



The Effect of Orthography on Word Recognition of Iranian EFL Elementary Language Learners

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Abstract: Most languages on earth have at least a sort of orthography, a writing system widely used to represent the language. When a word is presented, the primary step of its identification is the orthographic visualization of that word. The main concern of this study was to investigate the effect of orthography on word recognition of Iranian EFL elementary learners. To carry out this study, fifty male and female subjects learning English in Parseen Academy of Languages in Qom province were randomly selected. The subjects were homogenized based on Cambridge Young Learners Placement Test, divided into control and experimental groups and the Longman Achievement Test was given to them. The subjects in experimental group were taught twelve words using orthography presented flash cards. The Longman Achievement Test was administered again for both groups. Statistical analysis including ANOVA, and T-test revealed that orthography had a significant effect on word recognition, was effective for visual word recognition and had effect on oral word recognition of EFL Iranian young language learners.

Keywords: Orthography, Word Recognition, Young Language Learners

1. Introduction

All of us know that language is a means for communication and among the existing languages English is the most commonly and frequently used one. English is commonly used by the most people throughout the world and majority of people are trying to acquire the knowledge of this worldwide language. Children are among those groups of people learning English.

Most languages on earth have at least a sort of orthography, a writing system widely used to represent the language. When a word is presented, the primary step of its identification is the orthographic visualization of that word. As cited in F. de Jong, Bitter, Setten & Marinus [2009], after a year of reading instruction, beginning readers can often read a substantial number of words fast and accurately. The sight of the written form of such words seems to be sufficient for the immediate activation of their spoken form in memory. Such rapid and accurate word identification is commonly believed to depend on orthographic knowledge, a system of associations between phonology and orthography [Ehri, 1998; Perfetti, 1992; Share, 1995].

Different languages orthographies offer different degree of

correspondence between spelling and pronunciation. English orthography, for example is highly irregular whereas orthographies of other languages such as Russian, Spanish are more consistent. Consistency of orthography represents the approximation of the principle: one letter per sound. What is really important here is the relationship between phonemes and graphemes in a language.

Orthographies differ from one another in terms of their scripts and in the specifics of the mapping from scripts to linguistics unit. Orthographic depth, the complexity of the mapping from script to language, modulates the ease with which orthography is learned. Within orthography, the consistency or regularity of a particular spelling pattern will temper the difficulty with which written words containing that pattern can be recognized [Braze & Gong; 2017].

English orthography, like other alphabetic orthographies, exhibits a set of relationships between speech sounds and the corresponding written words. In most other languages, these relationships are regular enough to be called rules. In Standard English spelling, every sound can be spelled in more than one way, and most spellings and all letters can be pronounced in more than one way and often in many different ways.

Children who are learning English need to acquire the ability in listening and learning comprehension. This achievement requires special experiences that do not occur only in spoken form of conversation between teachers and learners. One of the major problem students deal with is that sound changes taking place in the spoken language and they are not reflected in the written form and better to say in orthography. The central equipment which has been used in the process of speech is brain and in order for writing and reading what needs to happen is that written language must penetrate in learners' brain. Another problem relates to the writing problems and also dictations of the words and sentences. Children when they want to write a word need to hear it first and in the process of dictation letters and spelling are very important.

Children with larger speaking vocabularies in ages before school may have an easier time with phoneme awareness and the alphabetic principle because they can draw on more words to explore the similarities among the sounds they here in spoken words and the letters that form the words. More recently, researchers have also suggested that children with larger vocabularies find it easier to read words that have unusual spellings [O'Connor; 2014]

This study attempted to clarify that focusing on the orthographic teaching can be useful in a number of ways. Writing systems of young learners can be improved by focusing more on the orthographic features of the language especially for EFL language learners. By focusing on orthography also pronunciation problems of the students can be resolved as well as they can improve their power of speaking by exactly pronouncing the words.

1.1. Orthography

For describing the orthography and what orthography refers to here we refer to the definition of orthography and its representation.

According to Richards and Schmidt [2002]: "the term orthography is used:

1. For spelling in general. 2. For correct or standard spelling.

For some languages, the orthography is based on generally accepted usage and is not prescribed by an official body" [p 378]. For other languages, e.g. Swedish, it is laid down by official or semi – official organization. Like the term spelling itself, the term orthography is more likely to be used of alphabetic writing than of syllabic writing, and is unlikely to be used of character – based writing systems.

Distinguishing among scripts, writing systems and orthographies, a script is simply a set of symbols, the visual aspects of their writings; writing systems refers to the nature of basic mapping and an orthography is a specific language-script mapping [Braze & Gong; 2017].

An orthography in which the correspondences between spelling and pronunciation are highly complex or inconsistent is called a deep orthography (or less formally, the language is said to have irregular spelling). Orthography with relatively simple and consistent correspondences is

called shallow (and the language has regular spelling). There is another phenomenon related to the definitions of orthography which is defective orthography. An orthography based on the principle that symbols correspond to phonemes may, in some cases, lack characters to represent all the phonemes or all the phonemic distinctions in the language. This is called a defective orthography. An example in English is the lack of any indication of stress. Another is the digraph th, which represents two different phonemes (as in then and thin). A more systematic example is that of abjads like the Arabic and Hebrew alphabets, in which the short vowels are normally left unwritten and must be inferred by the reader.

And as Jacob et al, [1997] says in order to explain what is the difference between orthographic and phonological processing we can say that orthographic processing refers to the use of orthographic information (knowledge of the spelling of words). In alphabetic languages such as English, French or German we assume that such knowledge is letter based. Knowledge of how to spell a word is thought to be stored as a set of abstract representations that code both the identity and the position of the word's component letters. Phonological processing refers to the use of phonological information (knowledge of the sounds of language) in processing written or oral language. The question of which functional units code this knowledge is more complex than for orthographic processing.

Before discussing the effects of orthography on vocabulary recognition it is first necessary to understand what actually vocabulary recognition is and what it refers to. As we discussed above vocabulary recognition is the ability of a reader to recognize written words or a hearer to understand the word without hesitation and much effort. Beginning readers initially sound out the words through their phonetics. So the words recognized by the learners as units that they encounter repeatedly in texts or orally spoken words. Beginning readers need many encounters with a word in order to develop quick and accurate recognition of it. Practice with flash cards, lists and word grids are needed to provide these repeated encounters. Readers also notice and apply their known spelling patterns to decode new words by analogy. For example, using a familiar pattern such as consonant-en" as in Ben, hen, Ken to decode an unfamiliar word like fen (an archaic term for marsh). Even after readers become proficient at Word Recognition, they may still have occasion to use their Word Analysis or phonics skills when they encounter unusual words and complex multisyllabic words.

Learners who have difficulties with word recognition often misread or misspell words by substituting a similar-looking known word for that target word. Examples like writing froot and frute for word fruit or reading immorality for immortality. Learners sometimes correct themselves when they get to familiar clues in the process of recognizing the word. And this fortunate self-correctness happens when the words are familiar. But for unknown or unfamiliar topics learners have difficulties.

In considering how children learn to read words the known

term of sight word learning is going to think of as a process. But what does the term sight word refer to? And what kind of mental image does this term present? Looking at the term sight word reading as a process is as something that all beginning learners go through to obtain skill in reading. These processes create a mental dictionary in the mind of the reader. The dictionary holds all the written words and spoken words that are familiar to the reader. The dictionary is linked to the reader's eyes such that when the eyes light on words that exist in the dictionary, the pronunciations and the meanings of the words are immediately activated in the memory.

Ehri & Metsala [1998] stated that the brain is specialized for processing spoken language, but it has no special central equipment for processing written language. In order for reading and writing skills to develop, what needs to happen is that written language must penetrate and gain a foothold in the central equipment used to process speech. Graphemes must become attached to "deep" phonemes, not simply to "surface" sounds within words. Such penetration and attachment, however, are not straightforward steps, because speech is seamless on the surface, with no breaks signaling phonemic units. Special experiences are needed to engage the brain in deciphering print. They also added the basic question to be answered is how learners acquire the deciphering skills that give their eyes access to language comprehension processes that are programmed for mouths and ears rather than eyes.

1.2. Word and Word Acquisition

Vocabulary is an essential integral part of foreign language teaching at the early stages of language learning. First of all, according to the orthographic definition, a 'word' is '... any sequence of letters (and a limited number of other characteristics such as hyphen and apostrophe) bounded on either side by a space or punctuation mark' [Carter, 1993]. Its flaw is not only its limitation to the written language, but the fact that it is formalistic, inconsistent and incomplete because it neglects differences in meaning and the issues of polysemy, homonymy, grammar functions, etc [Carter 1993].

Knowledge of an L2 lexical item consists of several components. Generally, it is characterized by several dimensions of word knowledge (i.e. phonological and orthographic, morphological, syntactic and semantic) and by knowledge of conceptual foundations that determine the position of the lexical item in our conceptual system. Finally, it inevitably includes the ability of productive use, i.e. efficient retrieval of the lexical item for active use [Takac, 2004].

Laufer [1997] stated that all language learners are well aware of the fact that learning a target language involves the learning of large numbers of words. As Wilkins [1972] stated "while without grammar very little can be conveyed; without vocabulary nothing can be conveyed" (p111).

Boogards [2001] emphasized that the notion of "word" is not very clear, so, words come in many shapes and can be classified in very different ways. When the vocabulary

knowledge is considered, words come to the minds. However, words are very complex structures and they do not have specific frameworks on their own. They are essential stones for the languages. The question "what is a word" is very difficult to answer. There are many definitions of a word; however, it is almost impossible to give a clear-cut definition of a word. In the first place, Laufer and Nation [1995] defined the word as "a base form with its inflected and derived forms, i.e., a word family" (p312).

Murcia and Marianne [2010] claimed that vocabulary should be recognized as a central element in foreign language instruction from the beginning stages and having an adequate stock of vocabulary often helps the learner more not only in reading comprehension, but also in achieving more efficient survival communication than having a perfect command of structures with an inadequate amount of vocabulary. In learning a target language it is crucial for students to have some control over the lexical items of the language they want to use.

1.3. Orthography as a Word Feature and Word Recognition

Word recognition in beginning literacy poses a particular set of problems. The most important of these is how written words represent spoken words. Writing systems were invented to communicate the spoken language, and most writing systems do this systematically, by using an alphabet, a syllabary, or a set of logographs (characters, like \$ or %) that convey meaning. Because English is an alphabetic language, children who are learning to read English must learn the systematic correspondences between alphabetic letters (or groups of letters) and sounds. This means that learning written language requires some understanding of spoken language. This is not surprising when one considers that writing systems are designed to convey speech Metsala & Ehri, [1998].

Psychologists have studied word recognition and reading by using experimental techniques that still require methodological and theoretical unification. The most widely used modern experimental method for investigating visual and auditory word recognition is the lexical decision task (LDT). Like any other experimental technique, the LTD provides only indirect and incomplete information about the processes underlying word recognition and therefore requires cognitive modeling as a compliment to experimental analysis [Jacobs et al, 1998].

They have also proposed that linking phonological and orthographic units is the tentative solution to the problem of discovering an optimal grapheme-to-phoneme correspondence scheme Jacobs et al, [1998].

According to Ziegler, et al [2014] the most influential theory of learning to read is based on the idea that children rely on phonological decoding skills to learn novel words. Each successful decoding encounter with an unfamiliar word provides an opportunity to acquire word-specific orthographic information that is the foundation of skilled word recognition. In their study they prepared a model that was able to acquire word-specific orthographic representations for more than 25000 words even though it

started with only a small number of grapheme- phoneme correspondences. Then they show how visual and phoneme deficits can cause dyslexia in the course of reading development.

Clery [2004] has done a study in which examined whether the isolated features of word as their orthography, phonology and meaning can evoke feelings of familiarity which results in word recognition. This study shows that word unit word unit might be separated into the set of those features in memory for using in later familiarity process and this familiarity process results in word recognition.

Rosenthal and Ehri [2008] followed up a research by investigating whether the presence of orthography during training facilitates learning of new word meanings, as well as their pronunciations they showed that children in both age groups were more likely to learn the pronunciations, meaning and spellings of words that had been learned with orthography.

Rickets, et al [2009] believed that children find visual stimuli easier to learn than verbal stimuli and further, pairings between one visual and one verbal stimulus were easier to learn than pairings between two verbal stimuli.

Chetail [2015] in his study, reconsidering the role of orthographic redundancy in visual word recognition, stated that after the presentation of evidence on orthographic redundancy, the hypothesis that orthographic regularities may play a prominent role in word perception is developed.

In the another study conducted by Coutougera [2010], which named as The impact of orthography on the acquisition of L2 phonology, the researcher investigated how the deep orthography of English influences the acquisition of L2 English phonetics/phonology by L1 Greek learners, given that Greek has a shallow orthography.

In the study conducted by Wyra, et al [2007], they examined mnemonic keyword method and the effects on recall of word-meaning pairs of (a) training in use of the keyword procedure at the time of retrieval; and (b) the influence of the self-rated ability to image.

Hypotheses

N01- Orthographic has no effect on elementary language learners' visual word recognition.

N02- Orthography has no effect on elementary language learners' auditory word recognition.

N03- Orthography does not have any effect on elementary language learners' word recognition.

2. Method

2.1. Subjects

The participants of this study consisted of children (males and females) aging between 8 to 11 years old with the mean age of 9.5 which were learning English in Parseen Academy of Languages for kids (located in Qom province, Iran). The sample of the study consisted of two groups of males and females (each 25) total number 50, studying in 4 classes in the institute. The learners were homogenized according to their English Proficiency level based on YLE (Cambridge

Young Learners English tests). All the participants were given this test in order to get that all of them were in the same level of English proficiency. The Cambridge English Young Learners Tests are produced by Cambridge English Language Assessment (part of the University of Cambridge). All the participants of this study were at the same level and had finished the Starters level and started learning at Movers level. One group of boys and girls was assigned as the control group and one group assigned as the experimental group. All the learners were studying at the same time of the day, in the afternoons and they have been studying English from the beginning in this institution.

2.2. Instruments

The following instruments have been used in this paper:

(1). Flashcards: Flash cards were the main instruments have been used in this study. Twelve words which had been selected for the experiment were depicted on those cards by some pictures illustrating the words. On the same number of flash cards including the pictures the spellings of the words were printed. Twelve words including nouns and verbs containing different number of letters or different phonemes were selected for this experiment. Words were selected after the proficiency YLE placement test in order to get that all the words were new for children.

(2). Placement and Achievement tests: Before conducting the treatment in order to make the learners homogenized all the participants were tested by a Cambridge Young Learners Placement Test. Pretest was given to the learners is a standard Longman Achievement Test which evaluates the learners ability to recognize the words before the treatment. By using Longman achievement posttest the learners' efficiency in recognizing the new vocabulary was tested. The test includes two parts, written and oral. The written test is valid and reliable including 32 items which demonstrating the participants' vocabulary recognition and all the items are from second L2 to L2. Some items include filling the blanks and some of them are answering the questions based on reading skill. In some of the items the participants use their writing skill and some other items are filling the blanks and answering the question. The dictation of vocabulary was also memorable. The oral test was recalling the words based on their translation (L1 to L2). An oral test in which the learners were asked to pronounce the vocabulary was the last part of it. In order to check the learners' mastery in word recognition all errors should have been considered. Misreading and mispronunciation were also included.

2.3. Procedure

In the process of carrying out the study the investigator took the following procedure to achieve the objectives of the current study. All the procedures including the development of the placement test, pretest, treatment sessions and posttest development are explained in details below.

At the first stage of the research before the learning session started a Longman Achievement Test was given to the

participants (experimental and control group) one week prior to the experiment in order to prevent memory traces. All participants were given the test in order to see how many words they could recognize and provide a good memory of their pronunciation and meaning. The target words were not taught previously and do not exist in their previous teaching units. All the participants were given 15 minutes to finish the test.

Before initiating the next stage the experimenter explained to the pupils that they would be learning some new and unfamiliar words. The used words in the class were prepared by the investigator. They are completely new words and they were introduced by a picture of each word by using flashcards. During training children learned 12 words orally and presented by their pictures. The control group (25 children) exposed to words without orthography (orthography absent condition) as the experimental group (25 children) exposed to words with orthography (orthography present condition).

For each training session children heard a stimulus word and saw its picture at the same time. Children were presented with a picture and after a short delay they heard the related word. For the experimental group pictures were presented with its orthography presentation of spelling of the word. For items trained with orthography, the spelling additionally appeared above the picture in black font, font size 40. And all the students heard the correct pronunciation (the accuracy of their responses has been checked by the trainer. For getting better results to assess whether they have learned both the meaning and pronunciation of the word children were presented with a picture and asked to produce the word.

At the next training stage for experimental group the trainer-investigator- pointed out to each word, pronounce it and then after presenting each word ask a child to spell it out loud and pronounce it. And then ask a different child to do the same with each word and also talk about word meaning and its translation

in their own language. Students had been looked at each of the new words in printed form and spelled it to themselves. They have been asked close their eyes and imagine themselves writing the words on their papers. They have been asked to look at the board and see if they have it correctly spelled. This helps inserting the words into students' auditory and visual memory. Then they asked to write each word from memory.

After training session the participants received the Longman Achievement Test as a posttest in order to get that how much their long term memory helps recognizing the words. The students' answers were considered in order to evaluate whether orthography has effects on recognition of the words. The test is a written posttest including filling the blanks, answering and dictation, took 20 minutes for each group. And 10 minutes oral test for each person.

After scoring the participants and checking their papers the data gathered for the data analysis. The results were tabulated and codified for the computer analysis using SPSS program including ANCOVA, t- test, and pretest and post test to determine the effectiveness of the independent variable on the dependent variable.

3. Results and Discussion

Investigating Distribution of Variables

To check the normality of the variables the Smirnov test was used. The results of this test showed in Table 1 revealed that the meaningfulness level of the test is higher than 0.05 concerning all variables (pre-test and post test scores) and thus the null hypothesis is rejected (null hypothesis: variables are not normally distributed. Research hypothesis: variables are normally distributed.) And variables are normally distributed, which means that they are equally distributed on either side of the mean.

Table 1. Normal Distribution of Scores.

One-Sample Kolmogorov-Smirnov Test		pretest writing	pretest oral	posttest writing	posttest oral
N		49	49	49	49
Normal Parameters ^{a, b}	Mean	5.24	5.98	40.33	40.45
	Std. Deviation	3.072	3.211	7.281	7.323
	Absolute	.168	.139	.147	.123
Most Extreme Differences	Positive	.168	.139	.092	.101
	Negative	-.162	-.087	-.147	-.123
Kolmogorov-Smirnov Z		1.173	.976	1.028	.859
Asymp. Sig. (2-tailed)		.128	.297	.241	.452

3.1. Orthography on Elementary Language Learners' Visual Word Recognition

H1: Orthography has no effect on elementary language learners' visual word recognition.

Table 2. Comparing the experimental and control groups in pre-test scores for visual recognition.

Comparing means of two independent samples to compare the visual recognition					
	Group	N	Mean	Std. Deviation	Std. Error Mean
pretest writing	Experimental	25	5.44	3.216	0.643
	Control	24	5.04	2.971	0.606
Test results compare the means of two independent samples to compare the visual recognition					
pretest writing	T amount	Degree of freedom	Significance level	Difference in the mean	95/0 percent confidence interval for the mean difference
	0.45	47	0.655	0.398	-1.383 2.179

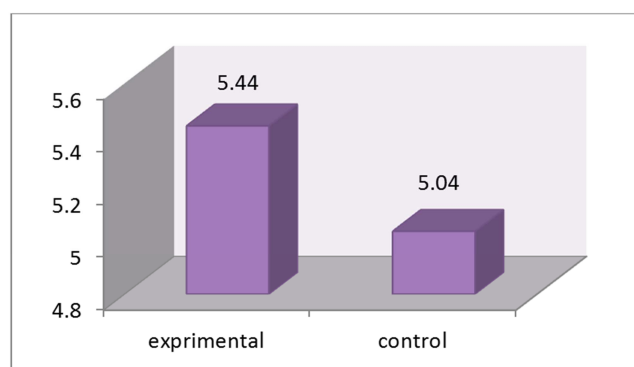


Figure 1. Mean scores for pre-test visual word recognition.

As shown in table 2 The results of the comparison of two independent samples test shows that the mean visual recognition score in the experimental group was 5.44 and 5.04 in the control group which means that the experimental group, compared with the control group have a more visual

recognition but this result cannot be generalized to the statistic population considering the significance level of T test which is higher than 0.05 (sig=0.655). In other words, the visual recognition of pretest scores in both control and experimental groups was not significantly different.

As shown in Table 3 to compare the post test scores of visual recognition between the control group and the experimental group, two independent comparing the average sample test was used. The results of this test show that the mean for posttest visual recognition test in the experimental group was 45.36. Which this score is higher than the score for the same test in control group (35.08). So the results according to T-test at a significant level of less than 0.05 (sig=0.000) can be generalized to the target population. And it also could be said that there is a significant difference between the scores for posttest visual recognition in experimental group and control group.

Table 3. Compares the experimental and control groups at post-test scores form visual recognition.

Comparing means of two independent samples to compare the visual recognition					
	Group	N	Mean	Std. Deviation	Std. Error Mean
Post test writing	experimental	25	45.36	4.462	0.892
	control	24	35.08	5.8	1.184
Test results compare the means of two independent samples to compare the visual recognition					
Post test writing	Amount of T	Freedom degree	Significance level	Difference in the mean	95/0 percent confidence interval for the mean difference
	6.969	47	0	10.277	7.31 13.243

According to the results of comparing means of two independent groups, between the experimental and control group in studying visual recognition it was revealed that the two groups had no significant difference in pretest but after the orthography test, the scores of the experimental group

was significantly increased compared to control group scores. Therefore it can be concluded that the orthography test had a significant effect on the visual recognition of words of the elementary learners.

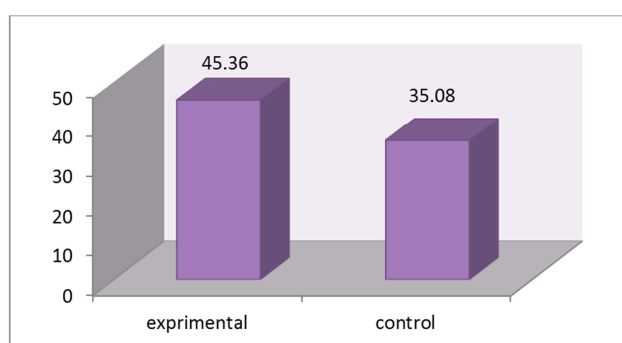


Figure 2. Mean scores for post-test visual word recognition.

3.2. The Effect of Orthography on Elementary Language Learners' Auditory Word Recognition

H2: Orthography has no effect on elementary language learners' auditory word recognition

Table 4. Comparing the experimental and control group in pre-test scores for auditory recognition.

Test for comparing means of the two independent sample to compare visual recognition					
	group	N	Mean	Std. Deviation	Std. Error Mean
pretest oral	experimental	25	6.24	3.515	0.703
	control	24	5.71	2.911	0.594
Test results of comparing means for the two independent samples to compare visual recognition					
pretest oral	T amount	Freedom degree	Significance level	Difference in the mean	95/0 percent confidence interval for the mean difference
	0.575	47	0.568	0.532	-1.327 2.391

As shown in Table 4 based on the results compared to the average of two independent samples, the mean score on the auditory recognition test group was 6.24 and 5.71 in the control group and this difference is so minute. But the score of experimental group comparing to control group is higher but this minute difference of the mean considering the

significance level of the T test which is higher than 0.05 (sig=0.568) cannot be generalized to the statistical population and the existence of a significance different between the scores of visual recognition pre-test in two control and experimental group is not confirmed.

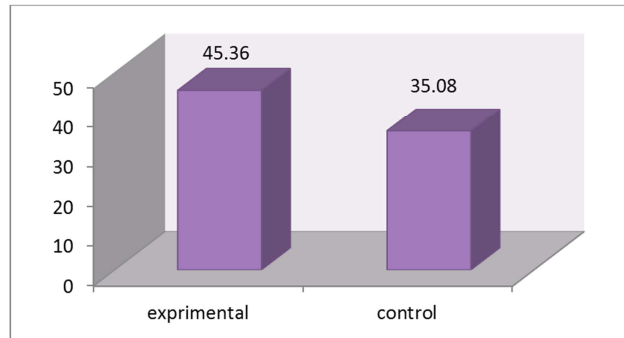


Figure 3. Mean scores for pre-test auditory word recognition.

As shown in Table 5 The results extracted comparing mean test of the two independent samples in studying post test scores of auditory recognition between two control and experimental groups show that the mean score of posttest for experimental group is 44.52 which comparing to the posttest of auditory recognition test for control group is higher (36.1),

considering the significance level of T test which is less than 0.05 (sig=0.000) this difference in the mean can be generalized to the statistical population and the existence of a significant difference between posttest scores auditory recognition between the control and experimental group is confirmed.

Table 5. Comparing experimental and control group in scores after auditory recognition test.

The test comparing mean for two independent sample to compare auditory recognition					
	group	N	Mean	Std. Deviation	Std. Error Mean
Post test oral	experimental	25	44.52	6.063	1.213
	control	24	36.21	6.065	1.238
The results of comparing mean test of two independent sample to compare auditory recognition					
Post test oral	T amount	Degree of freedom	Significance level	Difference in the mean	95/0 percent confidence interval for the mean difference
	4.796	47	0	8.312	4.826 11.798

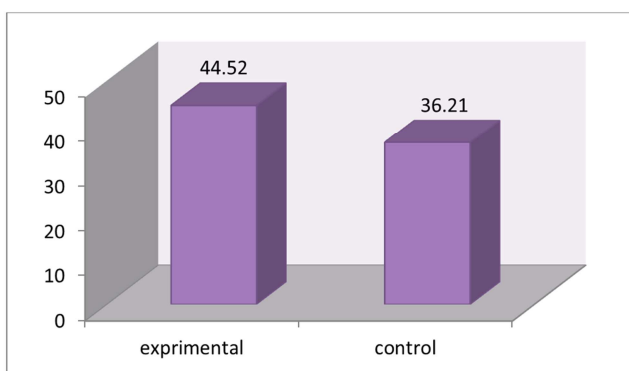


Figure 4. Mean scores for post-test auditory word recognition.

The results extracted from comparing mean test in two experimental and control group showed that these two groups does not have any significant difference in pre test scores (before administering orthography) but after applying orthography, the results showed that the experimental group attained a higher score comparing to control group and the difference in the scored of these two groups are also significant. Therefore it can be concluded that orthography has an effect on the word auditory recognition of elementary learners and the relationship is positive.

3.3. The Effect of Orthography on Word Recognition

H3: Word recognition does not affected by orthography.

Table 6. Comparison between experimental and control group in word recognition pretest scores.

Mean comparison test of two independent sample to compare word recognition					
	group	N	Mean	Std. Deviation	Std. Error Mean
pre test	experimental	25	11.68	5.86458	1.17292
	control	24	10.75	5.10967	1.04301
Results of comparing mean test for two independent sample to compare word recognition					
pre test	T amount	Degree of freedom	Meaningful level	Difference in the mean	95/0 percent confidence interval for the mean difference
	0.591	47	0.557	0.93	-2.23662 4.09662

According to Table 6 The results extracted from mean comparing test of two independent samples in comparison of the two experimental and control group on the bases of word recognition pre test scores shows that the experimental group have attained a higher score in word recognition (11.68) comparing to control group (10.75) that of course the

difference between these two groups is little. This result considering the significance level of T test which is higher 0.05 (sig=0.557) cannot be generalized to the statistical population and in other words there is no significant difference between the two experimental and control group in word recognition pre-test scores.

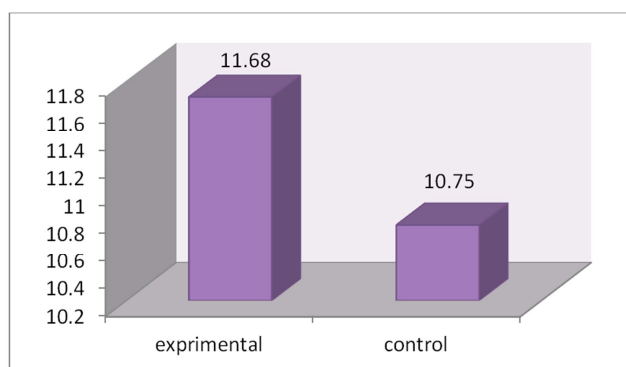


Figure 5. Mean scores for pre-test word recognition.

As shown in Table 7 The results extracted from mean comparing test of two independent sample shows that after applying orthography test the experimental group has attained a higher score (89.88) comparing to control group (71.29), this mean difference in post-test scores of these two

groups considering the significance level of T test which is less than 0.05 (sig=0.000) can be generalized to the statistical population and the existence of a meaningful difference in word recognition post test scores for these two groups is confirmed.

Table 7. Comparison of experimental group and control group in word recognition post- test scores.

Test comparing mean for two independent sample to compare word recognition					
	group	N	Mean	Std. Deviation	Std. Error Mean
Post test	experimental	25	89.88	10.00133	2.00027
	control	24	71.2917	10.61778	2.16735
Results mean comparing test of two independent sample to compare word recognition					
Post test	T amount	Degree of freedom	Meaningful level	Difference in the mean	95/0 percent confidence interval for the mean difference
	6.31	47	0	18.58833	12.66246 24.51421

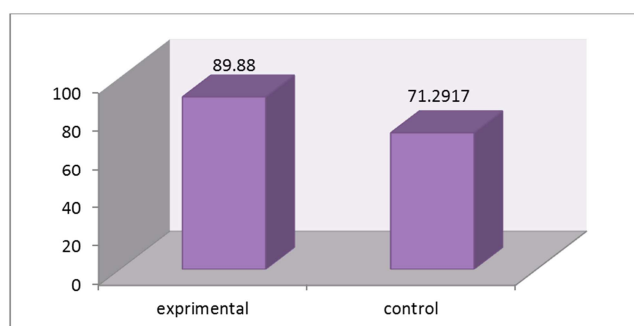


Figure 6. Mean scores for post-test word recognition.

On the basis of results attained from previous tests, we witnessed that the two control and experimental group in word recognition pre-test scores (visual recognition and auditory recognition) have no significance difference with each other but after applying orthography to the experimental group scores increased significantly comparing to control group and this increase in fact is an indicator of the positive effect of applying orthography test on word recognition. In other words orthography has a positive effect on word

recognition of elementary learners.

Based on the analysis the non-directional hypotheses of the study have been rejected. It means that according to the experiment the orthography has an effect on Iranian word recognition. Either in the Iranian elementary language learners' visual or experimental word recognition orthography plays a significant role. Less experiments have done studying the effect of orthography on word recognition but based on the studies have done related to this experiment spelling and word orthography is helpful for word recognition.

One probably reason for such findings of this investigation as what Cleary [2004] stated is that the isolated features of word such as their orthography are used in a process in memory which results in word recognition. Thus there can be a relation between word retention and orthographic feature of words.

According to the described results of this study and based on what we have mentioned before as what Rosental and Ehri [2008] showed meaning and spelling of words have been learned with orthography and further Ricketts, et al [2009] investigated exposure to orthography facilitates oral

vocabulary learning and overall, presenting orthography could provide a helpful strategy for elementary learners to have a good visual or orthographic skill in learning new words. So focusing on the orthography can both be helpful for word learning and word recognition.

4. Discussion

Analysis of co-variances

Covariance effect of orthography on the recognition of words

Results extracted from covariance analysis shows that the type group (either experimental or control group) influences

on the score of word recognition of the participants. The level of meaningfulness of T test is lower than 0.05 (sig= 0.000), meaning that the experimental group gained a higher score in recognizing words comparing the control group. In addition to that on the basis of the results the type of the test also affected on the participants scores in a way that the participants' post test scores are higher than pretest scores (sig=0.000) and the interaction between the test and the group is also effective in identifying words in a way that the experimental group also has attained a higher score in posttest comparing to control group in recognizing words. So it can be concluded that orthography has a positive influence on word recognition.

Table 8. Analysis of co-variances Covariance effect of orthography on the recognition of words between subjects factors.

Between-Subjects Factors			
		Value Label	N
Group type	1.00	Experimental	50
	2.00	Control	50
Test type	1.00	Pretest	50
	2.00	Post test	50

Table 9. Analysis of co-variances Covariance effect of orthography on the recognition of words between subjects effects.

Tests of Between-Subjects Effects.					
Dependent Variable: score for recognizing words					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	122038.827 ^a	3	40679.609	537.815	.000
Intercept	211087.353	1	211087.353	2790.731	.000
Group	2091.531	1	2091.531	27.652	.000
Zamoon	117135.902	1	117135.902	1548.624	.000
group * zamoon	2183.514	1	2183.514	28.868	.000
Error	7185.678	95	75.639		
Total	338065.000	99			
Corrected Total	129224.505	98			

a. R Squared =.944 (Adjusted R Squared =.943).

5. Conclusion

To carry out this study a T test design was employed. A total of 50 male and female subjects aged between 8-11 at an Elementary Language Academy in Qom province, Iran were randomly selected from different number of English classes of Elementary Language learners. A Cambridge Young Learners English Test (YLE), a Longman Achievement pre and posttest were administered to both control and experimental group. Statistical analyses including ANOVA, T test, and Analyses of covariance revealed that Orthography has significant effect on word recognition of the experimental group. The results and findings of the statistical analyses may be summarized as follow:

1. The first hypothesis was rejected, indicating that orthography has an effect on Elementary Language Learners' visual word recognition. This hypothesis was in line with results of some studies by some scholars who conducted experiments in this regard. The finding of some of these studies argue that exposure to print is another experiential factor that like schooling has a long term effect on word recognition in reading which

considers as visual word recognition.

Ricketts, et al [2009] got this conclusion that the finding that better readers benefit more from orthography in word learning paradigms has potential implications for education and intervention. Overall, teaching new words with orthography might be beneficial in mainstream classrooms. Further, presenting orthography could provide compensatory strategy for children who find it difficult to learn new words, whilst having relatively good visual or orthographic skills.

2. The second hypothesis was rejected indicating that Orthography has an effect on Elementary Language Learners' oral word recognition. Very little research has investigated the effects of orthography on vocabulary recognition but this hypothesis supports findings of Ziegler, J. c & Muneaux, M [2007]. They had one study which its goal was to investigate the extent of learning to read and write affects spoken word recognition. They mentioned that very few studies have addressed the development of orthographic affects as a function of reading expertise.

Ricketts, et al [2009] in their study about orthographic facilitation in oral vocabulary acquisition have done an

experiment in which investigated whether exposure to orthography facilitates oral vocabulary learning. In this study children showed robust learning for novel spelling patterns after incidental exposure to orthography. Further, they observed stronger learning for non-word-referent pairings trained with orthography. Also the degree of orthographic facilitation observed in post-tests was related to children's reading levels, with more advanced readers showing more benefit from the presence of orthography.

3. The third hypothesis was rejected indicating that Orthography has an effect on Elementary Language Learners' word recognition. This hypothesis supports Cleary's finding [2004] which shows that word unit might be separated into the set of those features in memory for using in later familiarity process and this familiarity process results in word recognition

This hypothesis also supports Rickets, et al finding [2009] which believed that children find visual stimuli easier to learn than verbal stimuli and further, pairings between one visual and one verbal stimulus were easier to learn than pairings between two verbal stimuli.

This hypothesis also supports Rosenthal and Ehri's finding [2008] which showed that children in both age groups were more likely to learn the pronunciations, meaning and spellings of words that had been learned with orthography. Thus, as well as supporting the development of phonological representations, their data suggest that orthographic information can aid learning of new word meanings.

6. Implications

The interrelationship between vocabulary learning and orthography is undeniable and the positive. We can't ignore the impact of rich vocabulary knowledge on the linguistic comprehension and production of the second or foreign language. The literature of second or foreign language development studies abounds with an Increasing number of researches that have put the vocabulary teaching and learning in the spotlight and tried to introduce innovative and efficient techniques for the lexical development of second language learners. The method of vocabulary instruction, despite its promising perspective at the outset of introduction, has not received the deserving attention in practice and hence has not flourished although many studies have underscored its merits as an effective educational technique. In an attempt to revive the attention and investigate the effects of orthography on vocabulary learning and especially long term retention of the learnt vocabulary items, in this study we compared two aspects of recognition namely auditory and visual in order to investigate their effects on word recognition in elementary learners. The results of the study indicated that using orthography method can help students learn vocabulary more effectively and retrieve the learnt vocabulary items much more efficiently than other methods like rote memorization. As the results revealed, the participants in the control group significantly showed a difference in word memorization comparing to the experimental group which were exposed to

auditory or visual word memorization method. This finding implies that orthography has a positive effect on the auditory word recognition of the elementary learners and specifically promotes vocabulary retention of the elementary level EFL learners. It is also revealed that orthography has a positive effect on the elementary learners' visual recognition.

One pedagogical and policy implication is that teachers need to become aware of the importance of spellings for vocabulary learning so they do not slight them in their teaching. When teachers encounter, pronounce, and explain new vocabulary words to their students, they should take time to display the spellings of the words, for example, when they are reading a story aloud to the whole class. Our observations in classrooms indicate that teachers do not.

SPELLINGS INFLUENCE VOCABULARY LEARNING necessarily does this but rather limit their instruction to spoken words and oral discussions of meanings. Our findings are important for experts who advise teachers about how to strengthen vocabulary instruction. They need to recognize the contribution that exposure to spellings can make and to include this step as one of their recommendations. They also need to explain why the step is important and how it enhances students' word recognition, as we have clarified in this article.

However, this guessing strategy does little for vocabulary learning. When students encounter new vocabulary words in their independent reading, according to present findings, they should stop and not only figure out the meanings of the words but also decode and pronounce their spellings. Based on present findings, this should enhance vocabulary growth, even though readers may sometimes decode and remember slight mispronunciations of never-heard-before new words, for example, pronouncing PUBERTY as /pub/-er/-tee, or GINGHAM as /jing/-ham/.

Vocabulary learning is the most important part of learning a language which also makes the greatest difficulty for language learners especially foreign language learners. Foreign language learners repeatedly consult this problem with their language teachers and want to get rid of vocabulary lists. There is no question that people who have large speaking vocabularies generally tend to have large listening, reading, and writing vocabularies; likewise people who are limited in one of these aspects are likely limited in other aspects as well. Building a large vocabulary is essential when learning to read in a second language.

Simply put, people with large vocabularies are more proficient readers than those with limited vocabularies. So, learning vocabulary through different ways is very important for language learners. In addition to the vital importance of vocabulary for success in life, it is very important not only for reading achievement but also for general social and economic success. So, because this study focuses on vocabulary learning and word recognition through orthography teachers and trainers can follow the instruction in order to get significant outcomes in the process of teaching vocabularies especially for young language learners.

According to what was said so far, it is needed that

educational policy makers find some new approaches in Teacher Training Course for teaching foreign languages to children paying more attention to the needs of young language learners. It is worth to say that orthographic teaching is one of the ways to encourage the learners to become aware of the words and letters and also the pronunciation of the target language and this will help them to recognize the words – the main elements of a language.

Another pedagogical and policy implication is that Language Teachers should be encouraged to develop their orthographic knowledge and keep informing language learners with the phonological and orthographic differences between their native and the target language. Knowing these differences empower learner to learn English easier and more successfully.

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