International Journal of Foreign Language Teaching and Research
ISSN: 2322-3898-http://jfl.iaun.ac.ir/journal/about

Please cite this paper as follows:
Garavand, S., Khoshbakht, T., Azizifar, A., & Welidi, Sh. (2022). Impact of Cognitive Intervention Instruction on the Phonological Awareness of Dyslexic Students at Primary Schools. *International Journal of Foreign Language Teaching and Research, 10* (43), 167-177.

Research Paper

Impact of Cognitive Intervention Instruction on the Phonological Awareness of Dyslexic Students at Primary Schools

Saadi Garavand[1], Tayyebeh Khoshbakht*[2], Akbar Azizifar[3], Shahram Welidi[4]
[1]Ph.D. Candidate, Department of English Language and Linguistics, Ilam Branch, Islamic Azad University, Ilam, Iran
Saadi1351@gmail.com
[2]Assistant Professor, Department of English Language and Linguistics, Ilam Branch, Islamic Azad University, Ilam, Iran
Khoshbakht_ta@yahoo.com
[3]Assistant Professor, University of Medical Sciences, School of Medicine, Ilam, Iran
Aazizifar2@gmail.com
[4]Assistant Professor, Department of English Language and Linguistics, Ilam Branch, Islamic Azad University, Ilam, Iran
Shahramwelidi@gmail.com

Received: July 07, 2022 **Accepted: September 22, 2022**

Abstract
This experimental research centered on considering the effect of cognitive intervention instruction on the phonological awareness of Iranian dyslexic students at primary schools. For this purpose, 32 male and female students between 8 to 11 years of age with 90 to 110 IQs average, were purposefully selected from primary schools and randomly assigned to a control group and an experimental group. Wechsler Intelligence test (WIT), Karami and Noori (KNT) test, and a cognitive intervention package were used as tools in this research. Then, to check the participants' phonological awareness, (KNT) measurement was applied to the students. The covariance analysis of the resultant data showed that this package was effective on the phonological awareness of the experimental group after receiving the cognitive intervention package in contrast to the control group. The independent sample t-test also showed that there was no statistically meaningful difference between dyslexic male and female students in the experimental group regarding phonological awareness. The findings recommend that instructors at primary schools should teach the students to use cognitive intervention programs in phonological awareness to accelerate and do their more effective homework and develop productive insights into their phonological awareness.

Keywords: *Cognitive intervention instruction, Dyslexic students, Primary schools, Phonological awareness*

بررسسه تتثیر آموزش مماخله شننخ تت بب گگهی و اشننخ تت دانش آموزان ننرررخوان ممارس ابتتا یی
ا یی پژووش آزمایشی با طرح پیش‌آزوو- پس‌آزوو با ه دد بررسی تأثیر آموزش مداخله شناختی بر آ اای واج‌شناختی دانش آموزان نارساخو اا ایرانی در پایه سوم ابتدایی انجام‌شش. 32 ددنش‌آوز دختر و پسر 8 تا 11 سال، با میانگ یی ضریب هوشی 90 تا 110، در یک گروه کنترل و یک گروه آزمایش به‌صو رر تصادفی انتخ ااشدند. آزوو هوش کودک اا ووسلر (WIT)، آزوو کرری و نوری (KNT) و بسته مداخله شناختی به‌عنو اا ابزار دد این پژووش مور.استتاده قرار گر فف. سپس، بر.ی سنجش آ اای واج‌شناختی دانش‌آوز اا در دو مرحله پیش و پس‌آزوو، از آزوو خواندن و نارساخوانی(ننا) در ب یی دانش آوز اا استتاده شد. تحلیل کوواریانس نشان‌داد که بسته مداخله شناختی بر آ اای واج‌شناختی دانش‌آوزان گروه آزمایش پس از دریافت بسته مداخله شناختی در مایسه با گروه کنترل مؤثر بود (p<0.01). آزوو تی نونه مستتل نی. نشد اا داد کک ب یی دانش‌آوز اا دختر و .سر نارساخو اا گروهز زایش، ازنظر مشکل آ‌آاهی واج‌شلاختی و آموزش مداخله شناختی، تـ وو ممنی‌دار وجود ندا شـ. ا .. نتا یی بب مربیی اا مدارس ابتدایی پیشنناد ملاِلاد تت به دانش‌آوزان‌سیااوی‌ند کـ. ذ اونه بب آ .. اا. شد.ررہ شذن.ی مم تـ ار بب آر اا ا وه .شو یدی زر استتاده کنند و تکالا یی مؤثرتر خود را انجام ددند و بینش‌های سازنده اا را دد آگ اای واج‌شناختی خود ایجاد کنند.
واژگگن‌ککییی: آموزش مداخله شناختی، آ اای واج‌شناختی، دانش آموزان نارساخو اا، مدارس ابتدایی

Introduction

Phonological awareness knowledge is an internal ability to help students to think about the sound structures of language (Gillon, 2000). Phonological awareness permits students to discriminate, remember and manipulate sounds at the sentences, words, syllables, and sound levels (Seki, 2008). More specifically, phonological awareness is the power to realize and play with sounds in spoken language (Webster & Plante, 2010). It is an essential skill that underlies a student's ability to learn to read and spell (Laing & Espelan, 2005). Students cannot begin to connect the sounds of their language to letters and letter combinations without strong skills in phonological awareness (Lemon & Fuchs, 2010). In fact, students must be able to isolate and blend sounds into word parts to learn to read as well as spell (Kjeldson & Olofsson, 2003).

Students who experience problems with phonological awareness actually have difficulty relating environmental sounds with specific things because for dyslexic students at primary schools, this is a very challenging task in their difficulties in decoding and encoding (Kjeldson & Olofsson, 2003). Students who experience problems with phonological awareness often cannot play with sounds (Konaz, 2010). These learners may have difficulty with letter reading and spelling. They are slow learners to learn the ability to pronounce words in written language (Klingner & Vaughn, 2015). Clearly, students with poor phonological skills are not good at understanding how letters and letter patterns play to represent language in written form (Rose, 2009). In reality, phonological awareness problems can be related to dyslexia which is a specific learning disability (Thomson, 2013). Dyslexic students are not able to pronounce the sounds satisfactorily. They have difficulties with accurate, fluent word recognition, spelling, and decoding abilities (Wray, 2016).

Consequently, students with phonological skills problems need much more adequate instruction to practice because deliberate instruction makes it easier for dyslexic students to develop their phonological awareness (Van Riper & Erickson, 2018). Therefore, a cognitive intervention package instruction as an innovative intervention is necessary for learners who do not make adequate progress with phonological skills. Cognitive intervention package instruction is effective in developing phonological awareness, practicing associating sounds, and spelling patterns, and practice decoding words (Leather .& Henry,2013).

Purpose of the Study

Whereas learning phonological components for Iranian dyslexic students at primary schools is to some extent difficult and takes a considerable amount of time and effort to learn well, it is necessary for all dyslexic students to know how to use cognitive intervention in education to read materials more successfully. To help this group of students, some researchers conducted a lot of studies to solve this problem, but the findings of such studies were not the end-all answer to the problems of dyslexic students. Consequently, the present research aimed at investigating the effect of cognitive intervention instruction on the phonological awareness of Iranian dyslexic students at primary schools. Thus, the following research questions were addressed:

Research Questions

Q1. *Is cognitive intervention instruction effective in the phonological awareness of Iranian dyslexic students at primary schools?*

Q2. *Is there any significant difference between Iranian dyslexic male and female students regarding cognitive intervention instruction and phonological awareness at primary schools?*

Review of Literature

Phonological Awareness

Phonological awareness has generally been defined as "a general awareness associated with sounds and phonemes that are in spoken words" (Moats & Tolman, 2019, p.289-394). Phonological awareness clearly draws on letter sounds' knowledge, patterns of sounds, and the capacity to manipulate that knowledge in decoding written words that are unfamiliar to readers (MacCullagh, 2014). Students who experience problems with phonological awareness have two dominant difficulties in the reading process. The first major difficulty that students suffer from is the shortage of explicit instruction and practice in phonological and phonemic awareness. The other major difficulty is problems in the phonological processing system of language (Moats & Tolman, 2019).

Students who experience phonological awareness difficulty usually have these problems:

- They are not able to pay a lot of attention to rhymes and the repetition of sounds
- They are not able to remember how to pronounce words (Casy, 2020)
- They are not able to recognize different sounds in similar words
- They cannot separate syllables in a compound word (Cornwall, 2001)
- They are not able to recognize the first sound in a word
- They are not able to spell a word into its separate sounds
- They do not have the ability to add, subtract and replace sounds in a word
- They are not able to recognize and produce correct sounds based on phonetics and spelling (Cornwall, 2001).

Cognitive Intervention Instruction and Phonological Awareness

Cognitive intervention is one type of learning strategy that good students utilize to learn teaching materials more and more successfully in the classroom (Long & MacBlain, 2007). Repetition, organizing, summarizing, guessing meaning, and using imagery for memorization are cognitive interventions that provide a structure for learning while a task may not be learned by different steps (Wheldall & Rothwell, 2015).

Cognitive intervention instruction supports experienced learners with phonological awareness difficulty to develop internal procedures that enable dyslexic students to perform tasks that are complicated (Wagner, 2011). In fact, one area where cognitive intervention is fundamental is phonological awareness because it can help students who experience phonological awareness difficulty to understand what they read as well as write (Waldie, Austin, Hattie & Fairbrass, 2014).

As a matter of fact, using cognitive intervention instruction on the phonological awareness difficulty in the classroom, "supports the teacher to fulfill an important role in bridging the gap between dyslexic students and skill to be learned" (Moore & Hammond, 2010, p.85-110). Explicit instructions such as independent practice, and verbal and written practice, may also be used for students to help them to make it easier to know how to manipulate cognitive knowledge more successfully because actions that are repeated each time can significantly effect important learning outcomes for students (Stackhouse & wells, 2009).

To consider the possible effect of cognitive intervention instruction on the phonological awareness of Iranian dyslexic students at primary schools, Faramarzi, Ghorbanchian, and Poor Sayyed (2014) in a study considered the effect of the phonological educational intervention on the reading performance of primary students in grade three with developmental dyslexia. The results of this conducted research showed a significant difference ($P \leq 0.001$) between the experimental and control groups. The results of this research also revealed that phonological educational

intervention is effective on the reading performance of dyslexic children and the method can be used to promote such dyslexic children.

In another study, Prusty, Gupta, and Raghavan (2019) investigated the effect of cognitive intervention on academic achievement in children with phonological awareness disabilities. In this research, they came to the conclusion instruction cognitive intervention on the phonological awareness of dyslexic students at primary schools was effective in improving reading and phonological awareness of dyslexic primary students in grades three and four. The results of this research also indicated that after receiving cognitive instruction, the experimental group in contrast to the control group had a considerable development in their phonological awareness scores.

Garavand, Khoshbakht and Azizifar (2022) investigated the effect of cognitive intervention training on elementary school students' reading performance with dyslexia. In this research, descriptive statistics and covariance analysis showed a meaningful difference between the experimental and control groups after receiving the cognitive intervention training ($p < 0.01$). In this conducted research, an independent sample t-test also revealed this program was effective on the students' reading performance with dyslexia, particularly, on reading words, chain words, words, and text comprehension components.

Pahlavan Neshan and Rostami Ravari(2016)considered the impact of phonological awareness training on the speed-reading of boy students with dyslexia. The results of this research showed that the students in the experimental group who received the phonological awareness training over two months significantly increased their speed-reading in comparison to the control group. The results also indicated that teaching cognitive intervention on the speed-reading disability can increase the reading promotion of dyslexic students in reading difficulties.

Mcbreen and Savage (2020) in research investigated the impact of a cognitive intervention program on the phonological awareness of primary school students. The results of this research showed that after receiving the cognitive intervention program, the reading ability of the dyslexic students was improved. The results also indicated that there was no statistically considerable difference between male and female students with dyslexia in the experimental group after receiving the cognitive intervention program.

Methodology

Participants

The randomly chosen participants in this research were 32 dyslexic male and female students in grade three between 8 to 11 years old with 90 to 110 IQs average in control and experimental groups of equal size.

Instruments

The instruments used in the present study are as follows:

Wechsler Intelligence Test (WIT). WIT is a suitable measurement that was first used to examine the students' intelligence between 6 and 12 years old (Zangiabadi, Sadeghi & Ghadampour, 2018). Alpha reliability of the measurement was found 0.88 and 0.85 respectively (Sharifi & Rezaie, 2018).

Karami and Noori Test (KNT). KNT is the test that was first designed by Karami and Noori to examine Iranian dyslexic students at primary schools (Sharifi & Rezaei, 2018). This test involves Reading Comprehension, Reading Words knowledge, Sound Elimination, Letter and Phoneme

Patterns, and Category Mark (Sharifi & Rezaei, 2018). Alpha reliability of the test was found 0.83 in this research.

Cognitive Intervention Package (CIP)

This cognitive intervention package includes:

- Identifying a skillful primary teacher to teach the package
- Drawing students' attention to a task through highlighted material
- Using pencil cues to pay attention to punctuation
- Specifying aids for memorization
- Practicing through verbalization and visual study
- Practicing sounds and phonemes through games
- Teaching students to play sounds and phonemes in print words
- Teaching students to divide, add and subtract the sounds
- Helping students to manipulate sounds in different words (Waldie, Austin, Hattie & Fairbrass, 2014).
- Conducting post- test

Data Collection Procedure

For collecting the required data, firstly, using the Wechsler Intelligence test (WIT), dyslexic students were identified and they were divided into a control and an experimental group. After that, Karami and Noori's (KNT) test was used to measure the students who had experienced phonological awareness difficulty. After manipulating the pre-test in two groups, the Cognitive Intervention Package for 10 sessions was only taught to the experimental group. On the other hand, to consider the differences between the control and experimental groups in phonological awareness a covariance analysis was used. Then, the independent sample t-test also was used to consider the difference between dyslexic male and female students in the experimental group regarding phonological awareness difficulty and cognitive intervention.

Data Analysis Procedure

Using a covariance analysis, the data was analyzed to deliberate the influence of cognitive intervention instruction on the phonological awareness of students. Then, an independent sample *t*-test was used to measure the difference between dyslexic male and female students in the experimental group regarding phonological awareness and cognitive intervention.

Results

The results obtained from the analysis of the data are presented in the following tables:

Table 1

Mean and Standard Deviation in the Control Group in Pre- and Post-Tests

	Pre –Test			Post-Test	
Component	N	Mean	Std. Deviation	Mean	Std. Deviation
Phonological awareness	16	15	1.86	14.49	1.48

Table 1 above clearly presents the number of participants, the means in the pre-and post-tests, and the standard deviation in the control group. The mean of the phonological awareness component in the pre-test in the control group is (mean=15) while the mean of phonological

awareness in the post-test in this group is (mean=14.49). This means that there is no meaningful difference between the means of the two groups.

Table 2

Mean and Standard Deviation in the Experimental Group in Pre- and Post- Tests

Pre-Test			Post-Test	
N	Mean	Std. Deviation	Mean	Std. Deviation
16	15.63	1.59	19.81	1.97

Based on the means in the pre-test and post-test and standard deviation in the experimental group, the phonological awareness mean in the pre-test is 5.63, while the mean of this component in the post-test in this group is 19.81. This means that the mean for the experimental group in the post-test is higher than the mean for this group in the pre-test. Therefore, there is a meaningful difference between the means of the experimental group after receiving the cognitive intervention package.

Table 3

Normal Distribution of Phonological Awareness Scores in the Control and Experimental Groups

	Control Group		***Experimental Group***	
Degrees	Statistic Level	Sig.	Statistic Level	Sig.
Pre-Test	0.954	0.59	0.885	0.06
Post-Test	0.956	0.63	0.886	0.06

The above table shows that the distribution of this variable is completely normal and the domain of this distribution number is found at $p<0.05$.

Table 4

Leven's Test in Pre- and Post-Test Stages

Pre-Test Stage		***Post-Test Stage***	
Statisic Level	*Sig.*	*Statisic Level*	*Sig.*
0.159	0.69	0.428	0.52

According to Table 4, the value of the significant level in F is higher than 0.05 ($p\geq 0.05$). Consequently, the homogeneity assumption of variances is completely established. This is to say that conducting the covariance analysis test is statistically logical and perfectly acceptable.

Table 5

Cognitive Intervention Instruction and the Phonological Awareness along with the effect of Pre-Test

Changes	**df**	**Mean**	**F**	**Sig**	**Eta**
Scores	1	7.18	55.9	0.001	0.66
Impact of Variable	1	125.9	981.4	0.001	0.97
	27	0.128	---	---	---

Covariance analysis indicated that the effect of the cognitive intervention instruction on the phonological awareness of the dyslexic students is considerable because the Eta value is $\eta^2 = 0.97$, $P = 0.001$, and $F_{1, 29} = 981.4$.

Table 6
Changes in Phonological Awareness in the Experimental and Control Groups

Groups	Mean & Std. Deviation		Change (Percent)	Dependent T-test	Sig
	Pre-Test	Post- Test			
Experimental	15.63±1.59	19.81±1.97	+26.78	-13.69	0.001
Control	15±1.86	14.49±1.48	-3.4	0.235	0.82

In the above table, covariance analysis clarifies that the effect of the cognitive intervention instruction is statistically more on the phonological awareness of dyslexic students in the experimental group than in the control group.

Table 7
Results of the Independent Sample t-Test

Sig. level	t value	Mean difference
0/76	-0/306	-0/269

Table 7 shows the significant level, *t-value*, and mean difference in the post-test of students in the experimental group. The significant level in this table is more than 5%. In other words, this difference is 95% between the male and female students in the experimental group. It is thus perceived there is no significant difference between dyslexic male and female students at primary schools in the experimental group, in contrast, to the control group in terms of the effect of cognitive intervention instruction on phonological awareness.

Discussion

The obtained results indicated that phonological awareness is affected by cognitive intervention instruction. This finding supports the theory that explicit instructions such as independent practice, and verbal and written practice must be used for students to help them to know how to manipulate cognitive knowledge more successfully. In fact, actions that are repeated each time can significantly impact learning outcomes for students (Stackhouse & wells, 2009). Accordingly, this finding is in line with those in the previous research conducted by Faramarzi, Ghorbanchian & Poor Sayyed (2014), Prusty, Gupta & Raghavan (2019) & Garavand, Azizifar and Khoshbakht (2022).

The results of this research also revealed that cognitive intervention package instruction affects the phonological awareness difficulty of dyslexic students because dyslexic students often are not able to understand similarities and differences of sounds in print words (Anderson & Meier-Hedde, 2011). The results also revealed that cognitive intervention instruction supports advanced learners with phonological awareness difficulty to develop internal procedures that enable dyslexic students to perform tasks that are complicated. So, the results are in line with those of the previously-conducted studies by Faramarzi, Ghorbanchian & Poor Sayyed (2014), Prusty, Gupta & Raghavan (2019), Garavand, Khoshbakht, & Azizifar (2022), Pahlavan Neshan & Rostami Ravari (2016).

The results of the independent sample *t*-test indicated that there was no statistically meaningful difference between dyslexic male and female students at primary schools in the experimental group with respect to cognitive intervention and phonological awareness difficulty. These results are consistent with those of the research previously conducted by Mcbreen and Savage (2020) who concluded that there was no statistically considerable difference between dyslexic male and

female students in the experimental group with respect to cognitive intervention and phonological awareness difficulty.

The present research revealed that cognitive intervention is one type of learning strategy that good students utilize to learn teaching materials more successfully in the classroom, and that repetition, organizing, summarizing, guessing meaning, and using imagery are cognitive interventions that provide a structure for learning while a task may not be learned (Wheldall & Rothwell, 2015). Finally, according to what has been mentioned above, cognitive intervention package instruction is effective in the phonological awareness of dyslexic students such as recognizing sounds, phonemes, sound patterns, and sound and letter correspondence which are affected by cognitive intervention package instruction.

Conclusion

The present experimental research aimed at exploring the effect of cognitive intervention instruction on the phonological awareness of Iranian dyslexic students at primary schools. The results indicated that cognitive intervention package instruction is effective in the phonological awareness of students at primary schools so this significance level was considered $p \leq 0.05$. In fact, the results of covariance analysis revealed that the phonological awareness difficulty of Iranian dyslexic students at primary schools including syllables, sound levels, letter reading and combinations, and spelling are affected by cognitive intervention program instruction. Accordingly, cognitive intervention instruction necessarily plays a key role in accelerating phonological awareness of dyslexic students to know how to use cognitive strategies for language learning.

In addition, the results of this research also indicated when teachers spend sufficient time and interest to use cognitive intervention to accelerate phonological awareness knowledge of the dyslexic students in the classroom, they can better understand and interpret the learning process. Thus, cognitive intervention instruction is undoubtedly useful and productive for all language reading-related elements, especially phonological awareness. This means that the conducting and interpretation of such tasks is not only informative but can even be useful in students' reading and phonological awareness difficulties. Therefore, primary school teachers should know that students with phonological difficulties have some difficulties with phonological processing because of failure in rapid naming, problem in articulation speed, and shortage in the auditory short term (Washburn & Mulcahy, 2014).

The results of this research are only confined to the phonological awareness knowledge of third-grade dyslexic students at primary schools. It cannot be extended to other different elements of reading skills. Based on the results of this research, primary teachers at schools are encouraged to focus more on the effect of cognitive intervention instruction on other types of dyslexia. The major point is that cognitive intervention package instruction on the phonological awareness of dyslexic students at primary schools can play an important part in accelerating phonology awareness knowledge and information, especially, in relation to the acquisition of phonological awareness of dyslexic students at primary schools. Consequently, teachers are urged to advocate concentration on cognitive intervention instruction in the phonological awareness of dyslexic students at primary schools in the classroom.

References

Casy, M.(2020). Dyslexia and reading instruction. The national council for special education (NCSE). Retrieved September 2020 from *https://www.sess.ie/dyslexia-section/dyslexia-and-reading-instruction,1*(2), 1-6.

Cornwall, A.(2001). The Relationship of phonological awareness, Rapid naming and verbal memory to severe reading and spelling disability. J*ournal of learning disabilities*, 25, 532-538.

Dasjerdi Kazemi, R. (2006). What is phonological awareness*? Research on exceptional children journal, 4* (6), 931- 954.

Faramarzi,S., Ghorbanchian,E., & Poor Sayyed, S. R. (2014). The effect of phonological educational intervention on the reading performance of primary students with developmental dyslexia. *Journal of psychology department, University of Isfahan, Isfahan, Iran*,72, 25532-25536.

Garavand, S., Kohshbakht, T., & Azizifar, A. (2022). Effect of cognitive intervention training on the elementary school students' reading performance with dyslexia. *Journal of language and translation*, *12*(3), 207-220.

Gillon, G.T. (2000). The efficacy of phonological awareness intervention for children with spoken language impairment. *Language, speech and hearing services in schools, 31*(3), 126–141.

Karami-e-Noori, R., & Moradi, A. (2005). *Reading and dyslexia test. Tehran, Jahad-e-Daneshgahi Publications, Teacher Training University*

Kjeldsen, A,C., Niemi, P., & Olofsson, A.(2003). Training phonological awareness in kindergarten level children: consistency is more important than quantity. *learning an instruction journal*, *13*(5), 349–365.

Klingner, J.K., & Vaughn, S.(2015). *Teaching reading comprehension to students with learning difficulties. Guilford Publications,* 1-231.

Konza, D. (2010). Understanding the reading process. Retrieved June 2020, from https://www.ecu.edu.au/__data/assets/pdf_file/0009/663696/ SA-DECS_-Understanding-the-Reading-Process.pdf, 1, *1*(0), 1-8.

Laing, S. P., & Espelan,W. (2005). Low-intensity phonological awareness training in a preschool classroom for children with communication impairments, *Journal of communication disorders*, *38*(7), 65–82.

Leather, C., & Henry, L. (1994). Working memory span and phonological awareness tasks at predictors of early reading ability. *Journal of experimental child psychology*, 58, 88-111.

Lemon, C., J. & Fuchs, D. (2010). Phonological awareness of children with down syndrome: Its role in learning to read and the effectiveness of related interventions. *Research in developmental disabilities journal, 31(7), 316–330.*

Long, L., MacBlain, S., & MacBlain, M. (2007). Supporting students with dyslexia at the secondary level: An emotional model of literacy. *International reading association journal, 51(2), 124-134.*

MacCullagh, L. (2014). Study strategies for students with dyslexia. Retrieved June 2021, from HTTP ://www.ccd.edu.au/services/multimedia/StudyStrategies_Dyslexia_LoisMacCullagh_2014 Nov23.pdf,11-25.

Mcbreen, M., & Savage, R. (2020). The impact of cognitive reading intervention on the reading achievement of students at-risk for reading difficulties. *Journal of education for students placed at risk*, 21, 47–59.

Moats, L. C., & Tolman, S. B. (2019). Learning disabilities in the United States: Advocacy, science, and the future of the field. *Journal of learning disabilities*, *27*(3), 289-394.

Moore, W., & Hammond, L. (2010). Using education assistants to help pave the road to literacy: Supporting oral language, letter-sound knowledge and phonemic awareness in the pre-primary year. *Australian Journal of learning difficulties*, *16*(2), 85-110.

Pahlavan Neshan, O., & Rostami Ravari, M.A.(2016).The impact of phonological awareness training on the speed-reading of boy students with dyslexia. *Shenakht Journal of psychology and psychiatry*, 3(2), 94-107.

Prusty, B., Gupta, S., & Raghavan, D. (2019). The effect of cognitive intervention on academic achievement in children with reading disability. *Indian association of health, research and welfare Journal*,7 (5),1532-1443.

Seki. A. (2008) Reading ability and phonological awareness in Japanese children with dyslexia. *Brain & development journal*, 30(3), 179–188.

Sharifi, S., & Rezaie, S. (2018). The effectiveness of working memory training on reading difficulties among students with reading disorder. *Iranian Journal of learning and memory*, *1*(1), 35-44.

Stackhouse, J., & wells, B.(2009). *Children's speech and literacy difficulties: Psycholinguistic Framework. London: whurr Publication.*

Thomson, M.(2013). *Developmental dyslexia. London: whurr publishers.* Van Riper, C., & Erickson, R.L.(1995). *Speech correction an introduction to speech pathology and audiology. Boston: Allyn & Baccon.*

Wagner, R. (2011). Rudolf Berlin: Originator of the term dyslexia. *Annals of dyslexia, 23*(1), 57–63.

Wajuihian, S. (2011). Reading difficulties: An overview.*The South African Optometrist, 70*(2), 89-98.

Waldie, K., Austin, J., Hattie, J., & Fairbrass, M. (2014). Speed and remedial intervention for dyslexia. *New Zealand Journal of educational studies*, 49(1), 23-36.

Webster, P.E., & Plante, A.S. (2010). Productive phonology and phonological awareness in preschool children. *Applied psycholinguistics journal,* 16, 43-57.

Wheldall, K., Wheldall, R., & Rothwell, I. (2015). Reading tutor program. Multi list: A research initiative of Macquarie University. Retrieved July 2021, from http://www.multilit.com/programs/reading-tutor-program/

Wray, D. (2016). *Literacy and awareness.* London: Hodder & Stoughton.

Zangiabadi, M., Sadeghi, M., & Ghadampour, E. (2018). The effectiveness of working memory training on reading difficulties among students with reading disorder. *Iranian Journal of learning and memory, 1*(2), 23-31.

Biodata

Saadi Garavand is a Ph.D. candidate in English language and linguistics at Islamic Azad University, Ilam Branch, Iran. His research areas include SLA and psycholinguistics. He also teaches English courses regarding language teaching and learning to high school and pre-university students in the education system.
Email: *Saadi1351@gmail.com*

Dr. Tayyebeh Khoshbakht is an assistant professor of English language and linguistics at Islamic Azad University, Ilam Branch, Iran. Her research interests mainly lie in issues concerning applied linguistics with an emphasis on teaching English as a foreign language (TEFL). She also teaches courses with respect to applied linguistics at the graduate and postgraduate levels to EFL students. She has various publications in different academic journals.
Email: *Khoshbakht_ta@yahoo.com*

Dr. Akbar Azizifar is an assistant professor of Medical Sciences, at the School of Medicine, Ilam, Iran. His research interests include SLA, psycholinguistics, and sociolinguistics. He also teaches courses related to language teaching, testing, and assessment to EFL students.
Email: *Aazizifar2@gmail.com*

Dr. Sharam Welidi is an assistant professor of English language and linguistics at Islamic Azad University, Ilam Branch, Iran. His research areas include English language and literature, research programs, language teaching, and learning.
Email: *Shahramwelidi@gmail.com*