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The contribution of morphological instruction to morphological awareness and reading: An integrative experiment on Turkish EFL learners

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Abstract

The present study attempts to investigate the contribution of morphological instruction on awareness of morphology and its effects on reading. The participants were 74 freshmen studying at Translation and Interpreting Department and were distributed into experimental and control groups. The results have shown that the experimental group outperformed the control group on all four tasks of morphological awareness including root analysis, derivations and correction of affixes. On the tasks of reading vocabulary experimental group outperformed the control group again, demonstrating positive effects of morphological instruction. It is concluded that morphological treatment benefited morphological awareness and in turn, reading comprehension. The results also demonstrate that submitting an explicit treatment to the EFL learners on morphology helps them improve morphological awareness which is correlated with reading comprehension.

Keywords: *Morphology, morphological awareness, lexical teaching, reading, reading comprehension*

1. Introduction

In linguistics, the relationship between morphological awareness and success in reading is one of the best supported hypotheses in today's research area. In this aspect, knowing and understanding what happens when we learn how to read is another important research objective enabling the cognitive processes involved in acquiring this complex competency (Rueda & Medina, 2018).

The morphology of a language controls how words are built and what combinations of morphemes are conceivable or unthinkable. It is also characterized as the investigation of inside structures of words and word arrangement forms (Carlisle, Goodwin, & Nagy, 2013). Morphological awareness is the capacity to consider and additionally control morphemes and to utilize word-formation rules of a language (Kuo & Anderson, 2006). This control can be developed by the help of using technology in morphological analysis such as in Morphological Pairing Model (MPM) (Demirezen, 2018). This awareness also incorporates helpful perspectives that impact diverse reading and writing exercises (Mahony, Singson, & Mann, 2000). In other words, morphological learning alludes to effectively utilizing morphological units which might be without conscious awareness (Yucel-Koc, 2015), however morphological awareness is characterized as the capacity to consider, dissect and control the morphemic components in words (Carlisle, McBride-Chang, Nagy, & Nunes, 2010).

In early years, the research area was interested in reading development and vocabulary in general (Baddeley, Gathercole, & Papagno, 1998). Later, the increase in awareness with morphological family members was appeared between the fragments of complex words (García & González, 2006).

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1.1. Morphological awareness and reading comprehension

Word acknowledgement is a basic piece of reading (Adams, 1990). It is realized that reading advancement is a complex psychological and phonetic procedure that includes a few basic subjective capacities, for example, phonological awareness, vocabulary, and linguistic aptitudes (Nagy & Townsend, 2012). As indicated by Nation (2001), vocabulary and reading are firmly related with each other. If there is a development in vocabulary, a parallel development in reading is inevitable. As indicated in literature, morphological awareness helps L2 vocabulary learning specifically improve and in a roundabout way into the intercession of learners' capacity in lexical knowledge (Zhang & Koda, 2012). Constrained vocabulary learning is the basic reason of reading perception challenges (August & Shanahan, 2006). It was trusted that one motivation behind why morphological awareness is vital for word reading is that it could enable youngsters to examine morphologically compound words that help to understand the morphological tenets (Tyler & Nagy, 1990). At the point when these controls are performed purposefully, they are alluded to as 'morphological awareness' (Bowers, Kirby, & Deacon, 2010; Carlisle, 2010; Nagy, Carlisle, Goodwin, 2014).

Beside the contribution of morphological awareness to vocabulary improvement, this capacity may affect the understanding ability of reading. Some studies have endeavored to show another aspect, specifically, the connection between morphological awareness and familiarity in reading and perception in non-native kids (Goodwin et al., 2011; Kieffer, Biancarosa & Mancilla-Martinez, 2013). Notwithstanding, extra investigations affirm that the relationship between improving of morphological awareness and reading success in both mother tongue and second language has all the earmarks of being firmly intervened by a learner's phonological awareness and lexical capacities in both languages (Goodwin et al., 2011; Ramirez, Chen-Bumgardner, Geva, & Luo, 2011). In other words, morphological awareness refers to the reader's understanding of the smallest meaningful parts of words, the capacity to analyze the roots and affixes from whole words and manipulating them to produce grammatically correct words (Haddad, Weiss, Katzir & Bitan, 2018). From the perspective of second language learners, some previous studies have examined the relationship between morphology, reading and comprehension (Goodwin et al., 2011; Ramirez et al., 2011). In these studies, the correlation between morphological awareness and reading fluency in terms of first and second language seems to be facilitated by the learner's awareness in phonology and lexicology. On the other hand, the research conducted on Arabic-English children and presented by Saiegh-Haddad and Geva, (2008) indicates that morphological awareness uses a cross-linguistics impact on reading fluency. Besides, the improvement of morphological awareness in reading enables learners to read longer and complicated words more accurately and fluently (Nagy, Beminger, Abbott, & Vaughan, 2003). In literature, orthography, phonology, morphology and the competence in all these three aspects can be seen as an extra indicator on fluency in word reading (Carlisle & Katz, 2006; Roman, Kirby, Parrila, Wade-Woolley, & Deacon 2009), reading comprehension and reading development (Carlisle, 1995; Deacon & Kirby, 2004; Roman et al., 2009). Levesque, Kieffer, and Deacon (2017) express that morphological awareness and reading comprehension are related to each other directly and indirectly. Since there is a strong relationship between them, the lack of morphological awareness affecting word reading and reading comprehension can influence the acquisition of new vocabulary items.

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2. The present study

The motivation behind the present study was to investigate longitudinally the bidirectional cross-language relations between morphological awareness, vocabulary and reading comprehension of Turkish EFL learners. As expressed above, past investigations affirm the positive connection between awareness, vocabulary and reading comprehension especially for L2 learners. The potential effect of increasing awareness on morphology and vocabulary knowledge and its contribution to reading has been proved by most researchers, however; there is a limited number of studies conducted on Turkish EFL learners or analyzing response times of them. Thus, there is a need to assess whether instructional methodologies on morphology builds up learners' morphological awareness, enhances word learning and improves reading comprehension.

As discussed above, creating awareness in morphology through instruction can have positive effects on vocabulary and reading which are considered as the prerequisites to other skills in English. Unfortunately, limited studies in literature have examined these different integrated skills such as vocabulary and reading vocabulary together (Akbulut, 2017; Amirjalili & Jabbari, 2018; Nagy et al., 2003; Vernice & Pagliarini, 2018). All in all, the present study aims to explore the influence of morphological instruction on morphological awareness (based on morphological root, awareness and correction) and reading vocabulary (accuracy) among Turkish EFL learners.

2.1. Research questions

Q1. Is there a significant correlation between the integrated instruments (correlation between morphological awareness and reading vocabulary) when experimental and control groups are attached to the analysis?

Q2. Does morphological instruction expand Turkish EFL learners' morphological awareness identifying the vocabulary items (in four aspects such as root analysis, vocabulary awareness -in real and pseudo words- and morphological correction)?

Q3. Does morphological instruction have an influence on the development of reading vocabulary awareness of EFL learners?

3. Methodology

3.1. Participants

Seventy-four freshmen were recruited from a state university in Turkey (39 female and 35 males, aged between 18 and 21). The first language of all participants was Turkish and had no physical or mental problems to prevent them from participating laboratory research and experiments. Before the main study, all students took Oxford Quick Placement Test and Nation's Vocabulary Knowledge Test to be sure that their levels are equal and distributed to the experimental and control groups homogeneously. Placement Test results show that they were all B2-C1 level (M=48.77 out of 60). After the Placement Test, Nation's Vocabulary Knowledge Test was contributed to them and the results of both groups showed that there were no significant differences between vocabulary size of the participants (p=0.76). Afterward, the participants of the study signed a consent form willingly before participating in the study and they were informed by the researcher that the data taken from them will be used only for research purposes. According to the test scores, the participants are divided into two groups as experimental (treatment) (N=38) and control group (N=36).

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3.2. Instruments/measures

The measures of this study included a homogeneity test (only before the treatment), morphological root awareness test *(MRA)*, Morphological Awareness Test Part 1 and 2 *(MAT1, MAT2)* and Reading Vocabulary Awareness Test *(RVA)*. All tests were administered as pretest and posttest to experimental and control groups.

3.2.1. Morphological awareness (MA)

3.2.1.1. Morphological root awareness (MRA)

Morphological Root Awareness Test which was adapted from Mahony's (1994) study consisted of 42 pairs of words. 25 of these words are related with the root. The other group consists of 17 unrelated words and includes some 'pseudo-transparent' words or 'pseudo-bound-morpheme' or semantically-unrelated sequence of letters such as, *bad-badminton*, *back-bacon* or *comb-combination* etc…

3.2.1.2. Morphological awareness test- part 1 (MAT1)

Morphological Awareness Test was also adapted from Mahony's (1994) study. Parts 1 and 2 were designed to assess learners' knowledge of the syntactic category of common Latin and Greek suffixes. MAT1 consists of 27 sentences containing a blank and followed by four real words which are different derivations of the same stem. For instance,

All four studies produced nearly _____ results.

A. identity B. identical C. identify D. identification

As in the Mahony's study (1994), the correct answers include three noun types which are *-ion/-ation, -ity,* and *-ist*, three verb types which are *-ate, -ize,* and *-ify*, and three adjective types which are *-ous,/-ious, -al* and *-ive*.

3.2.1.3. Morphological awareness test- part 2 (MAT2)

MAT2 is similar to the MAT1 in structure however, this time, the four answer choices are Latinoid nonce words. As Mahony (1994) expressed they were composed of a real Latin or Greek bound stem followed by a nonsense syllable which is followed by one of four real suffixes. The main aim of the MAT2 test was to diminish the confounding effect of existing lexical knowledge that is related to real-word morphology. For instance,

They _____ the data in the back office.

A. curfamic B. curfamation C. curfamate D. curfamity

3.2.2. Reading vocabulary awareness (RVA)

Reading Vocabulary Awareness Test was used to measure learners' reading ability based on morphological awareness. Three reading passages were selected from Vince and Sunderland (2004) since they were suitable for group administration and they include interesting and attractive topics. Each passage includes 10 blanks which are needed to be filled in the morphologically correct form of the words given on the right part of the related line as in the example.

(e.g. This year, (1) ...*productivity*.. in the factory has suffered PRODUCT

because of a lack of expert technical knowledge. As a result

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we have made very substantial (2)……in sending employees INVEST

on training courses.)

These passages were chosen deliberately, since they include the morphological word parts to be completed only when the passage is understood correctly. Cronbach's alpha was .84.

3.3. Procedure and design

The study had a pretest-posttest experimental control group design. The main purpose of the design was to find out how morphological instruction could affect EFL learners' awareness in vocabulary, reading vocabulary and reading comprehension. The experimental group received morphological awareness instruction for 22 weeks explicitly, 4 hours for each while the control group continued to their regular instruction without intervention in English Lexis course. The independent variable was morphological treatment (experimental and control groups) and time (pretest, posttest). The dependent variable was morphological root awareness, morphological awareness (1 and 2) and reading vocabulary awareness. The study took 26 weeks, but the instruction period was 22 weeks. Pre and posttests were administered in the first two and the last two weeks of the course.

To study morphological awareness based on lexical access, three computerized tasks were created. All three tasks (MRA, MAT1, MAT2) were presented to the students with a pre-experimental (3 target words or sentences) and experimental trials. All sentence patterns in each task were presented individually (in Linguistics and Simultaneous Interpreting Laboratory) with a white background at a size about 400X564 pixels. They were asked to seat in front of a computer screen. Superlab (version 5) software was used to present stimuli and collect data. The instructions for all parts of the tests were read aloud by the researcher to each subject before the experiments started. Participants also received written instructions. For MA tasks which involved response time of each student, answers were recorded by the help of response pad and smart voice key (SV-1). One trial started with the presentation of a fixation cross at the center of the screen for 250 ms. After then, they heard a beep sound expressing that the test was about to start. After a blank screen presented for 500 ms, a compound appeared at the center of the screen. Then the other trial appeared on the screen. They were instructed to make a choice and answer as quickly and accurately as possible. In total, the participants underwent 9 practice trials session and 96 trials (42 for MRA, 27 for MAT1, 27 for MAT2) for all tests. Students gave a small break (nearly 5 min.) between each test to prevent them from overloading. They took about 40-45 minutes for each subject (including 5-minutes break times) in a quiet setting laboratory. The same procedure was carried out for the post-tests which were taken at the end of the treatment for one week. The procedure was as follows:

As for Task 1 (MRA), in three practice trials, students were first trained to recognize whether the second word is derived from the first word or not (e.g. doubt-dubious, fame-famous, ill-illiberal). In the experimental phase, the students were told to press as soon as possible a button on the keyboard marked with "Yes" or "No" to provide their answers.

As for Task 2 and 3 (MAT1 and MAT2), students gave oral instruction and three practice trials again. They were trained this time to choose the best word to fit in the blank. They were told that they would see a sentence with a blank inside it and four choices with this sentence. Their task

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was to choose the best option to fit in the blank and to press as soon as possible a right button on the keyboard marked with "A", "B", "C", "D", to provide their answers.

The second week after MA tasks in the laboratory environment, RVA task (Task 4) which involved different reading passages including gaps which would be completed with appropriate vocabulary items in the correct form given on the right line of the gap. This task was distributed during a class period in paper-and-pencil format and answers were recorded and scored off line in excel. Performance on the tests was recorded as "1" for correct answers, "0" for wrong answers for each student.

3.4. Treatment

The experimental group received 22 weeks of instruction on morphological awareness based on English lexis and text-linguistics. The main prefixes, suffixes and root list was created and adapted by *Wilde (2006)* (https://1.cdn.edl.io/0rMZoJ9PsY0pIhgO1wayjOHWo192TBF5JWecbB8uzYLjEj6G.pdf). In this "Building Vocabulary: Prefixes, Roots, and Suffixes" list, 32 prefixes, 27 roots and 23 suffixes were used in the treatment process. Beside this list, the instruction on parts of speech in English were given to the learners. All students in experimental group received explicit and direct instruction in morphological analysis.

While presenting roots and affixes, additional follow-up activities were also tendered such as, matching the words or roots with the appropriate suffixes, matching the meaning with correct derived words, producing new words using prefixes and suffixes, breaking the words-up into their syllables, reading texts and analyzing morphologically paired-up vocabulary items in the texts, categorizing and identifying the words in the texts according to their parts of speech, filling in the blanks predicting the parts of speech of the vocabulary items, using derived or inflected words in sentence gaps. Control group, on the other hand received the instruction of the same words with same texts and videos. This time, they were not focused on any morphological aspects of those words, that is, they were instructed only with the related words' definitions. Besides, for the follow-up activities, the instructor did not emphasize any morphological aspects of the words' functions in the sentences.

3.5. Data analysis

The results of the study were analyzed using SPSS (version 25) software program. The mean RT's across subjects were calculated after the outliers (shorter than 1000ms. and slower than 4000ms for MRA, 15000ms for MAT1 and MAT2) were excluded. In each analysis, it was tested whether MA treatment procedure affects morphological awareness on different tasks, reading vocabulary and reading comprehension by the performance (accuracy and speed of pretests and posttests results comparatively) of both groups (experimental and control). In each model, it was used the estimation procedure whether the MA treatment (Task 1 accuracy and speed; Task 2 accuracy) added improvement on posttests results.

For the first research question, Pearson correlation analysis for both groups (experimental and control group) was conducted in order to find out if a relation existed between morphological awareness and reading vocabulary knowledge in both experimental and control groups after the treatment. In order to compare the improvements of two groups in each task, their gain score from posttest to pretest for each task in MA (MRA, MAT1, MAT2) and RVA was computed for each

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participant by subtracting each person's posttest score from their pretest scores and correlational analysis was conducted.

For the other two research questions, ANCOVA (Analysis of Covariance) was conducted to examine the effects of morphological treatment on post-test scores (the dependent variable) of morphological root awareness, morphological awareness (1 and 2), morphological correction and reading vocabulary knowledge (i.e., the main factor with two levels: experimental and control group). After checking out some assumptions, it was found that there was interaction between groups and pre-test scores. The dependent variable was the pre-test results of each instrument, and the fixed factor was the group (i.e. treatment and control) while analyzing the first assumption. There was no statistically significant difference between control and treatment on the pre-test scores and the first assumption passes. The next assumption analyses the homogeneity of regression. ANCOVA model in terms of the assumption of homogeneity was checked by introducing and testing an interaction effect between group and pretest scores. This time, the dependent variable is post-test, the independent variable is group and the covariate are pre-test scores. The results of the overall instruments showed that there is no significance which meets the homogeneity of regression which is the condition of assumption. It means that it can be forwarded with running ANCOVA. After analyzing the assumptions, ANCOVA was conducted to control and examine initial group differences by using MRA, MAT1, MAT2 and RVA pre-test scores one by one as a covariate and for each pre-test scores the dependent variable is MRA, MAT1, MAT2 and RVA post-test scores and the independent variable is (fixed factor) group of the participants (i.e. treatment and control).

Independent sample t-tests results were also applied in order to investigate morphological instruction's effect on EFL learners' morphological awareness and reading vocabulary.

4. Results

4.1. Relationship between aspects of morphological instruction and morphological tasks

The first research question concerned with whether there is a significant correlation between MA and RVA tasks when two groups are attached to the analysis. In order to understand which aspect is most highly correlated with MA and RVA in both groups Pearson correlation analysis was conducted.

In order to compare the improvements of the groups in each task, the differences of the pretests and posttest scores were taken to get more accurate and reliable data for correlation analyses. Table 1 shows the correlations of MRA, MAT1, MAT2 and RVA for each group. The results demonstrated that the correlations among these variables in terms of time (pretest and posttest) are statistically significant. As demonstrated, MRA correlates in a negative and statistically significant way with the treatment (r= -.689, p=.000). Similarly, MAT1 and MAT2 [(r= -.378, p=.001), (r= -.454, p=.000) respectively] correlates in a negative and significant way with the treatment of both groups. These results indicate that the more the treatment on morphological awareness was given, the lower the response times for the given tasks were performed by the students.

The results related to reading vocabulary knowledge show a positive and statistically significant correlation with the treatment (r= .576 p=.000). Thus, the treatment on morphological awareness affects the performance of the participants in a positive way. In other words, their errors on

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vocabulary reading passage tend to decrease when they were instructed on morphological awareness.

Table 1. Correlations of performances on tasks (pre-test and post-test scores differences)

	Cont_exp	Mra_diff	Mat1_diff	Mat2_diff	Rva_diff
Cont_exp	__				
Mra_diff	-.689**	_			
Mat1_diff	-.378**	.090	_		
Mat2_diff	-.454**	.304**	.230*	_	
Rva_diff	.576**	-.333**	-.162	-.220	_

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

4.2. Morphological awareness

The second research question concerned with whether morphological instruction improve EFL learners' morphological awareness in terms of MRA, MAT1 and MAT2. In order to analyze the effect of instruction, the RT performance scores of pretests and posttests of both groups were analyzed with ANCOVA and Independent sample t-test procedure as follows.

Descriptive statistics (mean and SDs) for all variables included in the study and independent sample t-test results at two different times (pretest and posttest) and two treatments (experimental/control) are reported in Table 2. Independent sample t-test results demonstrated that before the treatment period, there were no significant differences between scores of experimental and control groups [MRA (t (72) =-.694, p=.490, MAT1 (t (72) =-1.962, p=.054), MAT2 (t (72) =-.550, p=.584)].

Table 2. descriptive statistics and independent sample t-test results of MRA, MAT1, MAT2

	Time	Treatment	n	Mean	SD	Min.	Max.	t (72)	p
MRA	Pretest	Experimental	38	3057.629	43.142	2946.06	3143.85	-.694	.490
		Control	36	3065.732	56.735	2952.31	3320.52		
	Posttest	Experimental	38	2893.782	39.423	2832.49	3081.25	-14.64	.000
		Control	36	3010.868	28.088	2961.03	3074.76		
MAT1	Pretest	Experimental	38	10125.142	972.166	8971.47	14447.57	-1.962	.054
		Control	36	10490.640	566.182	9340.67	12297.45		
	Posttest	Experimental	38	8674.775	368.244	7956.73	9851.09	-12.46	.000
		Control	36	9805.749	411.867	8947.84	10807.73		
MAT2	Pretest	Experimental	38	10173.349	840.358	9005.67	11986.30	-.550	.584
		Control	36	10285.149	906.807	9381.20	13092.75		
	Posttest	Experimental	38	8898.437	259.064	8356.80	9467.92	-11.34	.000
		Control	36	9943.930	502.285	9125.50	11268.50		

ANCOVA of the MRA, MAT1 and MAT2 scores when the covariate is not included revealed no significant differences between groups, [MRA (F (1, 72) = .481, p=.490), MAT1 (F (1, 72) = 3.850, p=.054), MAT2 (F (1, 72) = .303, p=.584)]. Similarly, when checking out the homogeneity of regression, there is no significant effect between groups [(Group*MRA PRE, F (1,70) = .423, p= .517), (Group*MAT1 PRE, F (1,70) = 1.060, p= .307), (Group*MAT2 PRE, F (1,70) = .003, p= .960)]. It is clear from the significance value that there are no differences in Pre-Testing of all tasks-between the experimental and control group.

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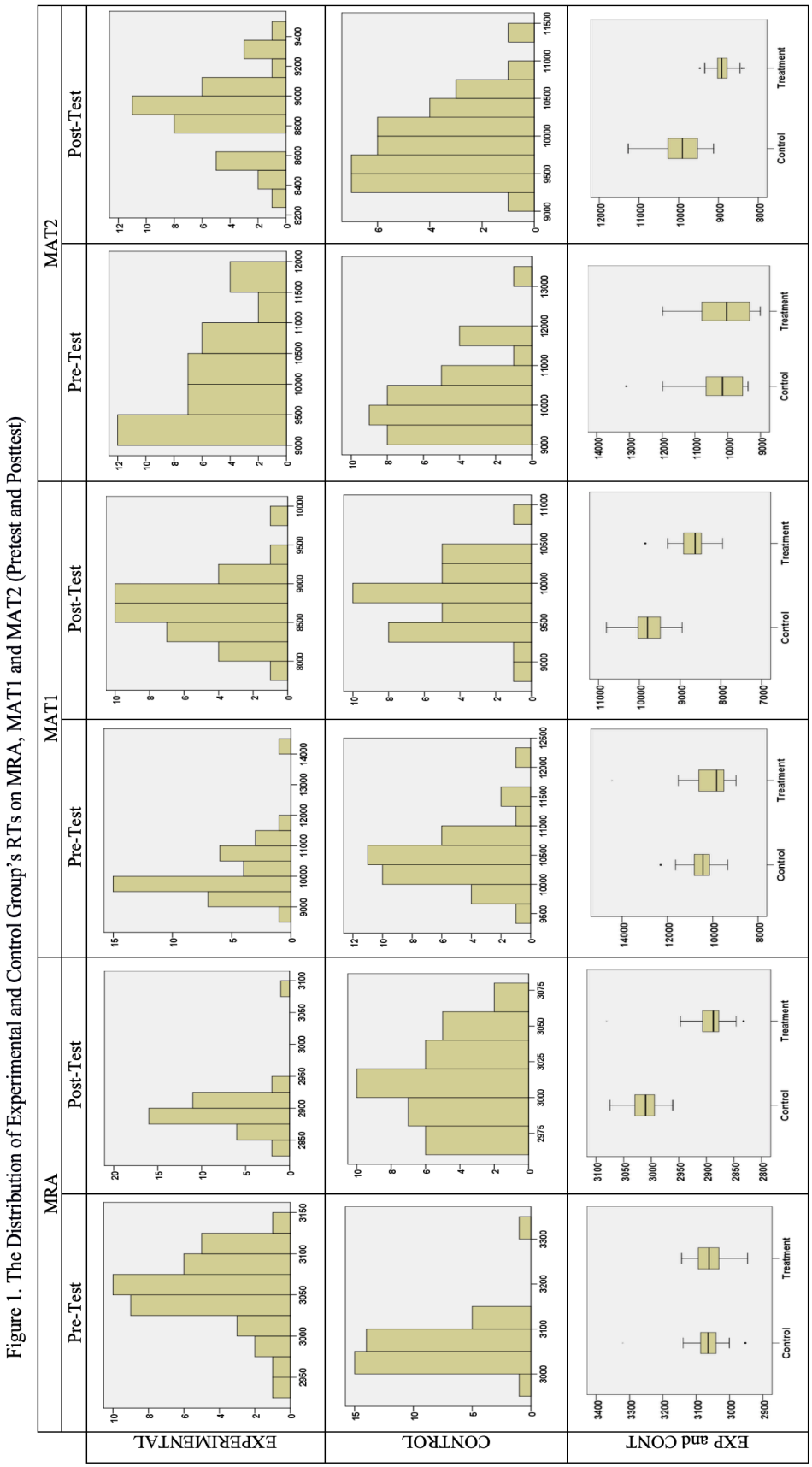

Figure 1. The Distribution of Experimental and Control Group's RTs on MRA, MAT1 and MAT2 (Pretest and Posttest)

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Independent sample t-tests of posttest scores indicated a statistically significant difference between the experimental and control groups [(MRA, (t (72) =-14.641, p=.000), (MAT1, (t (72) = -12.467, p=.000), (MAT2, (t (72) =-11.340, p=.000)]. When pre-test scores of all tasks are included in the model as a covariate, post-test scores of all tasks showed that the experimental group significantly outperformed the control group at the time of post-testing, [(MRA, F (1, 71) =210.027, p=.000),(MAT1, F (1, 71) =158.678, p=.000), (MAT2, F (1, 71) =126.129, p=.000). The partial eta-squared value was .747 for MRA, .691 for MAT1, and .640 for MAT2 indicating a large effect size. The results show that the experimental group outperformed the control group after treatment.

The histograms of pretest and posttest scores difference between experimental and control groups were displayed in Figure 1 comparatively. As seen in this figure, there is no significant difference between groups before the treatment. After the treatment, the experimental group had greater improvements compared to control group. Concerning the between-group factors, it shows the improvement of experimental group after the treatment. The response time means of experimental group are higher than the control groups' response time means.

4.3. Reading vocabulary awareness (RVA)

The third research question was about the relationship between MA treatment and reading vocabulary awareness. To understand whether MA instruction have an impact on the improvement of reading vocabulary awareness, some outstanding analyses have been conducted.

As seen in Table 3 (Mean and SDs were given for illustrative purposes), results demonstrated that before the treatment period, there was no significant difference between scores of experimental and control groups (t (72) =.326, p=.746). ANCOVA of the RVA scores when the covariate is not included revealed no significant differences between groups, F (1,72) =.106, p=.746. Similarly, when checking out the homogeneity of regression, there is no significant effect between groups [(Group*RVA PRE), F (1, 70) = 2.956, p= .090]. It is clear from the significance value that there are no differences in RVA-Pre-Testing between the experimental and control group.

Independent sample t-tests of posttest scores indicated a statistically significant difference between the experimental and control groups (t (72) =5.886, p=.000). When RVA pre-test score is included in the model as a covariate, RVA post-test scores showed that the experimental group significantly outperformed the control group at the time of post-testing, [F (1, 71) =34.308, p=.000]. The partial eta-squared value was .326 indicating a large effect size. The results show that the experimental group outperformed the control group after treatment.

Table 3. Descriptive statistics and Independent sample t-test results of RVA

Time	Treatment	N	Mean	SD	Min.	Max.	*t* (df)	*p*
Pretest	Experimental	38	12.868	3.38655	4.00	21.00	.326(72)	.746
	Control	36	12.638	2.59838	8.00	22.00		
Posttest	Experimental	38	23.236	1.95122	18.00	26.00	5.886(72)	.000
	Control	36	20.222	2.43910	15.00	26.00		

In Figure 2, the pre-test and posttest scores difference between experimental and control groups were displayed and it shows that after the treatment, the experimental group had a great improvement.

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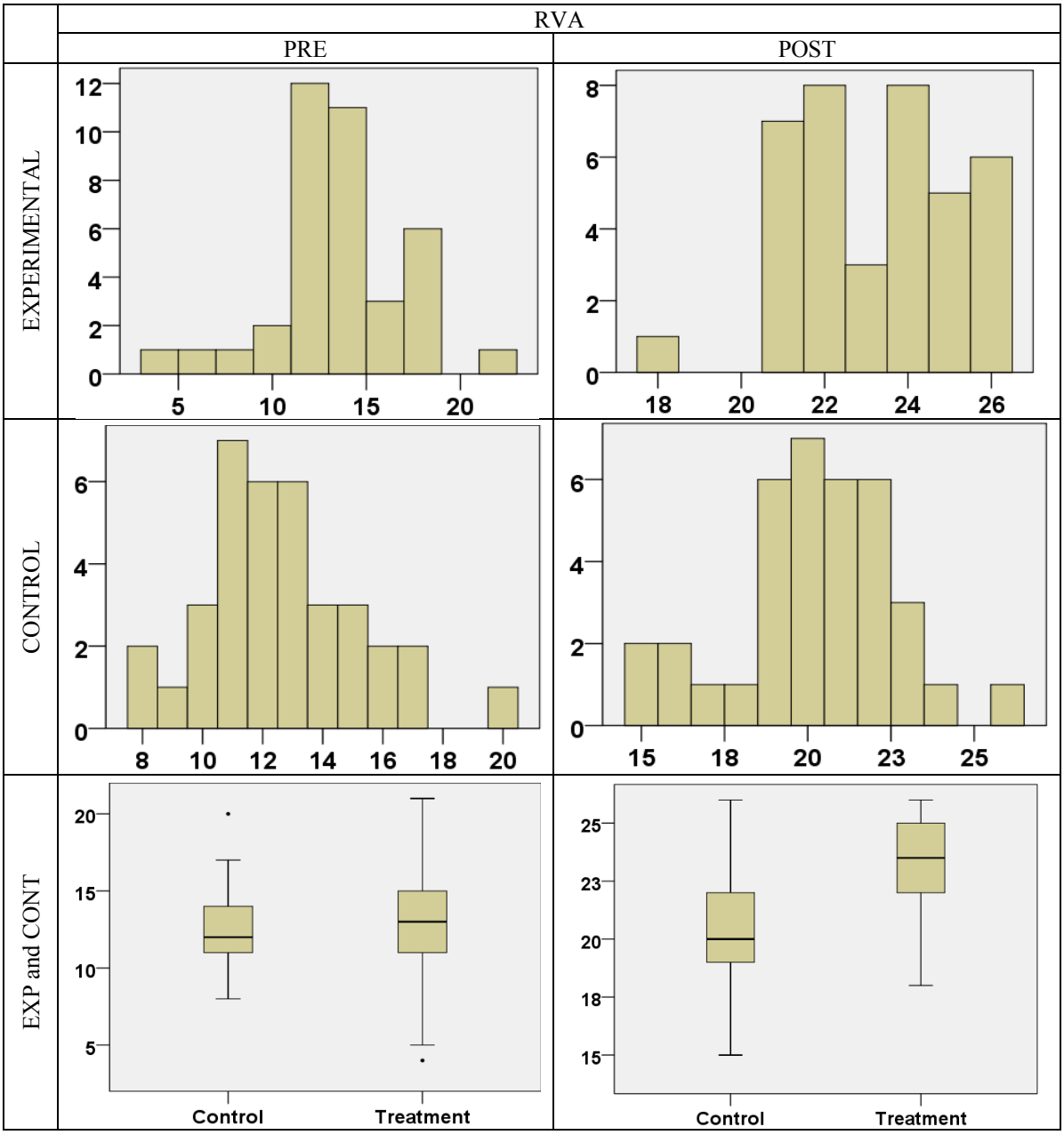
Figure 1. The distribution of experimental and control group's responses on RVA (Pretest and Posttest)



5. Conclusion

The results of this study fill in some missing connections in our interpreting of the value of morphological awareness for reading and comprehension of reading and add to literature some providing evidence illustrating a significant link between morphological treatment and the ability to define morphologically complex vocabulary items and reading passages.

Concerning the first research question, the results demonstrated that morphological instruction was correlated with all aspects of the study. Increasing the students' awareness in morphology helped them decrease their response times on morphological tasks and increase their scores on

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reading vocabulary knowledge. Morphological awareness and reading vocabulary were correlated with distributional aspect to the experimental group treated with morphemes and parts of speech to a higher degree compared to control group. This could be identified with the way that experimental group given higher explicit guidance would be wise to enhancements in all undertakings contrasted with the other group since distributional viewpoint was more defenseless to guidance than different abilities.

In line with the second research question addressing how morphological instruction improves learner's morphological awareness in different tasks, the results showed that the experimental groups significantly outperformed the control groups on all three tasks assessing root and affix awareness. The results also showed that EFL learners can achieve positive results when exposed to rule-based and explicit procedures for understanding the English language system. In other words, when morphological rules of English words were explicitly taught to the students, their awareness increased as in the study of Amirjalili & Jabbari (2018). When considering the *morphological root awareness*, the students in the experimental group, with lower root awareness at pretest, benefited to a higher degree from the treatment in analyzing the root of words compared to control group. The morphology classes targeted relatively common roots and as expected had greater effects on the learners with the most limited levels of morphological awareness. When looking at the improvements in *morphological awareness* aspect, we see that experimental group outperformed the control groups in both aspects (Part 1 and 2) and there was a significant difference between experimental and control group. Therefore, the instruction benefited the EFL learners.

For the third research question, the task used to assess students' awareness of morphological structure in reading passages placed emphasis on experimental group's ability not only to find the correct forms of the base morphemes but also to understand the reading passages totally. The central issue in this task was the link between structure knowledge and reading together, thus an important finding was the significant relationship between structural awareness and reading performance at both groups. These groups were quite proficient at filling out the sentence gaps with morphological structured words when their final proficiency level at the end of the semester was compared to the beginning level before treatment period; however, experimental group was still more successful in filling them accurately than control groups. Here significant differences were found through two reading passages including sentence gaps. These results confirm the suggestion by Carlisle (2000) and Tyler and Nagy (1989) that students are likely to have enough awareness of the structure of derived forms to find the base morphemes.

6. Discussion

In this research, the extent to which morphological instruction affects morphological awareness and reading vocabulary knowledge for both experimental and control groups was explored. In literature, the relationship between morphology and reading comprehension (Bowers et al., 2010; Deacon & Kirby, 2004; Goodwin et al., 2011; Goodwin & Ahn, 2013; Kieffer & Lesaux, 2012; Kieffer et al., 2013; Levesque et al., 2017), morphological treatment effect on morphological development (Amirjalili & Jabbari, 2018) and morphological awareness and semantic relation (Carlisle, 2000; Kuo & Anderson, 2006; Crosson, McKeown, Moore, & Ye, 2018; Mahony et al., 2000) effects were analyzed. From these perspectives, this study was designed to determine the extent to which morphological treatment contributes to morphological awareness and reading

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comprehension of Turkish EFL learners. As mentioned above, there is evidence pointing to the fact that second language learners who educated with morphology show better results on tasks that imply morphological awareness and reading comprehension than control groups (Amirjalili & Jabbari, 2018). These data fit what is found in competent readers, in which morphological awareness explains performance when reading a text (Mahony et al., 2000).

The previous studies suggesting that decomposition of complex words into morphemic units supports more proficiency in reading (Burani, Marcolini, De Luca, & Zoccolotti, 2008; Marcolini, Traficante, Zoccolotti, & Burani, 2011; Traficante, Marcolini, Luci, Zoccolotti, & Burani, 2011), morpheme-based reading allows children to read units smaller than the whole word (Angelelli, Marinelli, & Burani, 2014) approached the patterns of similar results from different perspectives. Our results provided evidence supporting the existence of a general correlation between and explicit measure of morphological awareness and reading ability (Kirby et al., 2012; Vernice & Pagliarini, 2018). The findings of this research suggested that morphological awareness improving by the help of explicit morphological instruction is strictly intertwined with reading comprehension. The general results of this research suggest that EFL learners need explicit instruction in using morphemes to reach word meanings. In line with these findings, the previous studies emphasize the important role of morphology in L2 reading comprehension and highlight that there is a need for explicit teaching of morphology to facilitate L2 learners' reading development (Amirjalili & Jabbari, 2018; Zhang, 2016).

EFL learners when compared to native speakers have limited exposure to the morphology and thus, this explicit instruction in morphemes entails not only a derivational skill improvement on word meanings but also a reading awareness processing instance. Thus, in this study, they require explicit instruction in morphemes in terms of root and affix properties and received this knowledge (derivational and inflectional morphemes) to find the meaning of words and improve reading ability. Some other previous research suggesting that there is a significant difference between successful and less successful adult EFL readers concerning morphological awareness (Jiang, Kuo, & Sonnenburg-Winkler, 2015), morphological awareness contributes to morphological decoding in terms of word reading and reading awareness (Levesque et al., 2017) or morphological awareness is important for decoding the words and inferring their meaning which influence reading skills in a greater extent (Carlisle, 2003) are in line with the results of this study only with a difference of morphological instruction since they did not have an explicit instruction except from the studies expressing that 10-week morphological instruction period is important for morphological awareness (Amirjalili & Jabbari, 2018) and saying that lexical quality which is increased by the help of morphological instruction is important for reading comprehension (Nagy & Townsend, 2012; Perfetti, 2007).

Anglin (1993) expresses that learners need a strategy to determine the meaning of the unknown words. For this purpose, they have a need of instruction on morphology to get the overall comprehension and the strategy to reach the meaning of complex words they encountered. For this purpose, explicit instruction provides learners to reach the access to semantic knowledge of new vocabulary items and to infer meanings of unfamiliar words. With this knowledge, learners can play with words through adding prefixes or suffixes to the roots, deriving words, adapting them into the new decomposition. As an effective language learning strategy, morphological awareness helps EFL learners build a gap between increasing vocabulary knowledge and better reading awareness. In summary, from the perspective of EFL learners, most studies -similar to the ones

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mentioned above- found that there is a positive effect of morphological instruction, morphological awareness and reading (Logan, 2010; Shoeib, 2017; Zhang & Koda, 2012).

Overall, the positive effects of morphological guidance in this research adds to the assortment of literature looking at and through the alternate points of view of morphology. The information taken in response times, a longitudinal guidance period and the comparative analysis of results showed the significance of taking morphological awareness to the initial step to build up a technique for obscure words and to improve reading understanding. Derivation and decomposition of words in terms of affixation can play a crucial role in vocabulary learning process. Seeing the better accomplishment of students in experimental group taking morphological guidance is the clearest method for understanding whether EFL students can decide a methodology which is focused on words meaning and reading process.

References

Adams, M. J. (1990). *Beginning to read: Thinking and learning about print.* Cambridge, MA: MIT Press.

Akbulut, F. D. (2017). Effects of morphological awareness on second language vocabulary knowledge. *Journal of Language and Linguistic Studies*, *13*(1), 10-26.

Amirjalili, F., & Jabbari, A. A. (2018). The impact of morphological instruction on morphological awareness and reading comprehension of EFL learners. *Cogent Education*, *5*(1), 1-30.

Angelelli, P., Marinelli, C. V., & Burani, C. (2014). The effect of morphology on spelling and reading accuracy: a study on Italian children. *Frontiers in psychology*, *5*, 1373. doi:10.3389/fpsyg.2014.01373

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

August, D., & Shanahan, T. (Eds.). (2006). Developing literacy in second-language learners: Report of the national literacy panel on language-minority children and youth. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Baddeley, A. D., Gathercole, S. E., & Papagno, C. (1998). The phonological loop as a language learning device. *Psychol. Rev. 105,* 158–173. doi:10.1037/0033- 295X.105.1.158

Bowers, P. N., Kirby, J. R., & Deacon, S. H. (2010). The effects of morphological instruction on literacy skills: A systematic review of the literature. *Review of Educational Research, 80(2),* 144–179.

Burani, C., Marcolini, S., De Luca, M., & Zoccolotti, P. (2008). Morpheme-based reading aloud: evidence from dyslexic and skilled Italian readers. *Cognition 108,* 243–262. doi: 10.1016/j.cognition.2007.12.010

Carlisle, J. F. (1995). Morphological awareness and early reading achievement. In L. Feldman (Ed.), *Morphological aspects of language processing* (pp. 131–154). Hillsdale, NJ: Lawrence Erlbaum.

Carlisle, J. 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, J. F. (2003). Morphology matters in learning to read: A commentary. *Reading Psychology, 24,* 291– 332. doi:10.1080/02702710390227369

Carlisle, J. F. (2010). Effects of instruction in morphological awareness on literacy achievement: An integrative review. *Reading Research Quarterly, 45(4),* 464–487. https://doi.org/10.1598/RRQ.45.4.5.

Carlisle, J. F., & Katz, L. (2006). Effects of word and morpheme familiarity on reading of derived words. *Read. Writ. 19,* 669–693. doi:10.1007/s11145-005- 5766-2

Carlisle, J. F., Goodwin, A. P., & Nagy, W. (2013). Morphological knowledge and literacy acquisition. *Journal of Learning Disabilities, 47(1),* 3–12. doi:10.1177/0022219413509967

ISSN: 2149-5939

Demiray Akbulut, F. (2019). The contribution of morphological instruction to morphological awareness and reading: An integrative experiment on Turkish EFL learners. *International Journal of Social Sciences and Education Research*, 5(3), 263-278.

Carlisle, J. F., McBride-Chang, C., Nagy, W., & Nunes, T. (2010). Effects of instruction in morphological awareness on literacy achievement: An integrative review. *Reading Research Quarterly, 45,* 464–487.

Crosson, A. C., McKeown, M. G., Moore, D. W., & Ye, F. (2018). Extending the bounds of morphology instruction: Teaching Latin roots facilitates academic word learning for English learner adolescents. *Reading and Writing*, 1-39.

Deacon, S. H., & Kirby, J. R. (2004). Morphological awareness: Just "morephonological"? The roles of morphological and phonological awareness in reading development. *Applied Psycholinguistics, 25,* 223–238. doi:10.1017/S0142716404001110

Demirezen, M. (2018). Developing a model for teachıing the problematic vocabulary items by computer. *International Online Journal of Education and Teaching*, *5*(4), 976-990.

García, J. N., & González, L. (2006). Diferencias en la conciencia morfológica, la escritura y el lenguaje en función del desarrollo y el nivel educativo del niño. *Psicothema, 18,* 171–179.

Goodwin, A. P., & Ahn, S. (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. doi:10.1080/10888438.2012.689791

Goodwin, A. P., Huggins, A., Carlo, M., Malabonga, V., Kenyon, D., Louguit, M., et al. (2011). Development and validation of extract the base: an English der-ivational morphology test for third through fifth grade monolingual students and Spanish-speaking English language learners. *Lang. Test. 29,* 265–289.

Haddad, L., Weiss, Y., Katzir, T., & Bitan, T. (2018). Orthographic transparency enhances morphological segmentation in children reading hebrew words. *Frontiers in psychology*, *8*, 2369.

Jiang, Y., Kuo, L., & Sonnenburg-Winkler, S. L. (2015). Morphological awareness and reading comprehension: A qualitative study with adult EFL learners. *International Journal of Language and Linguistics, 2 (5),* 18–26.

Kieffer, M. J., & Lesaux, N. K. (2012). Knowledge of words, knowledge about words: dimensions of vocabulary in first and second language learners in sixth grade. *Read. Writ. 25*, 347–373.

Kieffer, M. J., Biancarosa, G., & Mancilla-Martinez, J. (2013). Roles of morphological awareness in English reading comprehension for Spanish-speaking language minority learners: exploring partial mediation by vocabulary and reading fluency. *Appl. Psycholinguist. 34,* 697–725.

Kirby, J. R., Deacon, S. H., Bowers, P. N., Izenberg, L., Wade-Woolley, L., & Parrila, R. (2012). Children's morphological awareness and reading ability. *Reading and Writing, 25,* 389–410.

Kuo, L., & Anderson, R. C. (2006). Morphological awareness and learning to read: Across-language perspective. *Educational Psychologist, 41,* 161–180. doi:10.1207/s15326985ep4103_3

Levesque, K. C., Kieffer, M. J., & Deacon, S. H. (2017). Morphological awareness and reading comprehension: Examining mediating factors. *Journal of Experimental Child Psychology, 160,* 1–20.

Logan, B. (2010). The role of morphological awareness in the reading development of English language learners. (Doctoral Dissertation). Available from ProQuest Dissertations and Theses database. (UMI No.3421878).

Mahony, D. L. (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, D., Singson, M., & Mann, V. (2000). Reading ability and sensitivity to morphological relations. *Reading and Writing: An Interdisciplinary Journal, 72(3),* 191– 218. doi:10.1023/A:1008136012492

Marcolini, S., Traficante, D., Zoccolotti, P., & Burani, C. (2011). Word frequency modulates morpheme-based reading in poor and skilled Italian readers. *Appl. Psycholinguist. 32,* 513–532.

Nagy, W. E., Beminger, V., Abbott, R., & Vaughan, K. (2003). Relationship of morphology and other language skills to literacy skills in at-risk second-grade readers and at-risk fourth-grade writers. *Journal of Educational Psychology, 95(4),* 730–742. doi:10.1037/0022-0663.95.4.730

ISSN: 2149-5939

Demiray Akbulut, F. (2019). The contribution of morphological instruction to morphological awareness and reading: An integrative experiment on Turkish EFL learners. *International Journal of Social Sciences and Education Research*, 5(3), 263-278.

Nagy, W. E., Carlisle, J. F., & Goodwin, A. P. (2014). Morphological knowledge and literacy acquisition introduction. *J. Learn. Disabil. 47,* 3–12. doi: 10.1177/0022219413509967

Nagy, W., & Townsend, D. (2012). Words as tools: Learning academic vocabulary as language acquisition. *Reading Research Quarterly, 47,* 91–108.doi:10.1002/RRQ.011

Nation, I. S. P. (2001). Learning vocabulary in another language. Cambridge, England: Cambridge University.

Perfetti, C. A. (2007). Reading ability: Lexical quality to comprehension. *Scientific Studies of Reading, 11,* 357–383. doi:10.1080/10888430701530730

Ramirez, G., Chen-Bumgardner, B., Geva, E., & Luo, Y. (2011). Morphological awareness and vocabulary in ELLs. *Appl. Psycholinguist. 32,* 601–618. doi:10.1017/S0142716411000233

Roman, A. A., Kirby, J. R., Parrila, R. K., Wade-Woolley, L. L., & Deacon, S. H. (2009). Toward a comprehensive view of the skills involved in word reading in grades 4, 6, and 8. *J. Exp. Child Psychol. 102,* 96–113. doi: 10.1016/j.jecp. 2008.01.004

Rueda, M. I., & Medina, S. L. (2018). The role of morphological awareness in explaining reading-writing difficulties/El papel de la conciencia morfológica en la explicación de las dificultades de aprendizaje de la lectoescritura. *Infancia y Aprendizaje*, *41*(4), 702-732.

Saiegh-Haddad, E., & Geva, E. (2008). Morphological awareness, phonological awareness, and reading in English-Arabic bilingual children. *Read. Writ. 21,* 481–504. doi:10.1007/s11145-007-9074-x

Shoeib, A. (2017). Morphological awareness and its association with reading comprehension of EFL Saudi university students. *European Journal of English Language Teaching, 3(2),* 52–77. doi:10.5281/zenodo.1117415

Traficante, D., Marcolini, S., Luci, A., Zoccolotti, P., & Burani, C. (2011). How do roots and suffixes influence reading of pseudowords: a study of young Italian readers with and without dyslexia. *Lang. Cogn. Process. 26,* 777–793. doi:10.1080/01690965.2010.496553

Tyler, A., & Nagy, W. (1990). Use of derivational morphology during reading. *Cognition, 36(1),* 17–34. https://doi.org/10.1016/0010-0277(90)90052-l.

Tyler, A., & Nagy, W. E. (1989). The acquisition of English derivational morphology. *Journal of Memory and Language, 28,* 649–667. doi:10.1016/0749-596X (89)90002-8

Vernice, M., & Pagliarini, E. (2018). Is Morphological Awareness a Relevant Predictor of Reading Fluency and Comprehension? New Evidence from Italian Monolingual and Arabic-Italian Bilingual Children. *Frontiers in Communication*, *3*, 11.

Vince, M., & Sunderland, P. (2004). New Advanced Language Practice with Key: Macmillian

Wilde, J. (2006). Building Vocabulary: Prefixes, Roots, and Suffixes. Retrieved from http://www.readingfirst.virginia.edu/elibrary_pdfs/Building_Vocabulary.pdf. Last accessed 12nd July, 2017.

Yucel-Koc, M. (2015). The role of morphological awareness in academic vocabulary and reading comprehension skills of adult ESL learners. (Doctoral Dissertation). Available from ProQuest Dissertation and Theses database. (UMI No.3664492).

Zhang, D. (2016). Derivational morphology in reading comprehension of Chinese-speaking learners of English: A longitudinal structural equation modeling study. *Applied Linguistics, 38(6),* 871–895.

Zhang, D., & Koda, K. (2012). Contribution of morphological awareness and lexical inferencing ability to L2 vocabulary knowledge and reading comprehension among advanced EFL learners: Testing direct and indirect effects. *Reading and Writing, 25(5),* 1195–1216. doi:10.1007/s11145-011-9313-z

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