a consistent correlation with the learners’ ability of word recognition in the target language. (2) As a result of morphological component instruction, the higher the acquisition of morphological awareness in EFL learners’ word decomposition and inference, the better their lexical processing in reading comprehension will be.

Accordingly, the present study addressed developmental issues of the awareness of the internal structure of English words with regard to EFL learning, and examined the correlation between contextual passage reading comprehension and context-free word decoding ability, as well as the impact on their morpheme recognition, as a result of intensive morphological instruction.

**Research Question**

The research in the literature has provided evidence that morphological awareness plays a critical role for native speakers of English with regard to the acquisition of vocabulary and reading. However, it has not yet been fully examined whether morphological awareness is an important issue for EFL students’ reading proficiency. This study is designed to investigate the following research questions:

1. Is the nature of morphological awareness contributing to EFL students’
language processing in reading comprehension?

2. To what extent can morphological awareness be a predictor of vocabulary knowledge, apart from other skills such as phonological and syntactic processing?

**Literature and Theoretical Background**

In recent years, the role of metalinguistic awareness in the literature has attracted attention among psychologists and reading researchers. To understand the segmental nature of words, linguists on the cognitive reading have emphasized the efficiency of ‘bottom up’ acquisition, studies have promoted approaches to word learning, and further, to the decoding of written texts. Hence, metalinguistic awareness research has evolved through the experience of exploring learners’ language learning processes (e.g. Bowey & Francis, 1991; Perfetti, Beck, Bell, & Hughes, 1987; Vellutino & Scanlon, 1987).

Cross-linguistic variations in morphological awareness between Chinese and English are structurally and functionally incomparable. In concatenative languages such as English, morphological formation generally entails affixes (e.g. prefixes, infixes and suffixes) in a linear system. Intraword information integration in English is an essential ability required to recognize a word, while Chinese semantic information in each logographic character depends on multiple representational levels to be retrieved, rather than on affix analysis (Koda, 2000). It has been further hypothesized that, among Chinese-speaking learners, the utilization of morphological awareness in L2 can be a great challenge, if there is no morphological instruction or treatment provided in the EFL classroom.
Morphological awareness

Morphological awareness is the ability to combine familiar spoken units of meaning or morphemes to create new meanings that can be used as an indicator of reading development (Carlisle, 1995). From a broader perspective, morphological awareness refers to a learner’s grasp of morphological structure, as well as his or her capability of using the knowledge during morphological processing in visual word recognition (Koda, 2000). In English, the equivalent important skill for reading proficiency is phonological awareness, the ability to make words from different combinations of phonemes, or speech sounds. The prevalent belief about children’s L1 morphological awareness relating to vocabulary acquisition and word recognition is that children who are knowledgeable about morphology are able to decompose unfamiliar words into familiar meaningful units – prefixes, roots, and suffixes- and then derive the meanings of the words by combining the units. However, the differences among languages in terms of orthographic “type” - the representational units, such as alphabetic, syllabic, or logographic units, have also contributed to different degrees of phonemic awareness in the transfer from L1 to L2 (Akamatsu, 1999; Haynes & Carr, 1990; Koda, 1999; Wang, Koda, & Perfetti, 2003). Thus, many studies have been conducted to examine the cross-linguistic differences, and have shown significant degrees of morphological and phonological awareness in word recognition. However, it is difficult to draw a uniform conclusion from previous studies in which they have focused extensively on native English-speaking children; while paying only scant attention to EFL college or adult learners who have started learning L2 during their late childhood, such as the case for learners in Taiwan, who started their English language learning after the age of ten.
Morphological awareness and vocabulary acquisition

It has long been believed that morphological awareness is important in vocabulary growth. For example, Carlisle (1995) proposed that morphological awareness might be particularly important because “morphological decomposition and problem-solving provide one way to understand and learn the large number of derived words used in the books they read” (p.205). Thus, the increase in knowledge of derived words is more likely to reflect a process of the acquisition that depends heavily on morphological analysis.

This process of morphological awareness enables children to figure out the meanings of newly encountered words, and may enhance their retention of words. Thus, morphological awareness is considered an important factor in children’s rapid vocabulary growth (Nagy & Anderson, 1984; Tyler & Nagy, 1990; White, Power & White, 1989). English taught at schools contains morphologically complex words with a wide range of semantic transparency. Nagy and Anderson (1984) found that many complex words in school English have meanings that are ‘totally predicable’ (p.310) from constituents (e.g. senseless, senselessly). At the other extreme are words in which there is “no discernible semantic connection” (p.311) between a constituent and the whole word (e.g. consider, considerable). Carlisle (1988) and Leong (1989) categorized derived words into four types, depending on their orthographic or phonological change from the bases. They are (1) zero change (e.g. care, careful), (2) orthographic change (e.g., begin, beginner), (3) phonological change (e.g. electric, electricity), and (4) both orthographic and phonological change (e.g. deep, depth). Student made the least errors when producing derived forms which did not require either orthographic or phonological changes. For the same reason, can a language of logographic characters, such as Chinese, be acquired through morphological analysis? Are Chinese-speaking learners able to infer and recognize the meanings of unfamiliar
words through morphological awareness? A number of scholars (Hatano, Kuhara & Akiyama, 1981; Hoosain, 1992; Shu, Anderson & Zhang, 1995; Tang, 1988) believe that morphological awareness plays an important role in Chinese (and Japanese) reading; however, very limited systematic research has been reported in the literature. A Chinese character usually corresponds to a single morpheme, and characters are the blocks of building longer, more complex words. Shu, Anderson and Zhang’s cross-cultural study (1995) of how Chinese children learn unfamiliar words from context compared to how American children do, found that Chinese children were more likely to learn the meanings of morphologically transparent words than of morphologically opaque words, implying that Chinese children make more use of morphological analysis to infer word meanings.

**Awareness of morphological structure and meaning**

Research on the organization of the mental lexicon and on aspects of lexical access has led the morphological processing working toward the corpus of computing meaning from the constituent elements (Schreuder & Bayen 1995). Structural analysis alone may be misleading because words can sound alike without being morphological relatives (e.g., *bear* and *beard*). Derwing (1976) found that semantic similarity was more important than phonetic similarity, but that phonetic similarity was more likely to influence judgments of relatedness by elementary children than high school students or adults.

Morphological awareness, as it contributes to reading, includes the ability to parse words and analyze morphemes to construct meaning. In line with this expectation, some developmental increases in the awareness of morphological structure and its link to word meanings have been examined. Freyd and Baron (1982) found that the students they studied were likely to define words from base forms with
no regard to the affixes. In order to gather more direct evidence related to awareness of structure and meanings of morphologically complex words, their study included tasks of both structural analysis (decomposition and derivation of forms) and definition. The assumption was that the derivation task would be more closely related to the students’ cognitive ability, based on their age, to define morphologically complex words than would the decomposition tasks, because the former may involve analysis of the meanings and the grammatical roles of the morphemic constituents. Windsor (1994) found that older students are significantly better than younger ones in terms of their morphological knowledge and the production of derivational suffixes. According to Templeton & Scarborough-Franks (1985), younger students are likely to read high frequency words more accurately than they do low frequency words, regardless of the familiarity of the base forms. Older students, on the other hand, might have sufficient experience with orthographic representation in reading for it to have an effect on their reading accuracy of low frequency words. After the effects of age and receptive vocabulary were accounted for, the most important component to be observed and explored in the EFL setting is the L2 lexical process, in contrast to undergoing the phonological and orthographic changes in the L1. The best-known example is the transfer of the L1 logographic effect observed in L2 alphabetic languages (Akamatsu, N. 1999; Wang M. & Geva E, 2003).

Morphological awareness among L2 learners: Hypotheses

It has been found that in the absence of morphological awareness, learners are seriously handicapped in extracting even partial information from unfamiliar words on their reading performance. In other words, the lack of analytical competence, in
turn, restricts learners’ lexical inference, retention and reading effectiveness (Parel. R, 2004). Based on the research cited, the present study hypothesized that (1) In the EFL setting, apart from the variables of phonological and morphosyntactic processing, morphological awareness has a consistent correlation with learners’ ability to recognize morphologically derived words. (2) As a result of morphological component instruction, the higher the acquisition of morphological awareness of word decomposition and inference by EFL learners, the better their reading comprehension will be.

**Method**

**Participants**

A total of 99 Taiwanese college students from two classes participated in this study. They were non-English majors, aged 19-21, and were considered to have intermediate proficiency in English based on the Intermediate General English Proficiency Exam held by the college administration as a placement test, at the time of their enrolment. Class A, consisting of 55 second-year college students majoring in business, was involved in an intervention program in one of their English reading courses that focused on morphological derivation, and thus they had experience with the analysis of morphological structure and the identification of derivational affixes in words. The duration of the intervention program was three hours per week for eighteen weeks within one semester. Class B, consisting of 44 second-year students with the same major, took the same English course with the regular English reading instruction, but with no additional instruction on morphology.

**Intervention program**
The students in class A were involved in an intensive program that focused on developing an understanding of morphology and orthographic knowledge. One approach applied in each session of the instruction was to demonstrate an inventory of derivational words that represented target morpheme patterns and structures containing compound words or base words attached with affixes. The instructional techniques were targeted on the development of stronger mental representations of lexical and morphological complexity. One of the requirements for students to fulfill was to use the knowledge they acquired to infer or decode unfamiliar derivational morphemes within context, and to use cognitive strategies, such as orthographic rules, in their reading. It was noticed that proficiency was not exhibited until three to four weeks after students were exposed to and became aware of the relationship between functions and meanings of base words and their derived forms. At times, the pace of instruction was adjusted depending on the students’ progress.

**Measures**

Three tests were developed to assess different aspects of morpheme identification, passage comprehension, and derivationally complex word recognition, respectively.

*The Morpheme Discrimination (MD) Test.* This test was designed to determine whether a word part or derivational morpheme might have different meanings or word categories. The vocabulary items used in this test were extracted from the *Scholastic Aptitude English Test* (SAET). The test listed 15 groups of words. Each group consisted of four words that had the same affixes. Three words in each group (question) shared a similar category of meaning or function (e.g. *best, smartest, strongest, harvest*). The first three words in the example refer to the same suffix –*est* for superlatives; but the –*est* in *harvest* is a part of the base word and has no specific
meaning of its own. Word items in the test were rated for learners’ sensitivity to morphemes with different meanings or functions.

**The Passage Comprehension (PC) Test.** Participants in this test were required to read two short passages and choose a correct answer to fill in the blank of the given sentence (e.g. *For a few months in 1987, it** [seems, seem, was seemed, seemed] the world was about to change.*). This cloze test was chosen from the Reading Section of the intermediate level General English Proficiency Test (GEPT), and was designed to measure the learners’ knowledge of morphemes and their decoding ability within context.

**The Derivation Analysis – Word Identification (WI) Test.** The purpose of this test was to assess the students’ ability to analyze and identify morphologically complex words. Two groups of words were given in two columns. Column A was made up of 15 base words which were chosen from the *Standard Frequency Index* (Carroll, Davies and Richman, 1971) and the *Scholastic Aptitude English Test* (SAET), and which were high-surface-frequency and productive words (e.g. *electric, appear*). Column B was made up of another 15 derivationally complex words, derived from the base words in Column A, with morphological affixes attached, and with changed meanings. They included nouns (e.g. *-ance, -ion, -ity, etc.* and adjectives (e.g. *-al, -able, -sive, -ous, etc.*) which had either high or low frequency. All words in Column A had transparent relations with Column B. (e.g. *cycle-recycle, sense-sensation*)

**Analysis**
Table 1 summarizes the means and standard deviations for all the data, and shows the performance of the two classes of college students for all measures. The independent variables in the three measures were the MD test and the WI test, and the dependent variable was the PC test. In the MD test, the difference between the average raw scores of class A and class B was 32.18 points (71.11/38.93) (see Table 1), while the scores of the two classes for the PC test were within 11.8 points (55.75/43.95) of each other, indicating a distinct effect of the semester’s morphological instruction. The scores of the MD and the PC tests for the two classes, showed a significant difference in the performance between class A and class B ($p < .01$) (see Table 1); that is, class A, as a result of the morphological instruction, greatly outperformed class B on both the morpheme discrimination test and the passage comprehension test.

**Correlational analyses involving the MD, PC, and WI Tests**

Intercorrelations among all measures included in the present study are displayed separately for class A and class B in Tables 2 and 3. As indicated in these tables, correlations for class A and class B both appear below the diagonal. For class A, the table showed that the measures had moderate to higher inter-correlations.

Given the similar level of English language proficiency of the students in the two classes, the WI (derivational word identification) test scores for class A were strongly associated with the scores of the MD test and PC test ($r = .20, p < .05$) (see Table 2). Simultaneously, the WI (derivational word identification) test scores were also significantly correlated with the PC (reading comprehension) scores for class B ($r = .30, p < .05$). The strength of the linear associations among these variables suggests that the ability to identify derivationally complex words has a direct influence on learners’ reading proficiency and the capability of discriminating morphemes in words
As expected, a significant relationship was found between the identification of derivationally complex words and reading comprehension (WI and PC) but not between morpheme discrimination and reading comprehension (MD and PC) for both classes.

Table 1. Means and standard deviations for classes A and B (standard deviations are in parentheses)

<table>
<thead>
<tr>
<th>Measures</th>
<th>Class A Mean (SD)</th>
<th>Class B Mean (SD)</th>
<th>t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>M D (independent variable)</td>
<td>(71.11) 13.47</td>
<td>(38.93) 12.75</td>
<td>12.07**</td>
</tr>
<tr>
<td>P C (dependent variable)</td>
<td>(55.75) 21.04</td>
<td>(43.95) 13.36</td>
<td>3.40**</td>
</tr>
<tr>
<td>W I (independent variable)</td>
<td>(46.69) 15.58</td>
<td>(42.98) 13.87</td>
<td>1.21</td>
</tr>
</tbody>
</table>

Note: ** p < .01

Table 2. Class A. Correlations among 3 measures of morphological awareness (n = 55)

<table>
<thead>
<tr>
<th>Morpheme Discrimination</th>
<th>Passage Comprehension</th>
<th>Word Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD (Morpheme discrimination)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>PC (Passage Comprehension)</td>
<td>.20</td>
<td>-</td>
</tr>
<tr>
<td>W I (Word Identification)</td>
<td>.30*</td>
<td>.51**</td>
</tr>
</tbody>
</table>

Note: Reported values are Pearson correlation coefficients
** p < .01;  *p < .05

Table 3. Class B. Correlations among 3 measures of morphological awareness (n = 44)

<table>
<thead>
<tr>
<th>Morpheme Discrimination</th>
<th>Passage Comprehension</th>
<th>Word Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD (Morpheme discrimination)</td>
<td>-</td>
<td>.24</td>
</tr>
<tr>
<td>PC (Passage Comprehension)</td>
<td>.09</td>
<td>-</td>
</tr>
<tr>
<td>W I (Word Identification)</td>
<td>.26+</td>
<td>.41**</td>
</tr>
</tbody>
</table>

Note: Reported values are Pearson correlation coefficients
** p < .01
It is reasonable to assume that learners who are more skilled in identifying the meaning of complex words are also better in the comprehension of text. Table 4 indicates that the Word Identification test was more predictive in terms of reading comprehension for both class A and B, i.e. variation of word identification (WI), rather than morpheme discrimination (MD), can be a better predictor for reading comprehension. (adjusted $R^2 = .08$, class A, adjusted $R^2 = .13$, class B) (see Table 5). A less expected result from both class A and B was the non-significant correlations between reading comprehension and the ability to identify meanings and functions of morphemes. It appears that learners’ reading comprehension depends greatly on word identification, but less on being able to distinguish morphemes.

Table 4. Linear Regression analyses predicting Passage Comprehension from the MD and WI by using enter method for variable selection for class A & B.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>PC (Class A)</th>
<th></th>
<th></th>
<th>PC (Class B)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
<td>$\beta$</td>
<td>T</td>
<td>B</td>
<td>SE B</td>
</tr>
<tr>
<td>MD (Morpheme Discrimination)</td>
<td>.08</td>
<td>.19</td>
<td>.05</td>
<td>.43</td>
<td>-.28</td>
<td>.15</td>
</tr>
<tr>
<td>WI (Word Identification)</td>
<td>.67</td>
<td>.17</td>
<td>.49</td>
<td>3.95**</td>
<td>.40</td>
<td>.14</td>
</tr>
</tbody>
</table>

Note: ** $p < .01$, Adjusted $R^2 = .24$ (class A), Adjusted $R^2 = .13$ (class B)

Table 5. Linear Regression analyses predicting Word Identification) from the MD for classes A & B

<table>
<thead>
<tr>
<th>Predictor</th>
<th>WI (Class A)</th>
<th></th>
<th></th>
<th>WI (Class B)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
<td>$\beta$</td>
<td>t</td>
<td>B</td>
<td>SE B</td>
</tr>
<tr>
<td>MD (Morpheme Discrimination)</td>
<td>.35</td>
<td>.15</td>
<td>.30</td>
<td>2.32*</td>
<td>.28</td>
<td>.16</td>
</tr>
</tbody>
</table>

Note * $p < .05$ Adjusted $R^2 = .08$ (class A), adjusted $R^2 = .04$ (class B)
**Linear model**

Table 5 indicates that the ability to discriminate derivational morphemes is more predictive for word identification for class A, which suggests that the ability to recognize morphemes may influence word identification in a predictable way. Chart 1 is a scatter diagram displaying the relationship between the MD and the WI by plotting the value of bivariate observations. The trend roughly following the linear indicates the best fit of the output, that is, the more the learners’ morphological awareness is developed, the more the interaction between the morphological sensitivity and their receptive vocabulary knowledge background is processed. Charts 2 and 3 also represent the regression lines for the variables of the WI and the PC between classes A and B, respectively. In Table 4, linear regression analyses predicted PC from the MD and WI tests by using the enter method for variables within both classes A and B. It is apparent from the table that the ability to identify morphologically complex words based on given base words reveals a consistent dependence of learners’ reading comprehension performance. These outcomes also indicate that Taiwanese learners of English as L2, despite the dissimilarity between English and Chinese in acquiring word formation, have benefited greatly, not only from the acquisition of morphological awareness skills, but also from the increase of morphological awareness cross-linguistically.
Chart 1. **Class A** – scatter diagram of the relationship between MD and WI

Chart 2. **Class A** – scatter diagram of the relationship between WI and PC
Results

In order to test whether the three morphological awareness skills uniquely explain variance in the three measures, regression analyses were performed to explore the extent to which morphological awareness made a contribution to the EFL learners’ reading comprehension based on two tests conducted in two groups of second-year college non-English major students. Since it is generally accepted that morphological awareness facilitates lexical processing and acquisition, its relation to L2 vocabulary knowledge was explored through correlation analysis. Three variables were entered: (1) analysis of the efficiency of morpheme discrimination; (2) a cloze test for passage comprehension; (3) word component identification – recognition of derivationally complex words. Correlation analyses are listed respectively in Tables 2 and 3, together with scatter diagrams in Charts 1 and 2.

In this study, the students who were involved in the morphological instruction
program demonstrated clinically significant growth in morphological awareness, orthographic knowledge, and reading comprehension. The significantly higher scores of class A, as shown in Table 1, indicate that class A outperformed class B. Across groups, the three morphological awareness measures were associated with one another either moderately or highly. The data demonstrated a positive correlation between reading comprehension and word identification, suggesting that being more able to identify morphological components in words contributes to learners’ reading proficiency. It also suggests that Taiwanese learners in their L1 Chinese learning are adept at extracting clues from semantic roots and integrating them with character-external information, which might be in contrast to their L2 processing experience; nevertheless, L2 morphological awareness accordingly can be acquired without the process of L1 transfer or interference taking place. Interestingly, this might explain the non-significant relationship between the ability to distinguish derivational affixes and to recognize lexical items. In the present study, the base words in the learners’ mental lexicon played a vital role as their fundamental linguistic background for further morphological decomposition and form-to-function mapping in the processing; that is, without the knowledge of core (or base) word information equipped, morpheme awareness may not be effectively and sensitively learned and acquired. It therefore follows that, in an EFL setting, morpheme discrimination in orthographic properties may be less influential on learners’ expansion in vocabulary. The results give rise to a specific theoretical possibility. On the one hand, the contrast between L1 and L2 processing experiences may determine the extent to which the L2 morphological awareness is, without L1 transfer, shaped by L2 processing, such as decomposition of words; on the other hand, provided EFL learners have a richer L2 lexical background, morphological awareness such as form-to-function affixes will be acquired more easily and will further strengthen their
reading comprehension.

Conclusions

The results of the study found that morphological awareness in lexical processing makes a great contribution to vocabulary recognition and reading comprehension for those who receive morphological instruction. It was also found that there are both similarities and dissimilarities between EFL learners and English native-speaking learners in the acquisition of developmental morphological awareness, as reflected in the current theories and research.

This study observed three different types of lexical processing that support the hypotheses:

1. In an EFL setting, morphological awareness can be acquired during lexical processing, to some degree, if learners are provided with proper morphological instruction. Accordingly, learners’ morphological awareness becomes more distinct as their vocabulary expands. There is also good evidence that the knowledge of morphological properties indicates and predicts reading comprehension performance, in spite of the fact that most attention has been given to the top-down conceptualization characteristic of L2 reading studies.

2. For EFL learners, the raising of morphological awareness has a consistent correlation with the ability to recognize derivational affixes, which is a similar effect to what has been proven for L1 native-speaking learners. The results of the present study also clearly demonstrate that the examination of morphological awareness is separable from learners’ mental lexicon knowledge in predicting simultaneously measured recognition of
morphologically complex words.

3. Despite the contrast between L1 and L2 processing experiences, L2 morphological awareness can be raised, shaped, and predicted, through L1 transfer, under a morphological supportive program that provides direct and focal instruction in the realization of English morphological derivation, despite the dissimilarity of acquisition processes between two typologically unrelated languages.

These preliminary results may facilitate, among researchers, more postulations for understanding interactions between learners’ morphological awareness and vocabulary growth, particularly in the EFL context. Given the concerns about wide gaps between different lexical backgrounds existing in EFL learners’ language knowledge, a continued exploration of the value of morphological awareness for future vocabulary development and inference of unknown lexis is worth pursuing, particularly in the EFL setting.

However, the items used in the tests were admittedly not ideal. A few of the vocabulary brought together for the tests were not seen very often in the EFL textbooks, which were deliberately used merely for this morphological derivational construction (e.g. No. 1, 4, 14, and 15 in the MD test, and No.7, 8, 12 in the WI test). These shortcomings of the present study lead to recommendations that future research may consider these variations more systematically. Apart from the limitations mentioned, the study has highlighted the importance of scaffolding cognition in morphological instruction for EFL learners, and may hold promise to facilitate morphological skills to advance orthographic knowledge, decoding abilities, and reading skills. Such findings may have further implications and applications for future language research.
References


