Macrothink Institute™

International journal of linguistics
ISSN 1948-5425
2012, Vol. 4, No.2

Investigating the Effect of Farsi Font Type and Letter Space on the Rate of Morpheme Recognition by Gaidence School Students

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Received: March 7, 2012 Accepted: March 28, 2012 Published: June 1, 2012

doi:10.5296/ijl.v4i2.1857 URL: http://dx.doi.org/10.5296/ijl.v4i2.1857

Abstract

This thesis intends to study the effect of type (Nastaligh and Tahrir) of Persian font and the letter space (normal, condensed and expanded) on the rate of morpheme recognition. The population of this project is a number of 30 boys and girls (11-13 years old)، of Isfahan gaidance school Students who are randomly chosed from the students who have the same level of physical (with no visual and lingual defects…) and intelectual and personal (not being shy, fearful…) competence and also have the same average of 16-19. The instruments used in this study are 12 lists of multi-morpheme words and non-words. After that the lists were given to the students and they had 120 seconds for reading each of them. Eventually the number of read words by each student in each test were enumerated and registered. The achieved scores were entered into Spss software and after measuring the averages, using the

statistical analysis paired t-test, they were compared with each other in order to be specified wether the achieved differences relating averages were meaningful or not. The result showed that the morpheme recognition rate while reading words and non-words were faster in Tahrir font than Nastaligh font and among the different spaces “normal, condensed and expanded”, the morpheme recognition rate in normal letter space had the fastest rate.

Keywords: Font type, Morpheme recognition, Non-Word, Normal, Condensed, Expanded

1. Introduction

One of the problems of students educational improvement is the problem of reading.

Nowadays the topics of improving language teaching, enriching reading skills and special attention to reading comprehension are followed seriously in world educational systems from the beginning of the educational year.

The aspect which must be considered about problems of reading and relationship of font type and font size and letter space that is used in students book is their relationship with the skills such as morpheme recognition and text reading speed. Reading is an accepting and uncoding skill with which reader receives and uncodes the writer's message. Various definitions have have been given by the clear-sighted people. Boder (2002) defines reading as thought process, evaluation, judgement, mental image making and argumentation. Pollaczek (1999)believes that skill of reading is the ability of taking information out of written texts and comprehending the meaning of that text. The action of reading is consisted of three main and essential activities. The first step of individual activity is to take part in the act of reading and see words, the second activity is word recognition and pronunciation. The third one is the act of understanding the meaning of read material. These three activities are correlated and complementary. Therefore the factors which affect these three activities, that is, see words, recognition and pronunciation of words and understanding the meaning of the materials have great importance. The speed of reading an the rate of morpheme recognition, which is itself one of the reading steps and affect the speed of reading, depends on numerous factors that one of them is font and font size and letter space.

Researchers have shown that students' dependency on morpheme structures at low ages has meaningfull relationship with their comprehension and speed while reading and at higher ages this dependency is on the general shape of words. However, even at higher ages there is no way except using morphemes for reading new words(Willson and the others, 1991).Therefore morpheme recognition is very important either at low ages or at higher ones. Some of the researchers believe that reading takes place at two steps: 1-code reading of words 2-reading in order to gain meaning. This approach implies that reading takes place through letters recognition, Letter and phone concordance, putting the phones together and searching words for word meaning(Menyuk & Flood(1998). Morphological awareness in comprehending words and creating words denotes on this subject that the presence of multi-morpheme words within text have positive role in speed of reading.In this field a few researches in some of languages have been done on the effect of morphemes recognition in the process of reading. Morphological awareness may help the students in accurate pronunciation(Seymor, 1997). That is, the presence of familiar morphemes for students in one word such as root or affixes, is effective in speed of reading; especially when a word is structurally complex(Carlisle, 1988).

As the first step of reading is recognition of written letters, the apparent characteristics of letters, such as nearness and farness of letters and straight and curved lines of letters are very important and considering the recent use of Nastaligh font instead of Tahrir font in educational books and the fact that various general words are used for the first time in farsi

books and students are dependent on recognizing letters and morpheme for reading of these words, investigating which of these fonts are more important in recognizing letters and morphemes and also speed of reading and text comprehension is of great importance. Experts declare that "students' educational problems have close relationship with criminality and anormal behaviors, as such, one of characteristics of criminal students is the existence of reading and writing problems in them" (Pollaczek, 1999). Since the main deep structures of reading have basic relationship with reading speed and learning, we must see how we can improve speed of reading in children in the best way. Some of the people in charge announced that children gratually increase their speed of reading through learning continuos and Impressive skills(Carillo, 1952). In this case one of the effective skills in reading development is word analysis skill which is classified in the categories of bodiment, structural analysis, contextual symbols, pictorial symbols and formal analysis. Structural analysis is concerned with word recognition through using different parts of it, such as prefixes and suffixes and words root and morphological enclosures and recognize bodimental analysis of words with their length and shapes(Hilman, 1976). Knowing morphology is part of language competence and has direct and meaningfull relationship with the skill of literacy learning and reading and writing. Numerous researches on the relationship between morpheme awareness and reading show the importance of recognizing morpheme while reading and according to this relationship, developing morphology awareness seems to be necessary(Carlisle, 1995 and Champion, 1997 and Fowler and Liberman, 1995)..

Among many fonts that exists in Farsi language, the two Tahrir and Nastaligh fonts are used in educational books (for Farsi literary books). Since in Farsi language no study has been done in the field of the effect of font type on the rate of morpheme and considering the importance of this subject and the fact that what font type with what space between words and letters children read and comprehend better, we have decided to investigate the relationship between the effect of font type and letter space and the rate of morpheme recognition and through this way we step in the way of standardizing educational books.

The Goals of project ist Investigating the effect of font type on the rate of word recognition and Investigating the effect of font type and letter space on the rate of word recognition

The questions of the current project are as follows:

1) Which of the Tahrir and Nastaligh fonts and letter space " normal, condensed and expanded" increases the rate of word recognition?

2. The method and plan of sampling

1.2 Instrument for Collecting Data

1.1.2 Multi-morpheme words and non-words

For investigating the effect of font type and amount of space between letters on the rate of morpheme recognition, 6 lists of multi-morpheme words(that includes the words that students have observed in their educational books) and 6 lists of multi-morpheme

non-words(the students have observed them for the first time and therefore reading of these words completely depends on letter recognition and morphemes) with structuresin form of "affix+root", " affix+root+affix", " root+affix" in two Tahrir and Nastaligh font and in different letter spaces in form of " normal, condensed and expanded" are given in the following order that are 24 lists as a whole.

-Three lists of words with Nastaligh font with letter space "Normal, condensed and expanded"

-Three lists of Tahrir font with letter space "Normal, condensed and expanded"

-Three lists of non-words with Nastaligh font with letter space "Normal, condensed and expanded"

-Three lists of non-words with Tahrir font with letter space "Normal, condensed and expanded"

For specifying the relationship between font and letter space with the rate of morpheme recognition, the lists of words and non words in the two fonts Tahrir and Nastaligh with three characteristics including the spaces " normal, condensed and expanded" between letters were provided. At last we had 26 lists of words and non words with Tahrir and Nastaligh font and letter spaces "normal, cndensed and expanded"

3. Method

In this project the method of random grade sampling has been used and a number of 6 male and female guidence schools and a number of 30 person from the whole grades of first, second and third of guidense school who had the named conditions, were randomly chosed.

The existing variables were Nastaligh and Tahrir fonts, and letter spaces in three forms "Normal, condensed and expanded". For reading each of words and non-words lists, each student had 120 seconds.

at this step students had the chance of 120 seconds reading each of words and non-words lists that had been prepared in two Nastaligh and Tahrir and in letter spaces " normal, condensed, expanded" that for each student 12 scores for read words and non-words and 12 scores for errors were registered as a whole.

After collecting the data, eventually the calculated scores were entered into Spss software and the data were compared with eachother.

4. The Method of Analysis

For determining the relationship between font and letter space with the rate of morpheme recognition, the existing lists of words and non-words in two Nastaligh and Tahrir font 14 and letter space "normal, condensed and expanded" (Nastaligh and Tahrir 14 letter space normal, Nastaligh and Tahrir 14 letter space condensed and Tahrir 14 with letter space expanded) has been prepared and were given to the students. After that the number of words and read non-words and also the number of read errors were measured and registered. After

that the obtained averages were compared for determining the effect of letter space with Nastaligh and Tahrir fonts.

The obtained scores from studying the relationship between Nastaligh and Tahrir fonts and letter spaces " normal, condensed and expanded" with the rate of morpheme recognition were entered into Spss and and after calculating the averages with paired-t-test were compared to see that in each case wether the obtained differences about the averages had been meaningfull or not.

The hypothesis of this project predicts that there is no meaningfull relationship between Nastaligh and Tahrir font and letter space normal expanded and condensed with the rate of morpheme recognition.

1.4 Words

In this part pare the effect of letter space on the rate of morpheme recognition while reading words and the number of errors and in next part reading non-words have been investigated and compared.

1.1.4 Comparing the rate of morphemes recognition in Nastaligh and Tahrir fonts and letter space normal expanded and condensed while reading words.

For investigating in which of Nastaligh and Tahrir fonts the letter space normal expanded and condensed, the rate of morpheme recognition had been more, along with attaining the average and t-test, they were compared.

The number of read words with Nastaligh and Tahrir font and letter space normal expanded and condensed are given in figure 1.

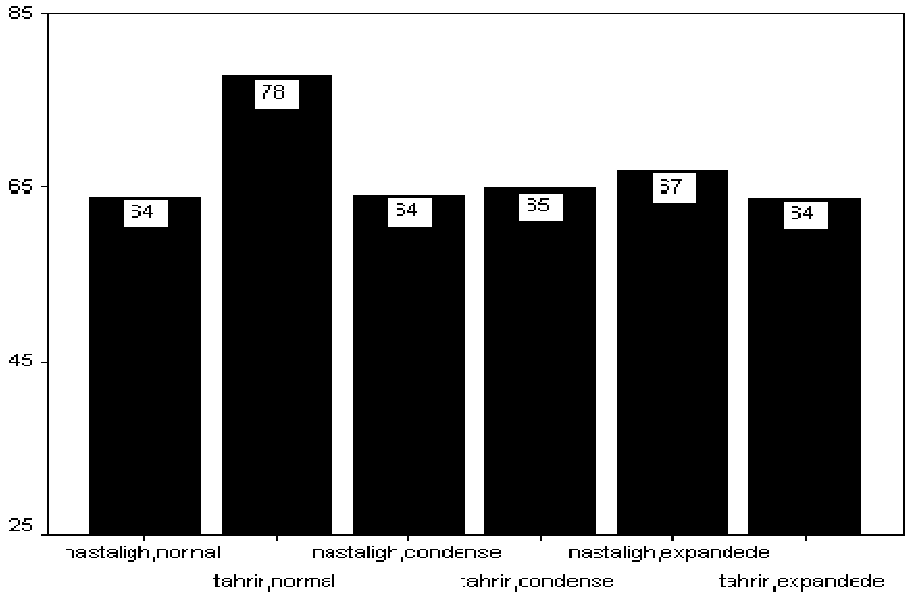

Figure 1. The average of the number of read word with Nastaligh and Tahrir font the normal expanded and condensed letter space

Studying the number of read words with Nastaligh and Tahrir font showed that the speed of reading words and non-words with Tahrir font and normal and condensed letter space has taken place faster than Nastaligh font.

The average of thee number of read words with Tahrir font and expanded letter space was less than the average of words that had been read with Nastaligh font with expanded letter space. It is specified in this step that the rate of morpheme recognition in Nastaligh font has taken place faster. We can again justify this subject by reasoning that the space between letters had been little and reading in this font is difficult, in this step that the space between letters became more than the normal size, reading for studnts became easier.

To determine if this difference between the two averages is meaningful, a t-test on the obtained scores while text reading was done. The results of the test is given in table1.

Table 1. The t-test on the scores morphemes recognition in Nastaligh and Tahrir fonts and letter space normal expanded and condensed while reading words.

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	nastaligh14word normal - tahrir14word normal	-13,7333	7,7687	2,0059	-18,0355	-9,4312	-6,847	14	,000
Pair 2	nastaligh14word condense - tahrir14word condense	-,6667	10,1606	2,6235	-6,2934	4,9601	-,254	14	,803
Pair 3	nastaligh14word expanded - tahrir14word expanded	3,1333	12,2816	3,1711	-3,6680	9,9347	,988	14	,340

(p_1:0 , t_1:-6.847), (p_2:0.803 , t_2:-0.254), (p_3:0.340 , t_3:0.988),

As the table 1 shows the obtained difference in reading words and letter space normal, was meaningful from statistical point of view.

2.1.4 The comparison of errors average in morpheme recognition in Nastaligh and Tahrir font and the normal expanded and condensed between letters while reading words.

After counting and registering read errors, the variables are compared with each other two by two.

Through the studying the amount of errors in reading, it is specified that the amount errors in Nastaligh font has been more than Tahrir in all of the steps. The amount of errors in expanded Tahrir is less than expanded Nastaligh and it can be said that the speed of reading in expanded Nastaligh was more than Tahrir in this part , the superiority of Tahrir to Nastaligh is the less amount of errors(figure 2).

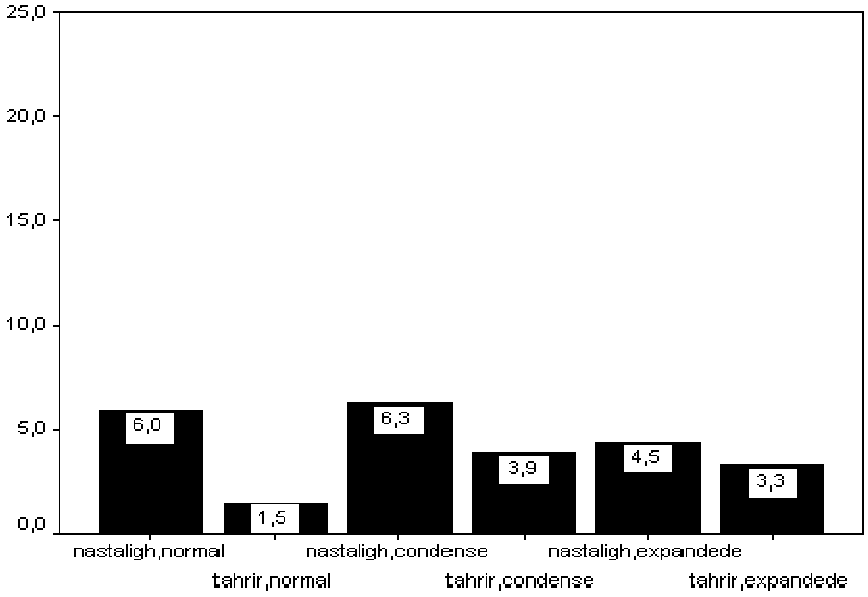

Figure 2. The average of the number of errors in reading words with Nastaligh and Tahrir fonts and the normal expanded and condensed letter space

As the figure 6 shows the average of errors in Nastaligh font is more than Tahrir font. To determine if this difference between the two averages is meaningful, a t-test was done on the obtained scores from reading of the words and it was specified that this difference is meaningful. The result of T-test on the scores showed that the obtained difference between the averages in reading words and the letter space normal and condensed have been meaningful. (Table2)

Table 6. The t-test on the the number of errors in reading words with Nastaligh and Tahrir fonts and the normal expanded and condensed letter space

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	the precent of error nastaligh14word normal - the precent of error tahrir14word normal	4,4633	1,7412	,4496	3,4991	5,4276	9,928	14	,000
Pair 2	the precent of error nastaligh114word condense - the precent of error tahrir14word condense	2,3740	2,3559	,6083	1,0693	3,6787	3,903	14	,002
Pair 3	the precent of error nastaligh14word expanded - the precent of error tahrir14word expanded	1,1653	2,8522	,7364	-,4142	2,7448	1,582	14	,136

(p_1:0 , t_1:9.928), (p_2:0.002 , t_2:3.903), (p_3:0.136 , t_3:1.58),

2.4 Non-words

For investigating the effect of font type and amount of space between letters on the rate of morpheme recognition lists of multi-morpheme words and non-words(the students have

observed them for the first time and therefore reading of these words completely depends on letter recognition and morphemes) in two Tahrir and Nastaligh font and in different letter spaces in form of " normal, condensed and expanded" are preper.

In this part pare the effect of font type and amount of space between letters on the rate of morpheme recognition while reading non-words .

Along with calculating the averages through doing t-test, they were compared. The number of read non-words with Nastaligh and Tahrir fonts and the normal expanded and condensed letter space are given in figure 1.

1.2.4 Comparing the rate of morphemes recognition in Nastaligh and Tahrir fonts and letter space normal expanded and condensed while reading words

For investigating in which of Nastaligh and Tahrir fonts the letter space normal expanded and condensed, the rate of morpheme recognition had been more, along with attaining the average and t-test, they were compared.

the number of read non-word with Nastaligh and Tahrir font the normal expanded and condensed letter space are given in figure(3).

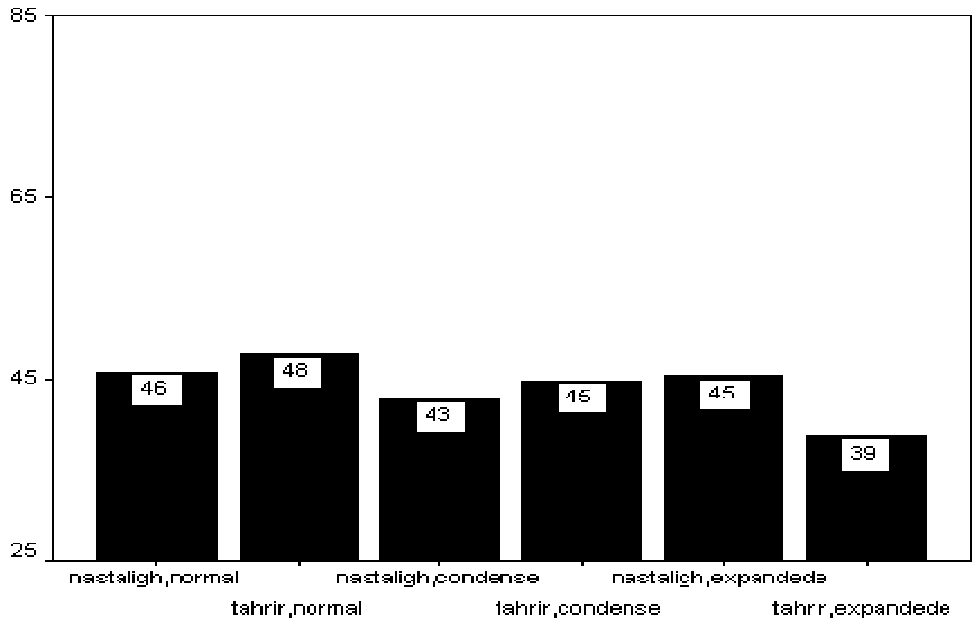

Figure 3. The average of the number of read non-word with Nastaligh and Tahrir font the normal expanded and condensed letter space

Studying the number of read non-words with Nastaligh and Tahrir font showed that the speed of reading words and non-words with Tahrir font and normal and condensed letter space has taken place faster than Nastaligh font.

The average of thee number of read non-words with Tahrir font and expanded letter space was less than the average of words that had been read with Nastaligh font with expanded letter space. It is specified in this step that the rate of morpheme recognition in Nastaligh

font has taken place faster. We can again justify this subject by reasoning that the space between letters had been little and reading in this font is difficult, in this step that the space between letters became more than the normal size, reading for studnts became easier.

To determine if this difference between the two averages is meaningful, a t-test on the obtained scores while text reading was done. The results of the test is given in table3.

Table 3. The t-test on the scores morphemes recognition in Nastaligh and Tahrir fonts and letter space normal expanded and condensed while reading non-words

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	nastaligh14nonword normal - tahrir14nonword normal	-2,0000	5,0000	1,2910	-4,7689	,7689	-1,549	14	,144
Pair 2	nastaligh14nonword condence - tahrir14nonword condense	-2,0667	4,1139	1,0622	-4,3448	,2115	-1,946	14	,072
Pair 3	nastaligh14nonword expanded - tahrir14nonword expanded	6,6000	5,7171	1,4762	3,4340	9,7660	4,471	14	,001

The result of T-test on the scores showed that the obtained difference between the averages in reading non words and condensed letter space have been meaningful. (Table3)

(p_1: 0.144 , t_1:-1.549), (p_2:0.072 , t_2:-1.946), (p_3:0.001, t_3:4.471)

2-2-4- The comparison of errors average in morpheme recognition in Nastaligh and Tahrir font and the normal expanded and condensed between letters while reading non-words .

The average of the number of errors and t-test in reading non-words with Nastaligh and Tahrir fonts and the normal expanded and condensed letter space are given in figure 4 and table 4.

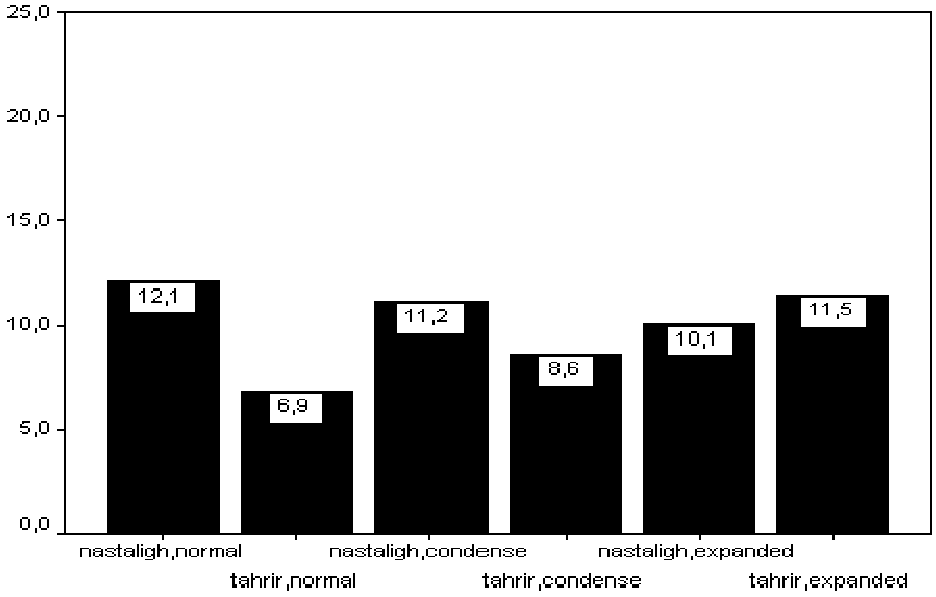

Figure 4. The average of the number of errors in reading non-words with Nastaligh and Tahrir fonts and the normal expanded and condensed letter space to determine if this difference between the two averages is meaningful, a t-test on the obtained scores while text reading was done. The results of the test is given in table4.

Table 4. The t-test on the the number of errors in reading non-words with Nastaligh and Tahrir fonts and the normal expanded and condensed letter space

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	the precent of error nastaligh14nonword normal - the precent of error tahrir14nonword normal	5,2447	4,4055	1,1375	2,8050	7,6844	4,611	14	,000
Pair 2	the precent of error nastaligh14nonword condense - the precent of error tahrir14nonwor condense	2,5373	3,9002	1,0070	,3775	4,6972	2,520	14	,025
Pair 3	the precent of error nastaligh14nonword expanded - the precent of error tahrir14nonwor expanded	-1,4007	3,5671	,9210	-3,3761	,5747	-1,521	14	,151

As table 4 shows the obtained difference in reading non-words with Nastaligh and Tahrir fonts and the normal and condensed letter space has been meaningful from statistical point of view (p_1:0 , t_1:4.61), (p_2:0.025 , t_2:2.520), (p_3:0.151 , t_3:-1.521)

5. Conclusion

The rate of morpheme recognition while reading words and non-words in tahrir font 12 and normal letter space is faster than nastaligh font and had the fastest speed. With comparing the number of read words and non-words in nastaligh font and tahrir 16, it is determined that in any font, in general, morpheme recognition and reading become easier as the font becomes bigger. Of course as it was seen, in a font like tahrir that the space between letters is not like nastaligh font and in the case normal space between letters the students have no considerable trouble in reading, the growing of the font had not much positive effect on the rate of morpheme recognition and speed of reading. Among the sizes 12, 14, 16 the speed of reading was more in tahrir 12 and in tahrir font as the shape of the letters are in a form that the letters are placed next to each other appropriately, it decreased the increase in level of text reading and it seems that in similar fonts like tahrir font with increase in size, it decreases the recognition of familiar and non-familiar(in here non-words). The average of the number of read words with nastaligh font 12 was more than tahrir font 16 with a little difference and it is specified that in nastaligh font reading is difficult because the letters space is small and reading becomes easier as the font becomes bigger. The number of read non-words in tahrir font and nastaligh 16 have little difference. And thus it is specified that nastaligh font in bigger sizes is better than tahrir font in bigger sizes when the dependency on letters recognition becomes more. Despite the growing of the font, the rate of morpheme recognition in all of the cases in tahrir font and different letter space; that is, normal and condensed was more than nastaligh font but the average of the number of read word and non-word in nastaligh font and expanded letters space is more than tahrir font and expanded letters space(figure 4-19 and figure 4-25) and as it was said before, since the letters space in nastaligh font had been small and reading in this font is difficult, in this step that the amount of letters space is more than the normal limit, reading became easier for students. In normal tahrir font, since the letters have enough space between them, providing more space makes reading difficult, for this reason the rate of morpheme recognition and expanded letters space was more in nataligh font. As it was said, the rate of morpheme recognition in tahrir font and condensed letters space was more than nastaligh font and condensed letters space, however the average of the number of read word and non-word in both tahrir and nastaligh font, was so low when the letters space was condensed(figure 4-17 and figure 4-23) and there is no considerable difference in the number of read word and non-word and in the rate of morpheme recognition in tahrir and nastaligh fonts as conclusion. Generally reading is difficult when the letters are condensed and font has no effect but the superiority of tahrir font in comparison with nastaligh in this part, is the amount of error which is less in tahrir font and in general the rate of morpheme recognition while reading words and non-words in tahrir font and normal letter space had the most speed. The amount of error while reading words and non-words in nastaligh font was consistently more than tahrir. As it was said before the morpheme recognition is one of the reading steps and morpheme reading is important specially in lower ages because in higher ages along with the increase in reading talent, people read the words as a whole but not as a morpheme and thus the rate of morphemes recognition has effect on the speed of reading either in words that the student has previous familiarity with them or in unfamiliar ones and it was determined that in fonts

like tahrir in contrast with a font like nastaligh, the increase in font size and space causes decrease in reading. But in a font like nastaligh that the letters are next to each other and are in curved form, in fact the letters don't have angles, the increase in font and letters space caused the rate of morphemes recognition and reading.

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