

**Research Article**

**Effectiveness of Awareness of Inter-Syllabic Units on Solving Problems of  
Dyslexic Students in Second Grade of Primary School, Baneh,  
Academic year 2014-15**

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**ABSTRACT**

The aim of this study was to investigate the effects of inter-syllabic units' awareness on solving the problems of dyslexic students in second grade of primary school in Baneh in the academic year 2014-15. This study is applied in terms of objective and quasi-experimental in terms of control over variables. The study method was pretest and posttest with a control group. Statistical population included all students with dyslexia in second grade referring to learning disorders center in Baneh. They were 76 people who were included in two groups of 38 subject: test and control groups. The experimental group passed training through awareness of inter-syllabic units in 15 sessions and the control group received no training. The results showed that awareness of inter-syllabic units improves reading in dyslexic students. The possible applications: The results will be very useful for all teachers in the schools and learning disorders centers. It is also very helpful for the Ministry of Education to develop educational and rehabilitation programs for normal schools and learning disorder centers.

**Keywords:** Inter-syllabic units, reading problems, dyslexia

**INTRODUCTION**

Reading is one of the major ways to acquire knowledge. Every individual in society is compelled to read a lot of texts. For this reason, in most societies, literacy of reading and writing is the key to educational success and children who are weak in reading are a very vulnerable group in learning various courses in all academic years and then which leads them to have negligible improvements in the education (Maughan, 2009, 1). But learning to read is difficult for some children despite normal intelligence, proper educational opportunities and

lack of emotional disorders (Yousef Zadeh, 2011).

The reading age of these children lags behind their chronological age two years or more. These children are called dyslexic children. Dyslexia is the most common and most important learning disability among children. It is diagnosed with difficulties in decoding words, the low ability to in phonemic processing skills and different problems in the field of written language. The prevalence of the disorder occurs in the ages of 6 (British Psychological Society: BPS). Dyslexia is

stemmed problems in reading and spelling words (Harts D., 2006; quoted by Seddaghati et al., 2010). The World Health Organization considered lag or delay in learning to read as dyslexia despite adequate training programs, normal intelligence and adequate social - cultural opportunities. Students with dyslexia problems have problems in recognition of letters (Walesh, Estein, 1997, as quoted by Gregor et al., 2003) word recognition, vocabulary words, remembering numbers, letters, preposition, deletion and perception (Gregor et al., 2003). Slow reading, spelling problems (Wagner, 1987; Forman, 1994, Hari, 1990; quoted by Miller, 2005), poor spelling skills (Covegrove, 1992; quoted by Miller, 2005) problem of memory (Miller, 2005, Hoeks, 2005), are other problems of dyslexic students.

Currently, dyslexia is the most common learning disorder, and includes about 80% of the total incidence of learning disabilities. Since reading is the basis for literacy and prerequisite for learning other skills, so far, various programs and teaching methods and various treatments have been developed to rehabilitate dyslexic children and many studies have been done in this area. In this study, different aspects of dyslexia, including environmental - neurological aspects, cognitive - educational aspects are considered to call for explanation and definition of issues related to this disorder, especially in areas of cognition of this disorder and its neurological and biological foundations.

Among the explanations offered include cognitive theories. Theorists such as Piaget and Bruner believe that the non-verbal growth is a basis for verbal growth and when the balance and communication of normal verbal and non-verbal development is interrupted, the patient will be inefficient in learning and is likely to use a system which is better developed to solve problems. Also some psychological theories such as the hemispheric dominance theory by Orton concentrates on the assumption that no

prominence of one side of the brain on the other side causes impaired speech, writing and reading. Modifying hemispheric dominance, with the help of a targeted move to treat the disorders are recommended. It is a developmental approach raised by people like Kpart, Goteman and Burch with the belief that motor learning, motor system and cognitive system are communicational bonds between learning.

Reading is one of the major ways to acquire knowledge. Everyone in the community is forced to read a lot of texts. For this reason, in most societies, literacy of reading and writing is the key to educational success and children who are weak in reading are a very vulnerable group in learning courses in all academic years and then which leads them to have negligible improvements in the education (Maughan, 2009). But learning to read is difficult for some children despite normal intelligence, educational opportunities and lack of emotional disorders, (Yousefzadeh, Yaghoubi and Rashid, 2011).

The reading age of these children lags behind their chronological age two years or more. These children are called dyslexic children. Dyslexia is the most common and most important learning disability among children. It is diagnosed with difficulties in decoding words, the low ability to in phonemic processing skills and different problems in the field of written language. Prevalence of this disorder is 12% in ages 6 to 10 years old, and boys suffer this disorder 6.1% more than girls. On the other hand, Behdad (2005) reviewed the results of research conducted in Iran and reported the prevalence rate as 8.5% and boys suffer from dyslexia 1.1 to 2.2% more than girls (quoted from Bahari, 2007).

Phonological processing includes retrieval, storage, analysis and manipulation of phonological codes. Abilities of phonological processing models include phonological awareness, phonological working memory and rapid automatic naming.

This issue that the defects and phonological awareness is a basic cause in dyslexia is widely confirmed in several languages. In several studies, phonological awareness is a good predictor of reading problems. Children who are delayed in the development of phonological awareness are likely to be at risk of dyslexia. A significant number of studies have shown that in children at risk for dyslexia, at least one parent is dyslexic and has phonological difficulties. Unfortunately Dyslexia is prevalent among students. This causes other disorders such as spelling and math disorders. And the disorder can also be called mother disorder.

#### **Necessity and importance of problem**

Knowledge of the inter-syllabic units is a term that refers to the knowledge of the sound structure of spoken language. Children who know that sounds in language represent letters used in reading and writing, typically are more comfortable in reading than children who do not know. Researchers believe dyslexia in children is due to delays in development of phonological awareness skills or phonological awareness. The reason for this lack of understanding of the dyslexics is the ability to combine and decide for words and phonemes. For this reason, one cannot easily change and distinct between parts of words or sounds, and recognition and decoding words is difficult. As a result, accurate and fast reading does not occur. In fact, awareness of inter-syllabic units is the ability to hear and manipulate the smallest unit of sound in the language. It is a key to learn to read for children who would normally evolving and growing. Thus, training phonological awareness abilities increases phonological awareness skills, and a person can be aware of phonological awareness about the sound and phonological structure of spoken language, which, in turn, improve reading skills. It is therefore important to identify the problems in phonological awareness and performing intervention programs. It can be said

that phonological awareness training allows you to manipulate the phonological component of language and thereby, can convert the phonemes to written text and achieve the meaning. Accordingly, the acquisition and use of such knowledge in cognitive structure helps him to read quickly and accurately. Phonological awareness skills are strong predictors of reading skills and it is even said that this skill is stronger in anticipation of reading skill than intelligence, vocabulary and listening comprehension. Therefore, normal children should be taught phonological awareness before pre-school. This is because phonological awareness occurs later in children with reading difficulties.

Since sometimes opportunities pass very quickly and students have difficult in reading. The best restorative and assistive practice after assuring their normal intelligence is finding inter-syllabic units that is part of phonological awareness. With this, dyslexia is resolved and we will stop other disorders and ultimately we can contribute to increase growth and motivate students.

#### **Research background**

Zeinab Abbasi (2011) conducted a research entitled “study of the effect of phonological awareness training on speed, accuracy and reading comprehension of dyslexic students in second grade of elementary school. The statistical population was all dyslexic girl students of the second grade of elementary schools in Kermanshah in the academic year 2011-12. Cluster sampling method was used to select sample. After identifying dyslexic children, 30 of them were chosen and were randomly divided into two experimental and control groups. Then, for the experimental group training sessions of phonological awareness were held and the control group received no intervention. Analysis of covariance was used to analyze the data and according to the results, it can be said that teaching phonemic awareness improves reading in students with dyslexia.

Joler (2002, quoted by Shakiba, 2002) in a study entitled "improved reading in students with multi-sensory method in one of the schools in Illinois State, which in this study, the experimental group were trained in the traditional way. The results showed that students in the experimental group increased their level of verbal fluency and word recognition also increased in them and answered question about comprehension correctly more than the control group.

Atiyeh Ashtari (2010) conducted a study entitled "evaluation and comparison of phonological awareness and rapid naming skills in dyslexic and normal children" on 58 children in second grade of the primary school of Tehran. 28 were dyslexic and 30 normal subjects. Assignments used in this study were phonological awareness test (Dastjerdi, 2002). All information collected in this study were analyzed using independent t-test and Mann-Whitney test. The correlation between phonological awareness and rapid naming skills was studied using Pearson and Spearman correlation coefficient tests in subject groups. The findings of this study is as follows: The results of the test indicate that there is a significant difference between two dyslexic and normal groups and dyslexic group in both skills is weaker than normal groups. Also, in this study there is no significant correlation between phonological awareness and rapid naming skills. The results also consistent with many previous research indicated that presence of difficulties in phonological awareness and rapid naming in dyslexic individuals. From this point of view, the lack of a significant correlation between the two skills show that naming speed is independent of the phonemic awareness.

Zahra Soleimani (2010) in a study entitled "comparative study of the role of morphological awareness in speed and accuracy and reading comprehension of dyslexic and normal children in second grade of primary school", 27 dyslexic and 57 normal students in second grade of

primary school were participated. Presence or absence of dyslexia was determined using reading and dyslexia test and also TOLD language development test was used for presence or absence of language disorders in each group. Phonological awareness test was used to evaluate the morphological knowledge and the texts of subtests were used in text comprehension test to determine the speed, accuracy and reading comprehension. Data obtained were analyzed using inferential statistics such as Pearson and Spearman correlation coefficient, Kolmogorov normality test, and t-test. The research findings are as follows. In whole sample, correlation between morphological awareness and reading speed was obtained 0.91 and reading accuracy 0.95 and between morphological awareness and reading comprehension 0.92 respectively. These values indicate that the correlation is high between morphological awareness and each reading component. Correlation coefficient in children group was 0.68 and 0.14 and 0.10, respectively and showed the significance.

Results obtained are as follows: morphological awareness - speed - accuracy and reading comprehension in dyslexic children are weaker compared to normal children and is as one of the aspects of language that can affect the speed - accuracy and reading comprehension. Despite, in dyslexic group which problems are at surface of word such as dyslexic group of case study, morphological awareness will have no influential role in their reading skills including speed - accuracy - and comprehension.

## **METHODS**

This study is experimental with pretest and post-test and control group. The study statistical population is all students in second grade of elementary school in Baneh with dyslexia disorder. Among these students, 76 were randomly selected. The 76 are organized in two groups of 38 named experimental and the control group. Then all students undergo children

Kessler intelligence test. Then, we perform the phonological test of Mr. Soleimani on students. Three sessions will be assigned to this work. Then, 38 subjects in the experimental group were trained through direct instruction of phonemic awareness and 38 subjects in the control group were trained using common practices. 15 sessions are intended for this training. After the end of 15 sessions, all the 76 samples will undergo post-test i.e. phonological awareness test for the second time, and then the results will be compared.

**Independent variable:** In this research, knowledge of inter-syllabic units and the dependent variable is reading of dyslexic students. Of course, their relationship will be examined in one main hypothesis and three sub-hypotheses.

To analyze the data, the following methods are used: 1. Descriptive statistical methods such as frequency, percentage, mean and standard deviation 2. Covariance analysis and 3. Cronbach's alpha. Before we examine the hypothesis, it should be noted that Cronbach's alpha value in this study is equal to 0.756 which is acceptable.

## RESULTS

Given that in this study we have the two groups control and experimental and we did pre-test and post-test for both of these groups. On the other hand there is a high correlation between pre-test and post-test, covariance analysis was used.

But to detect whether or not the research data are normal, Kolmogorov-Smirnov test and Shapiro Wilk are used.

**Table 1.** Kolmogorov- Smirnov and Wilk - Shapiro tests

	Kolmogorov – Smirnov			Wilk - Shapiro		
	Statistics	Degrees of freedom	Significance level	Statistics	Degrees of freedom	Significance level
Pre-test of syllable detection	219.0	76	08.0	206.0	76	06.0
Post-test of syllable detection	186.0	76	07.0	242.0	76	055.0
Pre-test of heterogeneity detection	155.0	76	11.0	182.0	76	09.0
Post-test of heterogeneity detection	153.0	76	13.0	174.0	76	105.0
Pre-test of rhyme detection	175.0	76	075.0	193.0	76	07.0
Post-test of rhyme detection	141.0	76	14.0	164.0	76	08.0
Pre-test of inter-syllabic units awareness (general)	178.0	76	072.0	195.0	76	069.0
Post-test of inter-syllabic units awareness (general)	143.0	76	14.0	167.0	76	078.0

As can be seen in Table, significance level for all tests is greater than 0.05, so we accept the data normality at 0.05 level.

Main hypothesis: awareness of inter syllabic units is effective in improving dyslexia in dyslexic students in second grade of elementary schools in Baneh.

**Table 2.** Statistical indicators of inter-syllabic awareness for both control and experimental groups

Groups	Mean	Standard deviation	Frequency
Control	4.8	76.3	38
Experiment	73.24	46.4	38

**Table 3.** Analysis of variance to examine the impact of inter-syllabic awareness in improving dyslexia in second grade elementary students with dyslexia in Baneh

Source of changes	Sum of squares	Degrees of freedom	Mean squares	F	Significance level
Groups	235.429	1	235.429	254.32	0
Error	411.359	73	92.4		
Total	10711	76			

Given that the significance level is zero and this amount is less than 0.05, we accept the hypothesis that knowledge of inter-syllabic units is effective in improving dyslexia in dyslexic students in second grade of elementary school in Baneh.

First sub-hypothesis: awareness of syllables is effective in improving dyslexia in dyslexic students in second grade of elementary schools in Baneh.

**Table 4.** Statistical indicators of awareness of syllables to both control and experimental groups

Groups	Mean	Standard deviation	Frequency
Control	2.3	93.1	38
Experiment	87.8	64.1	38

**Table 5.** Analysis of variance to examine the impact of awareness of syllables in improving dyslexia in second grade elementary students with Dyslexia in Baneh

Source of changes	Sum of squares	Degrees of freedom	Mean squares	F	Significance level
Groups	503.72	1	503.72	434.21	0
Error	332.91	73	25.1		
Total	1221	76			

Given that the significance level is zero and this amount is less than 0.05, we accept the hypothesis that knowledge of syllables is effective in improving dyslexia in dyslexic students in second grade of elementary school in Baneh.

Second sub-hypothesis: awareness of heterogeneity is effective in improving dyslexia in dyslexic students in second grade of elementary schools in Baneh.

**Table 6.** Statistical indicators for awareness of congruence to both control and experimental groups

Groups	Mean	Standard deviation	Frequency
Control	53.2	06.1	38
Experiment	67.7	68.1	38

**Table 7.** Analysis of variance to examine the impact of awareness of the heterogeneity in improving dyslexia in second grade elementary students with dyslexia in Baneh

Source of changes	Sum of squares	Degrees of freedom	Mean squares	F	Significance level
Groups	229.49	1	229.49	84.34	0
Error	151.38	73	523.0		
Total	1033	76			

Given that the significance level is zero and this amount is less than 0.05, we accept the hypothesis that knowledge of heterogeneity is effective in improving dyslexia in dyslexic

students in second grade of elementary school in Baneh.

Third sub-hypothesis: awareness of rhymes is effective in improving dyslexia in dyslexic students in second grade of elementary schools in Baneh.

**Table 8.** Statistical indicators of the variable of awareness of rhyme to both control and experimental groups

Groups	Mean	Standard deviation	Frequency
Control	3.3	57.0	38
Experiment	56.7	57.0	38

**Table 9.** Analysis of variance to examine the impact of awareness of the heterogeneity in improving dyslexia in second grade elementary students with dyslexia in Baneh

Source of changes	Sum of squares	Degrees of freedom	Mean squares	F	Significance level
Groups	503.72	1	503.72	434.21	0
Error	332.91	73	25.1		
Total	1221	76			

Given that the significance level is zero and this amount is less than 0.05, we accept the hypothesis that knowledge of rhymes is effective in improving dyslexia in dyslexic students in second grade of elementary school in Baneh.

### DISCUSSION AND CONCLUSION

In this section, some topics, methodology and analyses are provided in the preceding discussion and we conclude and discuss about the questions raised in the paper. Whether our hypotheses are confirmed or not. Similarly, after noting the limitations of the study, we will have recommendations for researchers and professors of universities and higher education institutions and the Ministry of Education.

First sub-hypothesis: awareness of syllable is effective in solving dyslexia in dyslexic students in second grade of elementary schools in Baneh.

To investigate this sub-hypothesis, by analyzing the relationship between awareness of syllables and dyslexia, we come to the conclusion that awareness of the syllable is effective in solving reading problems of dyslexic students. So, results of this part of the research is consistent with the results obtained in study by Zahra Soleimani (2010) entitled “Comparative study of the role of awareness of syllables and reading comprehension in dyslexic and normal students in second grade of elementary schools.

Second sub-hypothesis: awareness of heterogeneity is effective in improving dyslexia in dyslexic students in second grade of elementary schools in Baneh.

To investigate this sub-hypothesis, by analyzing the relationship between awareness of heterogeneity and dyslexia, we come to the conclusion that awareness of the heterogeneity is

effective in solving reading problems of dyslexic students. So, results of this part of the research is consistent with the results obtained in study by Zahra Soleimani (2010) entitled "Comparative study of the role of awareness of syllables and reading comprehension in dyslexic and normal students in second grade of elementary schools. Third sub-hypothesis: awareness of detecting rhymes is effective in improving dyslexia in dyslexic students in second grade of elementary schools in Baneh.

To investigate this sub-hypothesis, by analyzing the relationship between awareness of detecting rhymes and dyslexia, we come to the conclusion that awareness of detecting rhymes is effective in solving reading problems of dyslexic students. So, results of this part of the research is consistent with the results obtained in study by Zahra Soleimani (2010) entitled "Comparison between phonological awareness and naming speed in dyslexic and normal students".

#### RECOMMENDATIONS

1. Ministry of Education and the Ministry of Exceptional Education are recommended to change the intelligence and diagnostic tests so the diagnoses are performed accurately and appropriately in the centers for learning disabilities.
2. Given the significant relationship between awareness of inter-syllabic units and solving reading problems, colleagues working in centers for learning disabilities are recommended to use it to solve dyslexia in students.
3. Dear Parents of children with dyslexia are recommended to refer to centers of learning disabilities across the country to solve the problem of their children.
4. Caring school teachers are recommended to immediately refer students with Dyslexia for treatment to learning disorders centers.

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