Linguistic Research 35(Special Edition), 47-82
DOI: 10.17250/khisli.35..201809.003

The effect of explicit instruction on derivational morphological awareness amongst Iranian EFL learners*

Forough Amirjalili · Ali Akbar Jabbari*** · Mohammad Javad Rezai**
(Yazd University)

Amirjalili, Forough, Ali Akbar Jabbari, and Mohammad Javad Rezai. 2018. The effects of explicit instruction on derivational morphological awareness amongst Iranian EFL learners. *Linguistic Research* 35(Special Edition), 47-82. The explicit instruction on derivational morphology has attracted little attention as an object of effective EFL teaching method. The current study attempted to investigate the impact of morphological instruction on relational, syntactic and distributional aspects of derivational morphology amongst intermediate EFL learners. The participants were 129 lower/higher intermediate students, randomly assigned into experimental and control groups. The study had a pre-test-post-test quasi-experimental control group design. The results demonstrated that before the instruction there was a significant difference in each of the three aspects of derivational morphology and distributional aspect was the lowest score amongst the three aspects. The experimental groups outperformed the control groups on all three tasks assessing derivational morphology. For lower intermediate experimental group, syntactic aspect was more susceptible to instruction and for the higher intermediate experimental group it was the distributional aspect. The results also demonstrated that morphological instruction can benefit lower level of proficiency to a higher degree. The findings of the present study imply the merits of explicit morphological instruction on derivational morphology by isolating each aspect and observing the sequence of their presentation to EFL learners. **(Yazd University)**

Keywords derivational morphological awareness, explicit morphological instruction, relational, syntactic and distributional aspects of derivational morphology, EFL learners

1. Introduction

In linguistics morphology is defined as the study of the internal structure of

* We would like to thank two anonymous *Linguistic Research* reviewers for providing insightful comments and suggestions.
** First author
*** Corresponding author

words and word formation processes (Nagy, Carlisle, and Goodwin 2013). Morphological knowledge refers to correctly employing morphological units which may be without conscious awareness (Yucel-Koc 2015), while morphological awareness is defined as "the ability to reflect on, analyze and manipulate the morphemic elements in words" (Carlisle 2010: 466) and this is conscious awareness. Morphological instruction aims to improve morphological awareness or the conscious awareness of morphemic structure. Researchers have emphasized the need for morphological instruction in language literacy (Fracasso, Bangs, and Binder 2016; Mcleod and Apel 2015) and processing of morphologically complex words has drawn many researchers' attention (Ahn *et al*. 2014). This is due to the fact that by its nature morphological instruction addresses sub-lexical features of a language which in turn can influence literacy skills at lexical level such as word reading, spelling and vocabulary and supra-lexical level such as reading comprehension and writing (Brimo 2016).

The number of morphologically complex words in English is very large, greater than the number of basic words (Anglin 1993). Thus Morphological instruction can be an essential area of vocabulary instruction and learning (Lo, Anderson and Bunch-Crump 2017). Instruction concerning morphological awareness could have immediate but also outstanding benefits for students through contributing to their ability to infer the meanings of unfamiliar, morphologically complex words and to use word structure and context to understand texts containing such words (Goodwin and Ahn 2013). Having knowledge of the internal morphological structure of words helps learners read them faster (Jun 2014). In order to make word recognition happen, morphological structures of words are broken into subparts (Rezai and Pakbaz 2014). According to Carlisle (2010), in spite of its importance to language literacy, little focus has been on the nature and value of instruction in morphological awareness.

Awareness in derivational morphology includes awareness in three components; relational, syntactic and distributional aspects. Relational awareness is the ability to recognize the stem in morphologically complex words and understand the relationship between the stem and the suffix (Kuo and Anderson 2006). It is based on the understanding that there is a semantic relationship between different morphological forms of a word (Kieffer 2009). If a student can recognize that the stem of 'productive' is 'product' and understand that *–ive* was

added to make a new word, he/she is said to have relational awareness. According to Tyler and Nagy (1989) awareness in relational morphology is the fundamental understanding that words have internal structure and that words that share a common base morpheme also share some aspects of meaning. Relational aspect of derivational morphology, according to Tyler and Nagy (1989), is the simplest and most early developing morphological aspect. It has been tapped in the classic "Comes From" task used in many studies (Carlisle 1995; Mahony, Singson and Mann 2000; Nagy, Berninger, and Abbott 2006). In these tasks the learner is asked to judge relationships across words, such as "Does farmer come from farm?"

Syntactic awareness is the understanding of how a derivational suffix changes the part of speech of a word and how derived words function in clauses or sentences. If a student recognizes that even though the words 'productive' and 'production' contain the same stem, the suffixes that have been added determine the part of speech and the way the two words function in a sentence, then that student is said to have syntactic awareness. According to Tyler and Nagy (1989) insights into syntactic morphology are more sophisticated than insights into relational morphology, because it requires the recognition that derivational suffixes such as *-ize*, or *-ion* demonstrate semantic relationships across words in specific ways, including marking words for particular syntactic categories and grammatical roles within sentences. Syntactic aspect of derivational morphology is usually tapped by sentence completion tasks requiring students to generate morphological changes in a word for example the word "farm" to complete a sentence such as "My uncle is a----------" (Carlisle 2000). The adaptations of these tasks have reduced the task demands by changing it to a multiple choice task in which the learners choose among various affixed options (Nagy *et al*. 2006; Singson, Mahony, and Mann 2000).

Distributional awareness refers to the ability to understand how affixes are constrained and limited by the syntactic category of the stem (Kuo and Anderson 2006). In other words it reflects awareness of linguistic constraints on the allowable connection of stems and suffixes influenced by grammatical category of the base word. For example the suffix *–less* can attach to nouns such "sense" in "senseless" but it cannot be attached to adjectives. Also *–ness* cannot attach to verbs so the word "playness" is incorrect but it can attach to adjectives

so the word "quietness" is correct. Thus the suffix *-ness* is constrained by the syntactic category of the stem. According to Tyler and Nagy (1989), when compared to syntactic aspect of derivational morphology, distributional aspect is even more sophisticated. As McCutchen, Green, and Abbott (2008) state, such distributional constraints have been studied explicitly in relatively few studies, always in conjunction with other morphological tasks. Tyler and Nagy (1989) provided evidence that relational aspect of derivational morphology develops relatively early, followed by syntactic and later by distributional aspect.

Similar to English, new Persian (Farsi) is rich in derivational morphology. According to Perry (2007), Old Persian was considered a typical inflected language. By the late middle Persian (650 c.e.), the language faced a radical reduction of inflectional morphology and became close to the analytical structure characteristic of New Persian. Accordingly, lexical morphology, expanded although it was reduced in number and variety of forms. The morphological system of new Persian is rich concerning derivational affixes. Derivational suffixes in Persian are numerous and transparently characteristic of a lexical or semantic class and suffixation is the major means of word formation in Persian. Many suffixes forming nouns and adjectives exist in new Persian.

Although Derivational morphology is the most widely studied aspect of morphological awareness, and research has demonstrated that derivational morphological instruction can have positive effects on language literacy, limited studies have examined three aspects of derivational morphology independently (Katz 2004; McCutchen *et al*. 2008; Tyler and Nagy 1989). As previous research shows, creating awareness in derivational morphology can be one of the prerequisites to other skills such as vocabulary and reading. Even in the limited studies considering aspects of derivational morphology, the effect of instruction on these aspects has not been considered. Consequently, it remains an empirical question whether morphological instruction on the awareness of three aspects of derivational morphology would affect EFL learners' morphological awareness regarding these aspects and susceptibility of these aspects to instruction needs to be studied. It is not known how EFL learners with a language rich in derivational morphology would react to instruction in the second language and whether they will have difficulty mastering derivational morphology of L2 English. Also research is needed to investigate whether the effect of instruction

varies with different proficiency levels and which aspect is more challenging for EFL learners.

2. Review of literature

2.1 Metalinguistic awareness in second language learning

Metalinguistic awareness means thinking about one's own language and reflecting on one's language (Scott and Nagy 2004). It is clearly accepted that metalinguistic awareness helps language learners in the learning process. One of the subcategories of metalinguistic awareness is morphological awareness (Yucel-Koc 2015). Morphological awareness plays a major role in literacy acquisition because "English language is a morpho-phonemic language" (Carlisle 2003: 292). This emphasizes the relationship between morphological awareness and literacy relationship.

Numerous theories and hypotheses have been proposed by linguists to find out how a language is learnt. Noticing Hypothesis as one of the second language acquisition theories has importance to the current paper. Schmidt (2001) proposed that learning does not happen without noticing and he claimed that it is a requirement for learning a language. The noticing hypothesis is connected to metalinguistic awareness. In second language acquisition research, metalinguistic awareness appears under different names such as noticing, consciousness and consciousness raising (Yucel-Koc 2015). Schmidt's language awareness/noticing hypothesis refers to metalinguistic awareness. He states that second language acquisition is different from first language acquisition. According to him, incidental learning is possible in LI acquisition, but not in L2 acquisition. Schmidt (1990) stated that intentional learning is necessary specifically for adult L2 learners and that noticing is the first step to acquire the language forms. That is to say, metalinguistic awareness of language forms helps learners to acquire them and also helps with their retention. Schmidt (1990) argued that explicit teaching and increasing learners' awareness contribute to the language learning process to a great extent. Noticing the language forms plays an important role in language acquisition and this brings the idea of focus on form back. According

to Ellis (2001), form-focused instruction is any planned or incidental instructional activity that aims to induce language learners to pay attention to linguistic form. Focus on form should not be overlooked in the learning process and that language instruction with a metalinguistic awareness focus can cause better language gains (Fotos 1994; Swain 1998). Instruction with the aim of creating morphological awareness is a planned instruction with the aim of helping learners pay attention to morphological forms.

2.2 Studies on three aspects of derivational morphology

Loudermill (2014) conducted a study to investigate if there were statistically significant differences between awareness in three aspects of derivational morphology in good and poor comprehenders. Results showed significant differences in each of the three aspects of derivational morphology amongst the participants. Both groups performed better on the task assessing relational aspect than on the task assessing syntactic aspect showing that relational aspect develops before syntactic. He also found significant correlation between reading comprehension and awareness in derivational morphology in good comprehenders. Relatively few studies have attempted to standardize task demands and systematically tapped performance across multiple aspects of derivational morphology (McCutchen *et al*. 2008).

In a study conducted with native L1 learners from grade four, Tyler and Nagy (1989) found that natives in grade four had good awareness in relational aspect of derivational morphology. Concerning syntactic aspect, students at each grade level also had at least some awareness in suffixes and at grade four participants were able to apply their awareness of syntactic properties of suffixes to derivatives from unfamiliar stems. Concerning distributional aspect, students at fourth grade had a substantial but incomplete knowledge. McCutchen *et al*. (2008) conducted an extensive examination focusing on aspects of derivational morphology and concerning the developmental process of these aspects, they found similar results as Tyler and Nagy (1989).

Kieffer (2009) conducted a study to evaluate the impact of a vocabulary-morphology intervention on the morphological awareness of early

adolescent language minority learners and their native English-speaking classmates. Results demonstrated that the treatment effects for language minority learners were positive for both relational and syntactic aspects of morphological awareness. In contrast, the treatment effects for native English speakers were limited to relational aspects of morphological awareness. The results also demonstrated that both language minority learners and native English speakers had improved performance on real word decomposition tasks that tapped relational aspect of derivational morphology, but only the language minority group showed improved performance on tasks tapping syntactic aspect of derivational morphology. He concluded that a strong relationship exists between growth in morphological awareness and vocabulary for language minority learners and such instruction can lead to meaningful gains.

Also Baumann, Edwards, Boland, Kame'enui and Olejnik (2003) and Baumann *et al.* (2002) investigated the effects of morphology instruction on vocabulary amongst native L1 learners. Both studies targeted relational aspect of derivational morphology by asking students to provide definitions of morphologically complex words that was scored based on students' recognition of the meanings of taught word parts. The results showed that students who received instruction in specific prefixes and suffixes were more successful at inferring the meaning of morphologically complex words, compared to students who received direct instruction in textbook vocabulary. These two studies provide evidence for susceptibility of relational aspect of derivational morphology to instruction but raise the question of susceptibility of other aspects of derivational morphology to instruction.

2.3 Morphological instruction

Previous research has demonstrated that morphological awareness has a clear relationship with literacy such as vocabulary and reading. Correlational studies have shown that morphological awareness plays a significant role in vocabulary knowledge and reading comprehension (Carlisle 2000; Nagy *et al*. 2006). Intervention studies are needed to investigate the causal links between morphological awareness and literacy development. Numerous studies have been

conducted with L1 learners investigating the effect of morphological awareness on different language skills (Berninger *et al.* 2008; Baumann *et al.* 2002). Other interventional studies showing the positive effects of morphological instruction on literacy include Goodwin and Ahn (2013) and Bowers, Kirby and Deacon (2010).

The number of instructional studies conducted with L2 learners is limited compared to L1 learners. Findings with L1 learners can hardly be generalized to L2 learners. Diaz (2010) investigated if morphological instruction was effective towards accelerating the acquisition of spelling, vocabulary, and reading comprehension by English language learners and their English dominant peers. The results showed that ELL students can make significant progress in reading, vocabulary, and spelling when Morphological Instruction is a major part of the curriculum.

Zhang (2002) conducted an experimental study with young adult Chinese Students. He investigated the effects of learners' meta-morphological awareness on their retrieval performance under different input conditions. The experimental group was given morphological analysis of the newly encountered adjectival lexicons instruction whereas the control group was not instructed at all. The results showed that the experimental group performed better in the memory-retention-retrieval tasks than the control group.

Yucel-Koc (2015) investigated the effects of morphological instruction on literacy of ESL learners. The findings demonstrated that a significant difference existed between the experimental group and control group on tests of morphological awareness, academic vocabulary, and reading comprehension and increasing morphological awareness led to better performance on the tests measuring the mentioned skills.

Even though there are some studies with L2 learners, there is great variety in the participants of these studies. These participants vary from ELL students to bilinguals and children of immigrants. Intervention studies indicate that morphological awareness has an impact on second language learners' literacy. However, there is a gap in the literature in terms of studies conducted with adult EFL learners.

3. The present study

The present study aims to investigate the impact of morphological instruction on the awareness of three aspects of derivational morphology amongst EFL learners at two different levels (lower intermediate and higher intermediate) and to find out if morphological instruction on these aspects can make a difference in the morphological awareness of EFL learners. It also tries to find out which aspect is more susceptible to instruction. The study addresses the following research questions:

1. Is there a statistically significant difference among three aspects of derivational morphological awareness amongst EFL learners before receiving instruction?
2. To what extent does morphological instruction improve EFL learner's morphological awareness in three aspects of derivational morphology for each proficiency level?
3. Which aspect of derivational morphology is more susceptible to instruction?

4. Method

4.1 Design

The study had a pre-test-post-test quasi-experimental control group design. The purpose was to find out if there existed a significant difference between the experimental and the control groups in morphological awareness concerning the three aspects of derivational morphology before and after the treatment and which aspect is more susceptible to instruction. The experimental groups received morphological awareness instruction while the control groups continued their regular instruction without intervention.

The independent variables were morphological instruction or treatment (experimental group receiving morphological instruction and the control group receiving regular instruction), time (pre-test/post-test) and level of proficiency

(lower intermediate/higher intermediate). Accordingly, the participants were divided into four subgroups: lower intermediate experimental (1), higher intermediate experimental (2), lower intermediate control (3) and higher intermediate control (4). The dependent variable was morphological awareness in three aspects of derivational morphology.

4.2 Participants

The participants were 129 students chosen from the freshmen studying at Imam Javad University College, Yazd, Iran. The first language of all participants was Farsi and their field of study was Management. They were both male and female (70 male and 59 female), aged between 18 and 21 (M=19 years and 6 months). At this university, students going through their first semester may go through some preparation courses such as English in order to make them ready for the main course being held in following terms. Students going through the English course were selected for the study. The students took part in Oxford placement test and based on the results, they were divided into lower intermediate (B1) and higher intermediate (B2) proficiency levels. In each level, the students were randomly selected as experimental and control groups (see the tables 1-3 in the results section for the number of students in each proficiency level and group).

4.3 Instruments

The base words used for the instruction and also for the morphological awareness tests were selected from Longman Communication 3000 which is a list of the 3000 most frequent words in both spoken and written English. It is based on statistical analysis of 390 million words contained in the Longman Corpus Network. The list represents the core of the English language. The base words selected for this study were amongst the 3000 most frequent words in written English. (Appendix 1). Low frequency words were not selected since learning the base itself was not the aim of this study. The focus of the study was creating awareness in the relationship of the base and the suffixes, how the suffix changes part of speech of the word, how the base word functions with the

specific suffix and how part of speech of the base can limit the suffixes. For this reason selecting relatively high frequent base words reduced the burden of learning the base itself and allowed the learners to focus on the above mentioned aims which were the main focus of the study. After base word selection, 30 of the most common suffixes of English suitable for levels B1 and B2 were selected based on Carter, McCarthy, Mark and O'keeffe (2016). They included noun making suffixes: *-ance/ence*, *-er/or*, *-sion/tion*, *-al*, *-dom*, *-ee*, *-hood*, *-ism*, *-ist*, *-ity/ty*, *-ment*, *-ness*, *-ry*, *-ship*, *-ian*; verb making suffixes: *-ate*, -en, *-ify*, *-ize*; adjective making suffixes: *-able/ible*, *-al* , *-ful*, *-ic*, *-ish*, *-ive*, *-less*, *-ly*, *-ous*, *-y* and adverb making suffix: *-ly*. These 30 suffixes were used during the instruction and also in designing the tests. In each session three suffixes were taught and for each suffix four base words were selected from the Longman Communication 3000 to which the suffixes attached. Since all forms of words are not equally transparent (Park and Chung 2012), from the four base words selected for each suffix, two of them were orthographically transparent and two of them were opaque after adding the suffix (Appendix1). According to Loudermill (2014), if in a morphologically complex word, the base word is spelled the same in derivative as is when spelled in isolation (e.g., *dark; darkness*), that word is said to be orthographically transparent and if the spelling changes occur at the end of the word before adding suffix (e.g., *happy; happiness*), that word is said to be orthographically opaque. The aim of including both transparent and opaque words in this study was to expose the learners to different types of words they would face in real texts and comparison between them was not the aim. Including only transparent words would have missed nearly half the conditions learners are faced with in texts.

The measures of this study included a homogeneity test and morphological awareness tests related to the three aspects of derivational morphology. All tests were administered as pre-test and post-test to both experimental and the control groups. Oxford placement test (2004) was used as a standard test of homogeneity in this study as a reliable and efficient means of placing students at the start of the course. The test has been calibrated against the level system provided by the common European framework of references for languages.

To assess the effectiveness of the morphology instruction, measures of morphological awareness were used to assess students' ability in different

aspects of derivational morphology. The items in the morphological awareness tasks tapped relational, syntactic, and distributional aspects. Each test included 30 items which were half transparent and half opaque items concerning orthography. The words selected for the test were the same as the words the learners were exposed to during instruction. As mentioned above, in order to control for word frequency, all the base words were selected amongst the 3000 most frequent words in written English from the Longman Corpus Network.

Relational aspect: Relational aspect has been mostly assessed by researchers using the TMS (Test of Morphological Structure), designed and used by Carlisle (2000). In this test, the students are asked to state the base form to complete the sentence once the examiner had given the derived form of the word and a sentence (e.g., *"Production" / The factory wants to ------ the goods*). However this version of TMS was not used in this study since in order to complete this test, syntactic (grammatical) awareness was needed to find the base form of the word in a sentence according to the function of the word. The application of this version does not measure pure relational awareness. According to Kuo and Anderson (2006), if a student can recognize the suffix and the root of a given word, he/she is said to have relational awareness. Thus a different version of TMS was used in this study in which the learners were faced with a set of morphologically complex words and they were required to state the base form and the suffix. The test was similar to tests of relational awareness tapped in the classic "Comes From" task used by Carlisle (1995) and Mahony *et al.* (2000). In the current study, the students were exposed to a set of morphologically complex words in isolation and were expected to recognize the base of each word and the suffix. There were thirty items on this test (half transparent and half opaque) each corresponding to the thirty suffixes taught during the instructions and all the items had been covered during the treatment. If a learner provides correct answers concerning the base and the suffix he/she will receive one point but if either one is incorrect only half a point will be given to them.

Example: In each section write the base (what word does it come from?) and suffix of the word.

Transparent example: Senseless Correct answer: Sense + less

Opaque example: variable Correct answer: vary + able

Syntactic aspect: Syntactic aspect is usually assessed using the DST (Derivational Suffix Test). This test was originally developed by Mahony (1994) but adapted by Singson *et al*. (2000) and Nagy *et al.* (2006). Awareness in syntactic aspect of derivational morphology involves the understanding of how a derivational suffix changes the part of speech of a word and how derived words function in clauses or sentences. The learner has to recognize the part of speech of the correct answer based on the suffix and also recognize the function of that word in the sentence. This test uses words in a sentence completion task to assess syntactic awareness by making grammaticality judgments. The test had thirty items, each correct answer corresponding with one of the suffixes taught during the instruction. All correct answers had been taught during the treatment and all the distracters had been taught during the review sessions through cumulative word form charts (Appendix 2). Half of the correct answers were orthographically transparent and half of them were orthographically opaque.

Example (Opaque):
Those two dogs are almost----------.
A. identical B. identify C. identification D. identity

In the above test the learner needs to recognize that an adjective should fill in the gap and that amongst these alternatives the word "identical" is an adjective based on its suffix. The same holds for the following sentence in which a noun should fill in the gap.

Example (transparent):
The patient's ---------- against disease decreased.
A. resistless B. resist C. resistance D. resistible

Distributional aspect: Distributional aspect is usually assessed using a judgment task used in Tyler and Nagy's (1989) study of derivational morphology. The learners had to judge whether the word given is correct or not based on the suffix added to the base. In this format of distributional tests, the testee has a 50% chance of getting the correct answer. To this reason the objective format was used in the current study to reduce lucky guesses. There

were 30 items on the test, each containing three correct words to which the learners had been exposed to during the instruction and one incorrect word which was made by adding a suffix to an unsuitable base word due to its part of speech.

Example: In each set determine which word does not exist in English.
a. childable b. equality c. characterize d. measureless

In the above test "childable" is an incorrect word since *–able* cannot attach to nouns such as child.

Once the tests were adapted and made ready, a Ph.D. in linguistics and a Ph.D. candidate in TEFL reviewed the tests and some parts were revised. Then the tests were piloted with a group of students similar to the target group before using it in the actual study. The reliability of the tests were calculated by SPSS separately in this phase and the results showed that all three tests enjoyed a high degree of consistency (Cronbach's alpha: 0.855, 0.876 and 0.765 for the three tests respectively).

4.4 Data collection procedure

After going through Oxford placement test, the participants of the study in each proficiency level were randomly divided into experimental and control groups. The students in the experimental group received explicit instruction in aspects of derivational morphology. All the participants took the tests on the three aspects of derivational morphology as pre and post-tests. The researcher taught all four classes. Both the experimental and control classes met with the researcher as the teacher of both classes once a week for 90 minutes. The study took 14 weeks, but the instruction period was 12 weeks, as the pre and post-tests were administered in the first and last week of the course.

4.4.1 Treatment

The students in the experimental groups received 12 weeks of instruction (10

instruction sessions plus 2 review sessions) on morphological structure of words focusing on the three aspects of derivational morphology. Three suffixes were selected for each session with four orthographically transparent and opaque base words for each suffix (Appendix1). The words were presented both in isolation and in texts selected from level appropriate text books such as "Select Readings", intermediate level, by Lee and Gundersen (2011). Three aspects of derivational morphology were taught in details and the order of presenting different aspects of derivational morphology was considered, starting with relational and ending in distributional aspect. The students received explicit, direct instruction in morphological analysis strategies and they were encouraged to interrupt the instructor to ask any question they encountered. The steps included:

- Presenting the base and its meaning (e.g., *resist*); the definition of the base was explicitly taught both in print and also explained by the teacher by presenting the students friendly definitions (e.g., *to stand against, to oppose, to fight against*). In some cases the word meaning was explained with some help from their first language (see appendix 1 for all the roots taught during the treatment);
- Giving examples of contexts (sentences) to which the word applied (e.g., *"The soldiers resisted for two days"*);
- Introducing the suffix (e.g., *-ance/-ence*) (see appendix 1 for all the suffixes taught during the treatment);
- Adding the suffix to the base word (e.g., *resist+ance=resistance*);
- Explaining changes in spelling in case of opaque words; (e.g., *vary+able=variable*; explaining that in cases such as vary the end 'y' changes to 'i' when a suffix is added (see appendix 1 for more opaque examples taught during the treatment));
- Giving the meaning of each word considering the combination of the base and the suffix and helping learners notice the difference in meaning after the suffix was added and accompanying it with examples:
  Resist: to stand against, to oppose, to fight against; "The windows can resist very high winds".
  Resistance: the act of resisting, opposing or fighting; "The paint shows good weather resistance".

- Explaining the part of speech of each word based on the suffix (e.g., words ending in *-ance/-ence* are nouns);
- Providing level appropriate sentences containing the words and explaining the function of that word in the sentence based on its part of speech (e.g., *"Their resistance against the enemy's attacks led to success"*; explaining that nouns or noun phrases are used after possessive pronouns);
- Elaborating on the allowed parts of speech to which the suffix can be added (e.g., *-ance/-ence* can only be added to verbs and nouns).

Follow up activities included tasks such as matching a definition with the correct derived word, matching the words with the appropriate suffixes (*product + ive*), breaking the words up (*dependable—depend-able*), categorizing words according to their parts of speech, using derived words in sentence gaps and choosing among foil and correct words based on the suffix. Corrective feedback was given throughout the lessons. The last two sessions of the treatment were devoted to reviewing the base words and suffixes in cumulative word form charts (Appendix 2). Thus if the base word "resist" had been taught during the treatment and accompanied the suffix *–ance* to make the word "resistance", during the review sessions the learners were exposed to other derived examples from the base words. (e.g., *resistless and resistivity*).

While the experimental groups were receiving the treatment, the control groups went through 12 weeks of instruction, being exposed to the same words included in the same texts as the experimental groups, but receiving instruction on those words only regarding their meaning. All the words were presented and defined for the learners without any focus on morphological aspects of those words. The students in the control groups also had follow up activities which focused on word meaning and functions of those words in sentences without emphasizing on morphological aspects.

At the end of the 12-week instruction, the participants took the post-tests in week 14, in the same way they took the pre-tests. Concerning the researcher adapted assessments, the forms with the same test items reordered were used to minimize their surface similarity. There was a three months gap between pre and post-tests. The tests in multiple choice format were graded by the researcher

and the relational test which was not in multiple format was also graded by one other rater. The inter-rater reliability was calculated (Cronbach's a=0.92).

Thirty percent of the sessions were randomly selected to assess the treatment fidelity of the program. The trained research assistant completed a checklist for each session viewed and confirmed that the principle components were present for each type of treatment and the procedures outlined in the lesson.

4.5 Data analysis

The results of the study were analysed using SPSS version 18. A repeated measure ANOVA was conducted to study the effects of time and the interaction effects of time*treatment, time*proficiency and time*treatment*proficiency. Since they were all significant, follow up analysis was conducted according to each research questions. Pre-test scores at each level in different aspects of derivational morphology were compared using paired sample t-test for the first research question. For the second research question the improvements from pre-test to post test in each aspect was computed for each participant and a one-way between groups analysis of variance (one way ANOVA) was conducted in order to compare the improvement of each subgroup in each aspect. For the third research question, the improvement from pre-test to post test in each aspect by participants in each level of the experimental groups were compared using paired sample t-test.

5. Results

The mean scores and standard deviations for three aspects of derivational morphology at two different times (pre-test and post-test) have been displayed in the descriptive statistics tables 1-3. The general results showed that experimental groups outperformed the control groups. All subgroups had higher scores in post-test when compared to pre-test.

Table 1. Descriptive statistics (relational aspect)

	Group	Proficiency	Mean	Std. Deviation	Min	Max	N
Post-test Relational Aspect	Experimental	Lower intermediate	25.50	3.38	14	30	46
		Upper intermediate	26.79	3.22	19	30	34
	Control	Lower intermediate	12.30	3.87	6	20	23
		Upper intermediate	20.96	4.79	11	28	26
Pre-test Relational Aspect	Experimental	Lower intermediate	12.36	4.86	2	24	46
		Upper intermediate	19.02	5.14	7	28	34
	Control	Lower intermediate	10.52	4.51	1	19	23
		Upper intermediate	17.80	4.67	8	25	26

Table 2. Descriptive statistics (syntactic aspect)

	Group	Proficiency	Mean	Std. Deviation	Min	Max	N
Post-test Syntactic Aspect	Experimental	Lower intermediate	21.30	4.31	6	28	46
		Upper intermediate	25.44	2.48	19	29	34
	Control	Lower intermediate	10.91	4.19	4	18	23
		Upper intermediate	21.88	4.05	16	30	26
Pre-test Syntactic Aspect	Experimental	Lower intermediate	5.84	3.91	0	15	46
		Upper intermediate	18.88	4.48	12	28	34
	Control	Lower intermediate	4.80	3.22	1	12	23
		Upper intermediate	18.34	4.38	12	28	26

Table 3. Descriptive statistics (distributional aspect)

	Group	Proficiency	Mean	Std. Deviation	Min	Max	N
Post-test Distributional Aspect	Experimental	Lower intermediate	12.21	7.16	0	24	46
		Upper intermediate	20.17	5.19	8	29	34
	Control	Lower intermediate	6.91	4.44	0	15	23
		Upper intermediate	12.23	4.35	5	21	26
Pre-test Distributional Aspect	Experimental	Lower intermediate	4.67	3.69	0	14	46
		Upper intermediate	10.20	5.12	2	24	34
	Control	Lower intermediate	3.78	2.82	1	11	23
		Upper intermediate	10.61	4.04	4	20	26

Independent sample t-test of the pre-test scores demonstrated that before starting the treatment, there was no significant difference between the pre-test scores of experimental and control groups in each aspect (p>0 .05). A repeated measure ANOVA (with the score on the three aspects of derivational morphology as the dependant variable or measures) showed that the significance values for all effects were less than 0.05. Concerning time, the value for Wilks' Lambda was

0.179, F (3,123) = 1.8 with a probability value of p= 0.001 showing a statistically significant effect. The partial eta-squared value was .821 indicating a large effect size. The interaction effects of Time * Treatment [F(3,123)= 42.6, Wilks' Lambda=0.49, p=0.001], Time * Proficiency [F(3,123)=26.06, Wilks' Lambda=0.611, p=0.001] and Time * Treatment * Proficiency [F(3,123)=15.79, Wilks' Lambda=0.722, p=0.001] were also significant.

Concerning the main effect of time, results from paired sample t-tests, indicated a statistically significant increase in aspects scores from pre-test to post-test (p<0.05) in all groups and proficiency levels. From the above analysis we observe that the interaction between time, treatment and proficiency is significant showing that the experimental group behaved differently compared to the control group considering pre-test /post-tests. This is also true for the proficiency levels. Thus follow up analysis was conducted according to the research questions.

5.1 First research question

Pairwise comparisons of pre-test scores at lower intermediate proficiency level in different aspects of derivational morphology showed that relational was significantly greater than syntactic score (MD (mean difference) =6.25, p=0.001) and syntactic was significantly greater than distributional score (MD=1.123, p=0.05) before receiving treatment. For the higher intermediate proficiency, pairwise comparisons of pre-test scores showed that, there was no significant difference between relational and syntactic pre-test scores (MD=0.15, p=1.00) and syntactic and relational were significantly greater than distributional scores (MD=8.26, p=0.001; MD=8.11, p=0.001, respectively).

5.2 Second research question

In order to measure to what extent morphological instruction in each subgroup improved learner's morphological awareness in each aspect, the improvement (gain) from pre-test to post test in each aspect was computed for each participant by subtracting each person's pre-test score from his or her

post-test score in each aspect. A one- way between groups analysis of variance (one way ANOVA) was conducted in order to compare the improvement of each subgroup in each aspect .There was a statistically significant difference in the improvements concerning the three aspects [Relational: F = 46.579, p = 0.001], [Syntactic: F = 69.125, p = .001], [Distributional: F = 13.218, p =0 .001].

Post-hoc comparisons using Scheffe adjustments indicated that the improvements in relational aspect for subgroup 1 (MD=13.13) were significantly greater than subgroup 2 (MD=7.76, p<0.05). The improvements of subgroups 3 and 4 were not significantly different (p=0.392) and their improvement was significantly lower than subgroup 2 (p<0.05). As demonstrated in Figure 1 ,The difference between means in the experimental groups in relational aspect was greater compared to the control groups when considering pre-test and post-test. In the experimental groups, the lower intermediate proficiency had greater improvement compared to higher intermediate proficiency. The difference between means was similar in the control groups.

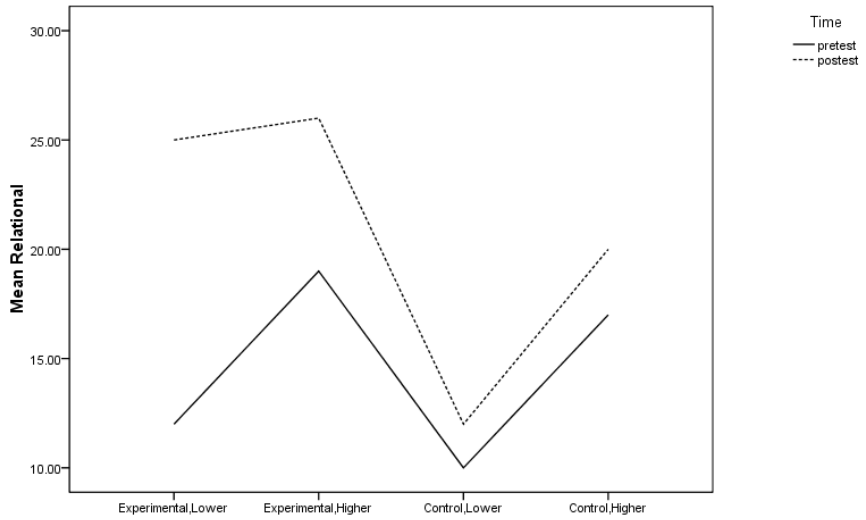

Figure 1. Change over time in each subgroup (relational aspect)

Concerning syntactic aspect, improvement in subgroup 1 (MD=15.45) was significantly greater than the other subgroups (p<0.05). The improvements of

subgroup 2 and 3 were not significantly different (p=0.977). Finally subgroup 4 had the least improvement at significance level of α=0.1, (p=0.089). As Figure 2 shows, the experimental groups had better improvement in syntactic aspect compared to the control groups when considering pre-test and post-test. In the experimental groups, the lower intermediate proficiency had higher improvement compared to higher intermediate proficiency. The difference between means was similar in the control groups.

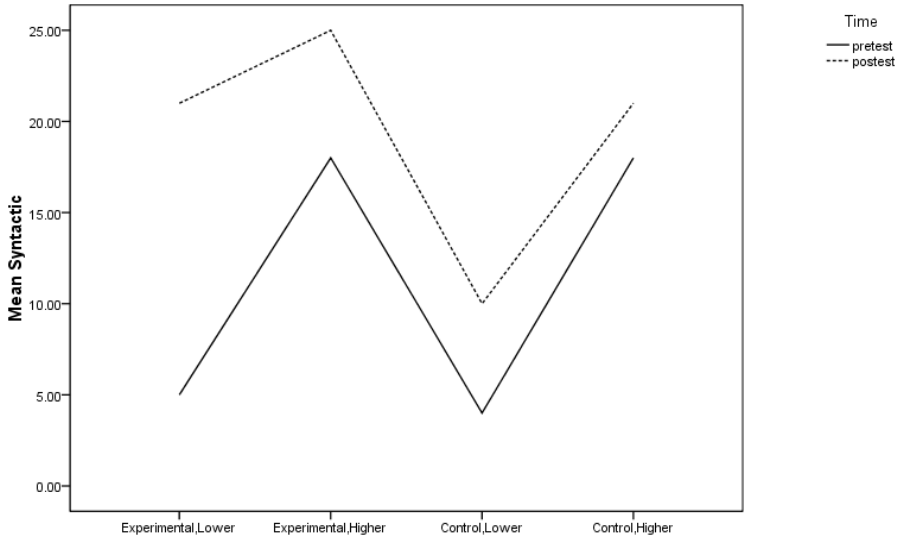

Figure 2. Change over time in each subgroup (syntactic aspect)

Concerning distributional aspect, Post-hoc comparisons using Scheffe adjustment indicated that improvements due to treatment for subgroups 1 and 2 did not differ significantly (MD=9.97, MD=7.54 respectively, p=0.453). Also there was no significant difference between the improvements of distributional aspect for subgroup 3 and 4 (M=3.13, M=1.61 respectively, p=0.794) and their improvement was significantly lower than subgroup 1 and 2. As Figure 3 shows, the experimental groups has a higher improvement in distributional aspect compared to the control groups when considering pre-test and post-test. The difference between means of both proficiency levels was similar in each group.

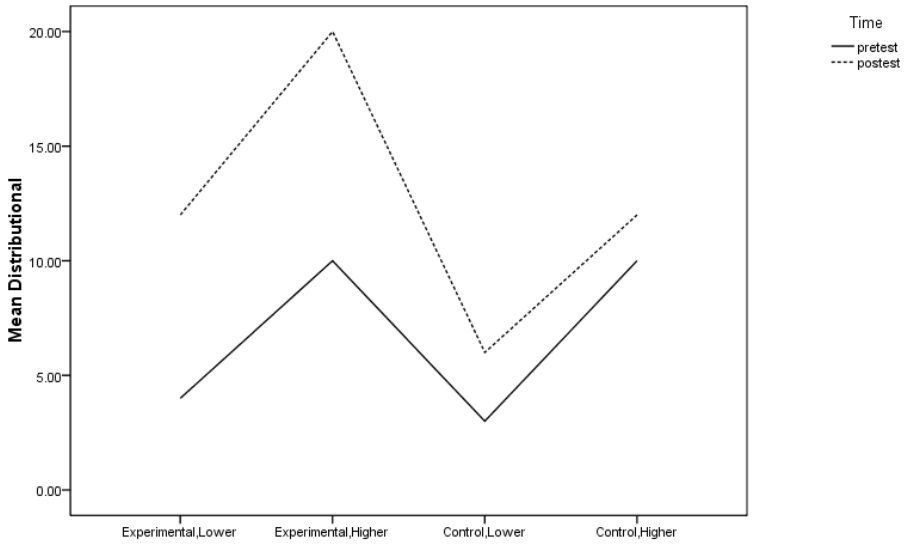

Figure 3. Change over time in each subgroup (distributional aspect)

5.3 Third research question

In order to see which aspect of derivational morphology is more susceptible to instruction the improvement (gain) from pre-test to post test in each aspect by participants in the experimental groups were compared. In pairwise comparison of improvements using paired sample t-test between aspects in each level of the experimental groups, the results showed that for the lower intermediate proficiency, improvement in syntactic aspect was significantly greater than relational (MD=2.32, p=0.037) and relational was significantly greater than distributional (MD=5.58, p=0.001). For the higher intermediate proficiency, the results show that improvements in distributional aspect were significantly greater than relational (MD=2.206, p=0.046) and syntactic aspect (MD=3.412, p=0.01). There was no significant difference between improvements in relational and syntactic aspects (MD=1.206, p=0.396).

6. Discussion

The current study attempted to investigate the impact of morphological instruction on the awareness of three aspects of derivational morphology by isolating each aspect and presenting separate morphological tasks to assess awareness in derivational morphology amongst intermediate EFL learners. A 12 week teacher implemented intervention had positive effects on morphological awareness when compared to regular instruction.

Statistical analyses revealed that before instruction there was a significant difference in each of the three aspects of derivational morphology amongst lower intermediate EFL learners with relational aspect significantly greater than syntactic and syntactic aspect significantly greater than distributional, which suggested that their awareness in relational aspect of derivational morphology is more developed than their syntactic. Loudermill (2014) had found the same results concerning relational aspect with native learners. Developmental differences between the three aspects of derivational morphology have been noted in the literature for native learners. Tyler and Nagy (1989) presented a clear path of development that began with the acquisition of relational aspect, followed by syntactic and then distributional aspect. McCutchen *et al*. (2008) reported the same developmental process in typically developing students. The results for lower intermediate EFL learners seem to follow the same path.

For higher intermediate EFL learners, the pre-test results showed that there was no significant difference between awareness in relational and syntactic aspect, but relational and syntactic were significantly greater than distributional aspect. As seen in the current study, intermediate students appeared to have a better foundation of relational aspect of derivational morphology. The higher intermediate learners also appeared to have the same ability in terms of syntactic aspect. EFL learners are exposed to high amount of instruction focusing on form and function of words during their studies. Higher levels of awareness based on form and function of words due to their higher level can explain the insignificant difference between relational and syntactic aspect of derivational morphology in this level when compared with lower intermediate. Distributional is the most complex aspect of derivational morphology and it has been determined to be the last to develop and it seems to be the least acquired for

both levels. Previous research with native speakers has also demonstrated that distributional aspect is the last to develop (Katz 2004; McCutchen *et al*. 2008; Tyler and Nagy 1989) and this fact was also observed with the EFL learners in this study. When considering the post-test scores, the fact observed for all subgroups is that the highest post-test scores were in relational aspect and the lowest post-test scores were observed in the distributional. Distributional aspect is considered the most difficult aspect to acquire as demonstrated in previous research with natives (Katz 2004; McCutchen *et al*. 2008). Although here are not many studies that have assessed distributional aspect independently.

This established pattern of development suggests that when trying to improve awareness in derivational morphology in EFL learners, building on their relational aspect is the most logical place to start. Activities focusing on producing and decomposing derived words as well as "comes from" tasks would be beneficial in improving relational aspect in EFL learners. After EFL learners have acquired a good foundation of relational aspect, activities designed to increase syntactic aspect should be introduced focusing both on form and function. After solid foundations of both relational and syntactic aspect have been established, activities targeting the improvement of distributional aspect should be introduced.

Concerning the second research question addressing how morphological instruction improves learner's morphological awareness in three aspects of derivational morphology, the results showed that the experimental groups significantly outperformed the control groups on all three tasks assessing derivational morphology and the positive effects of morphological instruction on these three aspects were confirmed. The treatment had a statistically significant positive main effect on the three aspects of derivational morphology. The results demonstrate that EFL learners can gain positive results when exposed to rule-based procedures for understanding the English language system. The fact that the treatment had positive effects can also be related to their learners' first language. The learners were all Farsi learners of English and Farsi is rich in derivational morphology. According to Seog (2015), learners' native language is a significant predictor of L2 English morpheme acquisition and L1 transfer has a role in morphological awareness. Since Farsi morphology is rather derivational than inflectional, learners' L1 morphological competence is one of the factors that

facilitated the instruction of L2 derivational morphology.

The students in the lower intermediate proficiency (subgroup 1) with lower morphological awareness at pre-test benefited more from the treatment in relational and syntactic aspects. One potential explanation is that the learners at the lower level were more responsive to this particular treatment due to their lower initial levels of proficiency. The instructions targeted relatively common suffixes and thus could be expected to have greatest effects on the learners with the most limited levels of morphological awareness. The students in the higher level had already mastered some aspects of derivational morphology. This suggests that the treatment may be more appropriate for students with less developed language proficiency. Kieffer (2009) had found similar results with language minority learners. Having less awareness of derivational morphology regarding these two aspects on the footing helped them benefit from this instruction to a higher degree when compared to the higher intermediate proficiency.

When looking at the improvements in distributional aspect, we see that both experimental groups outperformed the control groups and there was no significant difference between the two experimental groups. The different result for the higher intermediate experimental group (subgroup 2) concerning distributional aspect when compared to the other two aspects could be due to the difficulty of distributional aspect when compared to the other two and as a result the instruction benefited the higher level as well as the lower level. The higher intermediate learners were in a better learning situation to receive instruction on distributional aspect of derivational morphology when compared to relational and syntactic aspect due to their higher level of proficiency in language and the difficulty level of distributional aspect. In sum the improvements of the treatment groups are significantly better than those of the control groups in all aspects. Also the improvements of the lower intermediate proficiency were significantly higher than that of the higher intermediates in relational and syntactic aspects due to instruction.

The third research question aimed at finding out which aspect of derivational morphology is more susceptible to instruction. In general, the results demonstrate that all aspects of derivational morphology are susceptible to instruction but for the lower intermediates, syntactic aspect and for the higher

intermediate learners distributional aspect is significantly more susceptible to instruction. The latter can be attributed to the difficulty of this task and the instruction being more beneficial for the higher proficiency. Susceptibility of relational aspect to instruction with native learners had been demonstrated in previous research with native learners (Baumann *et al*. 2003).

Overall, the current research adds to the body of literature that has examined the various aspects of derivational morphology and the developmental process related to acquisition. The positive effects of morphological instruction with the aim of creating linguistic awareness were observed in the current study. Noticing the aspects of language following explicit instruction demonstrated positive effects for EFL learners. Noticing as metalinguistic awareness is the first step to acquire the language forms and it helps transfer those forms from short-term to long-term memory. This study proposes that noticing and awareness, as Schmidt (2001) stated, is necessary for learning. The positive effects of explicit instruction observed in this study are also in line with the emphasis given to form focused instruction. The better performance of learners in the experimental group demonstrate the benefits EFL learners obtain in focus on form instruction as compared to focus on meaning. The results shed light on metalinguistic intervention and its possible effects on language skills of EFL learners. EFL learners can increase their metalinguistic awareness by thinking about the language and the language learning process, and making reflections on it. A great number of derived words exist in English and noticing the base and suffixes of these words can play a crucial role in deriving and decomposing words rather than memorizing their semantics. This will lead to meaningful learning instead of rote memorization.

7. Conclusions and implications

The impact of morphological instruction on the awareness of three aspects of derivational morphology amongst intermediate EFL learners was investigated in this study. Based on the results, relational aspect is the first to develop with lower level learners and distributional aspect as the most complex aspect of derivational morphology is the last.

This established pattern of development observed suggests that when trying to improve awareness in derivational morphology amongst EFL learners, building on their relational awareness is the most logical place to start. Once they have acquired a good foundation of relational aspect, activities designed to increase syntactic aspect should be introduced focusing both on form and function. After solid foundations of both relational and syntactic aspect have been established, activities targeting distributional aspect should be introduced. The higher improvements of the experimental groups when compared to the control groups emphasize the positive effects morphological instruction can have for EFL learners.

With relational and syntactic aspect of derivational morphology, the lower intermediate experimental group benefited more from the treatment in relational and syntactic aspects. The higher intermediate learners were in a better learning situation to receive instruction on distributional aspect of derivational morphology when compared to relational and syntactic. This suggests that instruction on relational and syntactic aspect may be more appropriate for students with less developed language proficiency, but higher intermediate learners are in a better condition to receive instruction on distributional aspect of derivational morphology when compared with other aspects.. For the lower intermediates, syntactic aspect was more susceptible to instruction. For the higher experimental group, distributional aspect had the highest gain score.

The findings of the present study can benefit EFL instructors to focus on the merits of explicit morphological instruction, focusing on creating awareness in derivational morphology as a prerequisite to other skills, by isolating each aspect. This can in turn lead to morphological awareness skills and higher literacy. The sequence of presenting materials and offering instruction on aspects of derivational morphology should be observed by material developers and EFL instructors dealing with language learners, especially at lower levels of proficiency.

8. Limitations and further research

This study tried to investigate the effects of explicit morphological awareness

on awareness in three aspects of derivational morphology. Morphological awareness is considered as one of the factors that can lead to L2 competence and use. The effects of this awareness on L2 performance and competence of EFL learners has not been investigated in this study and can be studied in further research.

References

Ahn, Hee-Don, Yongjoon Cho, Jong-Bai Hwang, Moongee Jeon, Kisub Jeong, and Jieun Kim. 2014. L2 morphological processing of Korean nominal marker *-ka*: Evidence from masked and cross-modal priming with advanced Chinese learners. *Linguistic Research* 31(2): 305-323.

Anglin, Jeremy M. 1993. Vocabulary development: A morphological analysis. *Monographs of the Society for Research in Child Development* 53(10): 1-166.

Baumann, James F., Elizabeth C. Edwards, Eileen M. Boland, Stephen Olejnik, and Edward J. Kame'enui. 2003. Vocabulary tricks: Effects of instruction in morphology and context on fifth-grade students' ability to derive and infer word meanings. *American Educational Research Journal* 40: 447-494.

Baumann, James F., Elizabeth C. Edwards, George Font, Cathleen A. Tereshinski, Edward J. Kame'enui, and Stephen Olejnik. 2002. Teaching morphemic and contextual analysis to fifth-grade students. *Reading Research Quarterly* 37: 150-176.

Berninger, Virginia W., William D. Winn, Patricia Stock, Robert D. Abbott, Kate Eschen, Shin-Ju Lin, Noelia Garcia, Marci Anderson-Youngstrom, Heather Murphy, Dan Lovitt, Pamala Trivedi, Janine Jones, Dagmar Amtmann, and William Nagy. 2008. Tier 3 specialized writing instruction for students with dyslexia. *Reading and Writing: An Interdisciplinary Journal* 21(1-2): 95-129.

Bowers, Peter N., John R. Kirby, and Helene S. Deacon. 2010. The effects of morphological instruction on literacy skills: A systematic review of the literature. *Review of Educational Research* 80(2): 144-179.

Brimo, Danielle. 2016. Evaluating the effectiveness of a morphological awareness intervention a pilot study. *Communication Disorders Quarterly* 38(1): 35-45.

Carlisle, Joanne F. 1995. Morphological awareness and early reading achievement. In Laurie Feldman (ed.), *Morphological aspects of language processing*, 131-154. Hillsdale, NJ: Lawrence Erlbaum.

Carlisle, Joanne F. 2000. Awareness of the structure and meaning of morphologically complex words: Impact on reading. *Reading and Writing: An Interdisciplinary Journal* 12: 169-190.

Carlisle, Joanne F. 2003. Morphology matters in learning to read: A commentary. *Reading Psychology* 24: 291-332.

Carlisle, Joanne F. 2010. Effects of instruction in morphological awareness on literacy achievement: An integrative review. *Reading Research Quarterly* 45: 464-487.

Carter, Ronald, Michael McCarthy, Geraldine Mark, and Anne O'keeffe. 2016. *English grammar today*. Cambridge, UK: Cambridge University Press.

Diaz, Ivan. 2010. *The effect of morphological instruction in improving the spelling, vocabulary, and reading comprehension of high school English Language Learners (ELLs)*. PhD Dissertation. TUI University.

Ellis, Rod. 2001. Introduction: Investigating form-focused instruction. *Language Learning* 57(1): 1-46.

Fotos, Sandra S. 1994. Integrating grammar instruction and communicative language use through grammar consciousness-raising tasks. *TESOL Quarterly* 28: 323-351.

Fracasso, Lucille E., Kathryn Bangs, and Katherine S. Binder. 2016. The contributions of phonological and morphological awareness to literacy skills in the adult basic education population. *Journal of Learning Disabilities* 49(2): 140-151.

Goodwin, Amanda P. and Soyeon Ahn. 2013. A meta-analysis of morphological interventions in English: Effects on literacy outcomes for school-age children. *Scientific Studies of Reading* 77(4): 257-285.

Jun, Jongsup. 2014. Effects of linguistic and usage-based factors on children's acquisition of English derivational morphology. *Linguistic Research* 31(2): 325-356.

Katz, Lauren Ashley. 2004. *An investigation of the relationship of morphological awareness to reading comprehension in fourth and sixth graders*. PhD Dissertation. University of Michigan.

Kieffer, Michael J. 2009. *The development of morphological awareness and vocabulary knowledge in adolescent language minority learners and their classmates*. PhD Dissertation. Harvard University.

Kuo, Li-jen and Richard C. Anderson. 2006. Morphological awareness and learning to read: Across-language perspective. *Educational Psychologist* 41: 161–180.

Lee, Linda and Erik Gundersen. 2011. *Select readings*. Oxford, UK: Oxford University Press.

Lo, Ya-yu, Adrienne L. Anderson, and Kimberly Bunch-Crump. 2017. Building vocabulary of English learners with reading disabilities through computer-assisted morphology instruction. *Intervention in School and Clinic* 52(3): 133-140.

Loudermill, Chenell S. 2014. *An investigation of the relationship between reading comprehension and morphological awareness skills*. PhD Dissertation. University of Arkansas.

Mahony, Diana. 1994.Using sensitivity to word structure to explain variance in high school and college level reading ability. *Reading and Writing: An Interdisciplinary Journal* 6(1): 18-44.

Mahony, Diana, Maria Singson, and Virginia Mann. 2000. Reading ability and sensitivity to morphological relations. *Reading and Writing: An Interdisciplinary Journal* 72(3): 191-218.

McCutchen, Deborah, Laura Green, and Robert D. Abbott. 2008. Children's morphological knowledge: Links to literacy. *Reading Psychology* 29(4): 289-314.

McLeod, Angela N. and Kenn Apel. 2015. Morphological awareness intervention study of a child with history of speech and language disorders. *Communication Disorders Quarterly* 36(4): 208-218.

Nagy, William, Virginia W. Berninger, and Robert Abbott. 2006. Contributions of morphology beyond phonology to literacy outcomes of upper elementary and middle-school students. *Journal of Educational Psychology* 95(1): 134-147.

Nagy, William, Joanne F. Carlisle, and Amanda P. Goodwin. 2013. Morphological knowledge and literacy acquisition. *Journal of Learning Disabilities* 47(1): 3-12.

Park, Myung-Kwan and Wonil Chung. 2012. Processing semantic and phonological factors in derivational morphology by Korean L2 learners of English. An ERP cross-modal priming study. *Linguistic Research* 29 (3): 639-664.

Perry, John R. 2007. Morphology of Persian. In Allan Kaye (ed.), *Morphologies of Asia and Africa*, 975-1019. Winona Lake, Ind.: Eisenbrauns.

Rezai, MohamadJavad and Roya Pakbaz. 2014. Iranian EFL learners' processing of English derived words. *Issues in Language Teaching* 3(1): 37-64.

Schmidt, Richard. 1990. The role of consciousness in second language learning. *Applied Linguistics* 11: 129-158.

Schmidt, Richard. 2001. Attention. In Peter Robinson (ed.), *Cognition and second language instruction*, 3-32. Cambridge, UK: Cambridge University.

Seog, Daria Soon-Young. 2015. Accuracy order of grammatical morphemes of Korean EFL learners: Disparities among the same L1 groups. *Linguistic Research* 32: 151-171.

Singson, Maria, Diana Mahony, and Virginia Mann. 2000. The relation between reading ability and morphological skills: Evidence from derivational suffixes. *Reading and Writing: An Interdisciplinary Journal* 12: 219-252.

Scott, Judith A. and William Nagy. 2004. Developing word consciousness. In James F. Baumann and Edward J. Kame'enui (eds.), *Vocabulary instruction: Research to practice,* 201-217. New York, NY: The Guilford.

Swain, Merrill. (1998). Focus on form through conscious reflection. In Catherine Doughty and Jessica Williams (eds.), *Focus on form in classroom second language acquisition*, 64-81. Cambridge, UK: Cambridge University Press.

Tyler, Andra and William Nagy. 1989. The acquisition of English derivational morphology. *Journal of Memory and Language* 28: 649-667.

Yucel-Koc, Melike. 2015. *The role of morphological awareness in academic vocabulary and reading comprehension skills of adult ESL learners*. PhD Dissertation. Seattle Pacific University.

Zhang, Lawrence J. 2002. Exploring EFL reading as a metacognitive experience: Reader awareness and reading performance. *Asian Journal of English Language Teaching* 72: 69-94.

Appendix 1

Base words, suffixes and derived word taught in each session:

Week1	Target suffix	Base words	Derived words	Rules
	-er/or	Drive	Driver	Verb/noun+*er/or*=noun
		Distribute	Distributer	
		Process	Processor	
		Farm	Farmer	
	-less	Sense	Senseless	Verb/noun+*less*=adjective
		Resist	Resistless	
		Measure	Measureless	
		Meaning	Meaningless	
	-ness	Polite	Politeness	Adjective+*ness*=noun
		Bright	Brightness	
		Happy	Happiness	
		Ready	readiness	
Week2	Target suffix	Base words	Derived words	Rules
	-ance/ence	Continue	Continuance	Verb+*ance/ence*=noun
		Differ	Difference	
		Occur	Occurrence	
		Resist	Resistance	
	-ful	Purpose	Purposeful	Noun/verb+*ful*=adjective
		Beauty	Beautiful	
		Waste	Wasteful	
		Duty	Dutiful	
	-en	Dark	Darken	Adjective+*en*=verb
		Weak	Weaken	
		White	Whiten	
		Loose	Loosen	
Week3	Target suffix	Base words	Derived words	Rules
	-ment	Agree	Agreement	Verb+*ment*=noun
		Manage	Management	
		Argue	Argument	
		Improve	Improvement	
	-ive	Adjust	Adjustive	Verb/noun+*ive*=adjective
		Product	Productive	
		Absorb	Absorptive	
		compete	Competitive	

	-y	Cloud	Cloudy	Noun/verb+*y*=adjective
		Rain	Rainy	
		Bag	Baggy	
		Leak	Leaky	
Week4	Target suffix	Base words	Derived words	Rules
	-sion/tion	Add	Addition	Verb+*sion/tion*=noun
		Operate	Operation	
		Discuss	Discussion	
		Attract	Attraction	
	-able/ible	Vary	Variable	Verb+*able/ible*=adjective
		Demonstrate	Demonstrable	
		Depend	Dependable	
		Reason	Reasonable	
	-ify	Mode	Modify	Noun/adjective+*ify*=verb
		Note	Notify	*adjective bases were not
		Desert	Desertify	amongst the frequency
		Object	Objectify	allowed
Week5	Target suffix	Base words	Derived words	Rules
	-ee	Employ	Employee	Verb/noun+*ee*=noun
		Test	Testee	
		License	Licensee	
		Promise	Promisee	
	-ry/ory/ery	Minister	Ministry	Noun/verb+*ry*=noun
		Enter	Entry	
		Direct	Directory	
		Function	Functionary	
	-ship	Friend	Friendship	Noun+*ship*=noun
		Leader	Leadership	
		Relation	Relationship	
		Owner	Ownership	
Week6	Target suffix	Base words	Derived words	Rules
	-ize	Computer	Computerize	Noun/adjective+*ize*=verb
		Active	Activize	
		Character	Characterize	
		Economy	Economize	

	-ish	Girl	Girlish	Noun+*ish*=adjective
		Book	Bookish	
		Cat	Cattish	
		Club	Clubbish	
	-dom	King	Kingdom	Noun/adjective+*dom*=noun
		Free	Freedom	
		Wise	Wisdom	
		Self	Selfdom	
Week7	Target suffix	Base words	Derived words	Rules
	-ous	Disaster	Disastrous	Noun+*ous*=adjective
		Industry	Industrious	
		Danger	Dangerous	
		Joy	Joyous	
	-ist	Active	Activist	Noun/adjective+*ist*=noun
		Economy	Economist	
		Education	Educationist	
		General	Generalist	
	-ic	Base	Basic	Noun+*ic*=adjective
		Economy	Economic	
		Period	Periodic	
		Artist	Artistic	
Week8	Target suffix	Base words	Derived words	Rules
	-ly(adj)	Day	Daily	Noun+*ly*=adjective
		Friend	Friendly	
		Brother	Brotherly	
		World	Worldly	
	-ly(adv)	Day	Daily	Noun/adjective+*ly*=adverb
		Annual	Annually	
		Live	Lively	
		Anger	Angrily	
	-hood	Child	Childhood	Noun/adjective+*hood*=noun
		Brother	Brotherhood	
		Lively	Livelihood	
		Likely	Likelihood	

Week9	Target suffix	Base words	Derived words	Rules
	-al(noun)	Arrive	Arrival	Noun/verb+*al*=noun
		Deny	Denial	
		Reverse	Reversal	
		Propose	Proposal	
	-al(adjective)	Center	Central	Noun+*al*=adjective
		Identity	Identical	
		Critic	Critical	
		Origin	Original	
	-ity/ty	Active	Activity	Adjective+*ity/ty*=noun
		Acceptable	Acceptability	
		Popular	Popularity	
		Equal	Equality	
Week10	Target suffix	Base words	Derived words	Rules
	-ian	Magic	Magician	Noun+*ian*=noun
		History	Historian	
		Civil	Civilian	
		College	Collegian	
	-ism	Absolute	Absolutism	Noun/adjective+*ism*=noun
		Creation	Creationism	
		Formal	Formalism	
		Image	Imagism	
	-ate	Active	Activate	Adjective/noun+*ate*=verb
		Regular	Regulate	
		Individual	Individuate	
		Value	Valuate	

For some suffixes we could not find opaque derived words (e.g., *-less*; all examples are transparent) either because they did not exist or because one could not be found within the frequency of the selected base words. The same was true for suffixes for which we could not find transparent derived words (e.g., *-ate*; all examples are opaque).

Some base words were themselves derives words. For example the word "active" has been used as the base of the word activity. It is noted that: 1, the word active itself was amongst the 3000 most common words used in writing so frequency of the base was considered. 2, if the word "active" was used as the base, the suffix *-ive* had been taught during the same or previous sessions. 3. Such derived words were commonly used as the base with the suffix *-ity* and the researcher felt the need to expose the learners to such base words.

Appendix 2

Sample of Cumulative Word Charts:

Verb	Noun	Adjective	Adverb
operate	operation	operational, operative	
produce	productivity, production	productive	
Act	action	active	
identify	identification. identity	identical	
educate	educationist	educational	educationally
regulate	regulation, regularity	regular	
resist	resistance, resistivity	resistless	
differ, differentiate	difference	different	
beautify	beauty	beautiful	beautifully
distribute	distributor	distributive	
economize	economy, economist	economic	economically
manage	management	manageable, managerial	
test	test, tester, testee	testable	
accept	acceptability	acceptable	
demonstrate	demonstration, demonstrator	demonstrable	
relate	relationship	relational	
create	creationism	creative	creatively
historicize	historian	historical	historically
deny	denial	deniable	

* Only the derived words and parts of speeches covered during the review sessions have been included in the table

Forough Amirjalili
PhD Student
Department of Foreign Languages
Yazd University
Pajoohesh St., Safaeih, Yazd, 89195-741, Iran
E-mail: foroughmirjalili1363@yahoo.com

Ali Akbar Jabbari
Associate Professor
Department of Foreign Languages
Yazd University
Pajoohesh St., Safaeih, Yazd, 89195-741, Iran
E-mail: jabbari@yazd.ac.ir

Mohammad Javad Rezai
Associate Professor
Department of Foreign Languages
Yazd University
Pajoohesh St., Safaeih, Yazd, 89195-741, Iran
E-mail: mrezai@yazd.ac.ir

Received: 2018. 01. 03.
Revised: 2018. 03. 13.
Accepted: 2018. 03. 13.