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INVESTIGATING ROLES OF THE HEALTHY EYES DURING PROBLEMATIC READING

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Abstract
This study investigated the role of eyes during reading. In this case 20 intermediate EFL learners have been selected and some minimal pair words had been exercised with them before the final reading. The results of the study revealed that in some situations learners without psychological pressure, brain lesions, and eye problems read the words in context in a wrong manner.

Key Words: Minimal pair words, reading problems, Healthy eyes.

INTRODUCTION

Most of the time some problems in reading happen through brain impairments (Cherney, 2004). Both left-hemisphere and right hemisphere damages cause deficiencies in recognition of correct words via reading or writing. Sometimes the problems of word recognition in not on the basis of brain damages but originating from some psychological factors like stress, place of reading, reading within a small community, etc. This article is divided to two parts, first of all brain impairments and its effects on reading is stated generally and the second part includes descriptive investigation of eye movement in wrong remembering of words through reading on some participants with academic degrees who are healthy without brain damages.

THEORETICAL BACKGROUND

Brain Impairments

Some statistical data revealed that 80% of learning happens via vision. Although there is no scientific criterion for such a statement but there are agreements and disagreements (Walline & Carder, 2012).

One of the important strategies in reading is keeping the eyes in-line. Those people with deficiency in control and focus of their eyes usually face with reading problems. In this situation they use their fingers to find their way through paragraph.

There are different lesions of brain which each one happens through damage to spatial part of it which are called alexia, dyslexia, agraphia and etc.

As Cherney (2004) stated:
Disturbances of reading that occur after right-brain damage are typically related in visual processing such as spatial discrimination and unilateral visual neglect, these alexias have been referred to as neglect dyslexia or spatial alexia(p.22).

He (2004) also stated that reading problems which will be happen after left-hemisphere damage originated from some linguistics deficits and is stated as two different points: 1. As an isolated symptoms or a part of aphasia syndrome.

Following Cherney (2004) alexias are classified under investigation of neuroanatomic distinctions. Many years ago two kinds of alexias have been distinguished by Dejerine as alexia with agraphia and alexia without agraphia. In former, damages of left-hemisphere parietal cause some deficiencies and the latter originated from occipital damages together with damage to the splenium of the corpus callosum. Newly, another kind of alexia has been proposed which is called frontal alexia elicited from anterior lesion in the left-hemisphere.

Anxiety

The type of anxiety which occurs during learn a foreign language is unique (Horwitz etal., 1986; Mac Intyre and Gardner, 1989). Learners in these classes may represent poor performance which reduces their information via learning situations. Even some students which have high level of anxiety, mental block may happen (Tobias, 1979).

Hilleson (1996), in his diary stated that anxiety can go on different skill areas. His participants represented a range of anxiety which in not limited to speaking or listening but reading and writing. In some studies, reading anxiety has been investigated clearly. Via FLCAS (Foreign Language Classroom Anxiety Scale) and FLRAS (Foreign Language Reading Anxiety Scale), Saito et al., (1999) examined a link between foreign language anxiety and foreign language reading anxiety among learners of Japanese, French, and Russia. They found that it is also so hard to make a boundary between FL reading anxiety and FL anxiety.

In a Study Horwitz et al. (1986) tested 75 English learners of Spanish at an American University, using FLCAS found that learners experienced a major foreign language anxiety which affected their performance in that language. The results revealed that those learners with high level of anxiety afraid of speaking in the target language and even they got nervous when speaking it.

In order to improve the abovementioned results, let's check another study in this case. Aida (1994) and Kitano (2004) focused on the relationships between language anxiety and Japanese language learning. It revealed that some amount of anxiety existed in Japanese classroom which it affected learners performance. Aida (1994) also found that learners experience in target language situations is effective on anxiety reduction.

Physical Environment

Classrooms and schools are some places more than living for a special period of time, but they can have some significant emotional feelings. A viewpoint believes that designing educational school and classrooms could help learners in their identities. This idea stated that environment have some impacts on cognitive and behavioral development of the learners (Ellis, 2007).

Moreover, physical conditions of learning situations play an important role during reading. Some researchers examined the physical environment of learning and following results elicited:

1. Temperature, heating, and air quality are some factors which affect the learners` achievement (Earthman, 2004)
2. Noise of exposure cause some reading problems (Higgins et al., 2004)
3. Using visual aids provides success in what learners achieved (Culp, 2006)

Reading & Eye movement

One of the factors which affect reading is word frequency. The time the readers look as a word is influenced by the frequency of the word in the language (analyzed by corpus data). Rayner (1977) found that t he fixation time of readers on infrequent words are more than frequent ones and also Carpenter (1980) reported such similar findings on word frequency. Some studies found that the frequency of orthographic neighbors will affect the ability of word recognition. Andrew (1989) believed that it relates to lexical similarity of neighbors.

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Although two words may have same frequency value, they may differ in familiarity. The effects of word familiarity on fixation time have been determined in some recent studies (Chafin, Morris, & Seely, 2001; Juhasz & Rayner, 2003; Williams & Morris, 2004). There are other factors like number of meaning and age-of acquisition which is out of the patience of this paper.

There are two schemes on analyzing some words during reading. There is an interesting question on how does the word ART, is arranged in A, R, T, and no more else. There are two different coding approaches on the point. One of them is the channel-specific scheme. In this model it is hypothesized that in every string position exists different sets of letter units. For example, there are separating units representing ``A`` in first position, in second position and so on. In context-unit encoding this is not based on a single letter, but a group of letters. For example in this case the word ART never showed in A-R-T but –AR, ART, or RT-. The – symbol represents word boundary. The second scheme of encoding includes letter-tagging, in which a single letter can occupy any position and the position is numbered in which a word is read. For example, ART would represents as `A-1`, `R-2`, `T-3`.

When people read, look at a special place, or search for an object, the eyes continually moved which is called saccades. During this, the eyes remain relatively during fixation for about 200-300 ms. Saccades are rapid movements of the eyes with velocities as high as 500• per second. During eye movements, the visual input sensitivity is reduced. This phenomenon called saccadic suppression (Matin, 1974 ; Rayner, 1998).

Two important findings of eye movement and reading are 1. Fixation time on a word is shorter if the reader has a valid preview of the word prior to fixating it, and 2. Fixation time is shorter when the word is easy to identify and understand (Clifton, 2003).

Jonson (elicited in Rayner et al., 2006), provides some information based on the preview information and represented that transposed letters are more affective previews than substituted letters. It also revealed that special letters identities are important in preview benefit.

There are differences between eye movements of reading silently and reading aloud. During reading aloud, or reading silently while listen to someone which reads the same text, fixation duration are longer (Levy-Schoen, 1981). While reading English, eye fixation lasts about 200-250 ms. Letter spaces are the appropriate metric to use, because the number of letters traversed by saccades is relatively invariant when the same text is read at different distances, even though the letter space subtend different visual angles (cited in Rayner, 1998).

In previous paragraphs roles of some factors which influence the learning, has been investigated. The focus of this study is to considering the role of eyes during reading. For example why learners in some situations pronounce bike instead of like? As it is mentioned above, in most of the situations brain impairments may cause such a problem, or factors like anxiety and learning environment play the role of negative affection. This study examined learners reading of paragraphs within minimal pairs to determine that anxiety, and other negatives are not the only factors in reading disabilities. The present investigator of this research provided a small community of the learners in a user-friendly place in order to reduce the negative affections. Based on the above mentioned idea, the research question which is addressed here includes: Does in user-friendly environments which negative affections has been removed generally, learners may face with reading or learning disabilities? Following research question a null hypothesis is stated: learners may face with some reading and learning problems in some user-friendly places.

METHOD

Participants

The study was carried out with the involvement of twenty intermediate Iranian EFL learners, divide in pattern of 7 males and 15 females. Five of females were high-school students. All other remained males and females had academic university degrees in different majors. The age scale widened over 16 years old up to 40 years old.

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Instruments

This study made use of following instruments in order to gather more information:

1. Some minimal pairs has been selected and distributed to the learners in order to read and write.
2. After the end of experiment some interviews had done to investigate the emotional feeling of the learners during reading.

Procedures

To conduct the study the researcher started to read the special minimal pairs which selected already, and asked learners to repeat, read and write them. The purpose of such exercise was to make learners eyes familiar with the words which differ in just one phoneme or letter.

After working on minimal pairs some paragraphs were given to the learners contained the words on the minimal pair list but through some correct semantically and grammatically sentences. The purpose of this exercise was to determine the role of eyes during reading.

And finally researcher interviewed the learners in order to consider their general health and also emotional feelings that he/she had on reading time.

Data Analysis

The first step in this part is the analysis of data on the basis of correct pronunciation of words and wrong pronunciation of them. As it is observed from Table 1, the mean difference of learners on the basis of words pronunciation is so high, i.e. , most of the words pronounced by the learners were correct words.

Table 1: Descriptive Statistics for Wrong and Correct Pronunciation of Words

		C.pronunciation	W.pronunciation
N	Valid	20	20
	Missing	0	0
Mean		37.65	2.35
Variance		2.239	2.239

Table 2: Statistics for Correct Pronunciation of Words During Reading

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	35	1	5.0	5.0	5.0
	36	4	20.0	20.0	25.0
	37	5	25.0	25.0	50.0
	38	4	20.0	20.0	70.0
	39	3	15.0	15.0	85.0
	40	3	15.0	15.0	100.0
	Total	20	100.0	100.0	

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Table 3: Statistics for Wrong Pronunciation of Words During Reading

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3	15.0	15.0	15.0
	1	3	15.0	15.0	30.0
	2	4	20.0	20.0	50.0
	3	5	25.0	25.0	75.0
	4	4	20.0	20.0	95.0
	5	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

In order to earn more details on the basis of significant level, one-sample test had been stated and the result revealed that practicing minimal pairs before reading section cannot be effective on the pronunciation of wrong similar words instead of their correct forms.

Table 4: One-Sample Test for Wrong pronunciation

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
W.pronunciation	7.023	19	.000	2.350	1.65	3.05

Table 5: One-Sample Test for Correct Pronunciation

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
C.pronunciation	112.514	19	.000	37.650	36.95	38.35

Of course some interviews have been investigated and following reports were revealed: a. one of the learners with reading problems had a car accident two days before the examination session. The two other learners used eye-glasses and I think it was their problem to read problematically. Other learners with reading problems have not special problem.

CONCLUSION

This study has been followed some purposes: 1. Most of the times, psychological and environmental factors are not the only source of errors during reading. 2. Brain damages cannot always be faulty in wrong pronunciation of words during reading. 3. Sometimes remembering the similar words previously in the same sequence makes eyes faulty during pronunciation of words which differs in one or two phoneme (s).

Suggestion for further research

Since the sample size of this study was small, it is problematic to generalize the results to whole community of learning, thus more research is needed in this point. The other suggestion is that some qualitative reports are

not sufficient to investigate such studies, some tests had been designed which measure the sources of errors in details which all the researchers can use them in other studies.

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