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# The study of working memory and anxiety in children with dyslexia and normal children

<sup>1</sup>Nahid Hemmat Makan, <sup>2</sup>Parviz Sharifi Daramadi and <sup>3</sup>Fariborz Bagheri

<sup>1</sup>Department of General Psychology, Science and Research branch, Islamic Azad University, Tehran, Iran

<sup>2</sup>Department of Psychology, Allameh Tabatabaiee University, Tehran, Iran

<sup>3</sup>Department of Clinical Psychology, Science and Research branch, Islamic Azad University, Tehran, Iran

## ABSTRACT

*The present research is accomplished in order to study and compare the work memory and anxiety in dyslexia children and normal children. The sample of this research consisted of 30 dyslexia children aged of 9 to 14 years old and 30 normal children in Tehran. The anxiety scale of Spence and revised Wechsler intelligence scale for children in participants were studied. The results of this research showed that there was a meaningful difference between dyslexia children and normal children and dyslexia children had defect in their active memory. The results also showed that the total anxiety, social anxiety, separation anxiety and general anxiety are the same in both dyslexia children and normal children and they weren't different in this regard. The research results could be useful in determining and designing the clinical interventions for children with disabilities in learning.*

**Keywords:** disability in learning, dyslexia, anxiety

## INTRODUCTION

The process of learning is subjected to fairly fixed change in behavior that can be formed due to the results of experiences such as discovery, observation and practice in this regard. In other words, the process of learning is related to the governance of the knowledge or skill leading to adaptation with the environment [5]. The learning process happens when information is being processed and activated by the memory getting saved temporarily in the short term memory. Therefore, the whole process of learning represents the memory; if we forget all of our experiences, the life changes into a collection of temporary experiences and no any bonds could happen between ourselves [4]. The learning disabilities represent a disorder in one or more basic mental processes that is subjected to the use of verbal or written language and can be appeared as the lack of ability in listening, thinking, speaking, reading, and writing, spelling or calculating the mathematic measurements. This kind of issue includes conditions such as perceptual disabilities, brain trauma, incongruent and dyslexia and growth aphasia [25]. The incongruent is a disorder that in despite of the common education, enough intelligence and social situations and suitable cultural issues can be observed in this case [13]. The whole teachers facing with students who cannot read recognize the fact that they have got disability in a confined term of reading and seem to be very annoyed of something and or they are incongruent having reading growth disorders [12]. This group of children may know many words and apply them easily in their conversations but cannot understand the printed symbols of the words as well [25]. However, some pretend that the incongruence is a rare disorder and fairly as a heritage disease coming from due to the neurologically disorders [5]. In addition to the memory, some other learning problems such as anxiety can also impact on these problems that they should be under heavy attention in this regard [10]. Due to some hidden problems in terms of the excitement the children may face with language processing problem titled as the lack of

motivation; thus, it is possible they cannot get diagnosis up to the end of primary school period [10]. Many children complain their stomachache pain and this is one of the most essential sign of having an anxiety as hidden into these children. The most common anxiety disorder in children and adolescents are as followings: anxiety of separation, social anxiety, scare of the school, exam panic [19]. One of the most common features of children with learning disorders in reading has been paid attention by many researchers and theorists. The executive functions/attention is subjected to the deficits in the active memory [15]. Many researchers have shown the weak performance of these children that these children have lower active memory performance than normal children [3, 8, 22, 23]. Other researchers have shown that students with learning disability in reading have other serious problems such as language skills, phonology, rapid naming and producing spoken language [6, 16, 19, 21]. Also, researches about the listening disorder of children have been shown that dyslexia children have problem than normal ones and their listening problem is subjected to the temporal lobe [11, 16]. Different studies have been also shown that dyslexia children suffer from the simultaneous visionary processing disorder making their letter recognition hard [20, 26]. Also, some other researchers have shown that the dyslexia children have signs of growth retard, asthma, chronic neck ache and disability in reading and of course they have weak memory than their the same ages [24]. The researches of Ranmazani (2004), Gharamaleki (2001), Alizadeh (2003), Ahadi et al (2004) have shown that there is a significant difference between dyslexia children and normal ones in terms of their selection-attention, listening-attention and the memory and these children have some problems in the field of executive approaches of attention, language, space-visionary processing and learning. In relation to the importance and significance of achieving the present study, it can be stated that paying attention to the excitement and memory problems and designing some interventions is an essential process in this regard. Also, since these children study in normal classes, they never receive any services in this case and this makes them to be unknown and cannot be recognized by their teachers; for the reason, these children have been labeled as brain-retarded children [20]. In most cases, if the related disorder is being recognized rapidly, the educational drop off can be prevented by many suitable approaches in this case. And this makes them to live like other normal people [20]. Since many researchers have pointed to these disorders in children with learning disabilities, these excitement disorders can be originated from the lack of learning that they can also play a key role in the construction of learning disability and for the reason, these issues should be under more attention by many researchers; hence, the main aim and purpose of the present study is to compare the working memory and children anxiety with learning disability in reading and other normal children at primary school. In order to achieve the present study, the following hypotheses were evaluated and scaled:

- 1- There is a significant difference between the working memory performance of dyslexia children and normal ones.
- 2- There is a difference between the degree of dyslexia children anxiety and normal children.

## MATERIALS AND METHODS

### **Statistical community, sample and research executive method:**

Based on the nature and main aim of the present study emphasizing on the comparison of working memory and anxiety of children with learning disabilities in reading and normal children, the present study is a comparative-causative research in this regard. This research is consisted of two communities of children ranging from 9-12 year old of Tehran Mega City. To select the related participants of the study, matched sampling method based on age, gender and intelligence was applied from the learning disability clinics of Tehran Mega City [18] (30 people were selected in this case). The whole subjects of the group were early evaluated and considered as dyslexia in this regard. Thus, 30 students with dyslexia and 30 normal ones were selected and evaluated in the related study. In addition, both groups were compared due to their intelligence quotient, parents' education, family economical and social situations and not having other equal disorders. In this research, the mean, deviation as well as hypotheses and independent T test were used efficiently.

### **Measuring tool:**

#### **Spencer anxiety questionnaire:**

This scale has been designed by Rapi, Mc Donald and Ingram (2001) for measuring the anxiety disorders and diagnosis of children dysfunctions. This scale is consisted of 45 options measuring children anxiety disorders in six sub-scales as followings: separation anxiety, social anxiety, and scare of open space, practical obsession anxiety, general anxiety and scare of social damage. In the field of validity and reliability of Spencer scale, it is stated that the convergent validity of the related scale has significant correlation with the amended version of the scale, 0.71; the internal assimilation reliability of the scale is also 0.92 and reexamination reliability for 6 months is 0.60. Researchers used internal assimilation method for measuring the Persian version of the scale. Cronbach alpha coefficients for the whole questionnaire at both genders are 0.89, 0.90, and 0.89, respectively that they are preferred degrees in terms of satisfaction psychology term. The validity coefficients of the scale for children are as followings: Ubiquitous anxiety 0.72, social anxiety 0.76, special anxiety 0.79, separation anxiety 0.67 and practical-thinking obsession 0.59, respectively

**Wexler children intelligence scale:**

This scale has been designed by Wexler in 1970 and again has been amended in 1974. Shahim (1985) has normed this scale in Iran. The validity of this scale in reexamination is established between 0.44-0.94 and the coefficients of the sub-scales are 0.43-0.94 in this regard. Wexler verbal intelligence sub-scale has been used for measuring the short term memory at both groups.

**RESULTS**

**Table 1: the results of independent T test in the field of working memory among both groups of dyslexia and normal**

Dyslexia		Normal		Variance equal test		Test of mean of independent groups
M	Dev	M	Dev	F	*df	T
81.57	23.252	95.70	8.396	13.723***	36.436	-3.131***

Based on these results, there is a significant difference between both groups in relation to working memory; that is, dyslexia children have lower working memory than normal children.

**Table 2: the results of independent T test among both groups of dyslexia and normal children**

Dyslexia		Normal		Variance equal test		Test of mean of independent groups
M	Dev	M	Dev	F	*df	T
36.27	12.785	30.63	17.383	1.274*	58	1.430*

Note: according to the lack of establishing equal variances among both groups, the degree of freedom of mean test has been revised in independent group of both children.

The information of table 3 shows the results of independent T test at both groups of children in the field of anxiety. Based on the results, there is no a significant difference between both groups in terms of anxiety; that is, the anxiety is the same in both groups of dyslexia and normal children equally.

**Table 3: the results of independent T test between both groups of children**

Dyslexia		Normal		Variance equal test		Test of mean of independent groups
M	Dev	M	Dev	F	*df	T
7.07	3.552	6.30	3.932	0.573*	58	0.793*

The information of table 4 shows the results of independent T test between both groups of dyslexia and normal children. Based on these results, there is no difference between both groups of children in terms of anxiety than normal children statistically.

**Table 4: the results of independent T test at both groups in terms of social score**

Dyslexia		Normal		Variance equal test		Test of mean of independent groups
M	Dev	M	Dev	F	*df	T
6.53	3.530	5.90	2.940	0.651*	58	0.755*

The information of table 5 shows the independent T test in both groups of children in the field of social score. Based on these results, there is no significant difference between both groups of children; that is, the degree of social score is the same at both groups of dyslexia and normal children.

**Table 5: the results of independent T test at both groups of children in the field of general anxiety**

Dyslexia		Normal		Variance equal test		Test of mean of independent groups
M	Dev	M	Dev	F	*df	T
5.93	3.352	4.50	4.470	0.686*	58	1.405*

The information of table 6 shows the independent T test results in both groups of children in the field of general anxiety. Based on these results, there is no significant difference between both groups in terms of general anxiety; that is, the performance of dyslexia children and normal children is the same in the field of general anxiety. The present study is to evaluate and compare the working memory and anxiety among dyslexia and normal children. The results of the research indicated that dyslexia children had lower performance than normal children significantly. This finding is coincident with other studies such as Penington [] (1991, Barkely 1990, Esakey and plante 1997, Martin and Bardin 1992, Swanson 1999, Amir Shiran and Zoya Brinter 2011, Jerom 2006, Garry et al). These researchers showed that dyslexia children have lower working memory functionally in compare to normal children.

The above mentioned studies showed that the deficit in the working memory can fairly predict their educational performance. These skills are internal processes that children apply them for learning during fulfilling their tasks. Also, the results of the research showed that the degree of separation anxiety, social and general anxiety is the same in both groups of children and there is no observed significant difference between these both groups of children. However, this finding is not coincident with the results of Christinanson et al (1992, quoted of Kakavand 2003), Yulo (2010), Pravat and Marsal (1992), Lerner (1993), Margalist Vezak (1985) and Baker (1992). Generally, in the representation of the research findings, it can be stated that children should have been fluent in the field of learning some skills that one these skills is subjected to the memory skills that is being originated from the experience , education and learning processes. Most children achieve these skills automatically but children with learning disability face with too many problems in reading and the related skills. Also, the memory evaluation can give valuable information in relation to the fundamental deficits such as deficits in executive approaches, attention, visionary-listening, and language dysfunction. The most essential note should be mentioned is subjected to the fact that there is a significant difference between the children groups due to the listening stimulants and the speed of tracking the related information; thus, it is recommended the whole teachers to pay attention to any deficits of students caring in the field of their teaching methods at school settings. This makes students to get enough opportunity to make their analysis related to the information in this regard. Therefore, it is suggested for all principals and teachers to apply listening-visionary tools and prevent any continuous repeat in their teaching methods. Also, due to the results of the researches, the anxiety and depression have been emphasized in the prediction of dyslexia; hence, it can be recommended the experts and specialists to apply complex therapeutic programs for dyslexia students with excitement disorder. Although the results the present study is representing the lack of difference between dyslexia children and normal ones in the whole elements of anxiety, but it should be carefully judged about the obtained findings. Because there have been various factors confining the recovery field in the findings; hence, it is suggested to carry out other samples by large size and developed tools along with clinical interview; therefore, the obtained findings can be beginning of the next researches in this regard.

#### REFERENCES

- [1] Ahadi H, Kakavand A, Research and knowledge seasonal magazine, **2003**, 22, 155-168.
- [2] Alizadeh H, Cognitive science new topics, **2005**, 4, 34-46.
- [3] Amir S, Ziva B, *J Neurolinguis*, **2011**.
- [4] Atkinson R, Hilgard S, the background of psychology, Tehran: Rosh Publication, **1983**.
- [5] Baker DJ, *J learn Disabil*, **1992**, 25 (2), 102- 110.
- [6] Barkely RA, *A hand book for diagnosis and treatment*, New York, Culiford, **1990**
- [7] Bley NS, Thornton CA, *Re,edial and special Education*. **2001**, 22, 299-314
- [8] Geary DC, *J learn Disabil*, **2004**, 307 (I), 4- 15.
- [9] Gharamaleki N, MA thesis, Allame Tabatabaiee University, (Tehran, Iran, **2001**).
- [10] Gorm DC, *J learn Disabil*, **2006**, 38, 305- 307.
- [11] Gerd S, Jenifer B, *Department of child and adolescent Psychoiatry*, **2010**.
- [12] Hamil Donald, Bartel Neti R, the education of students with behavioral learning, Tehran: the college of exceptional children, **1997**.
- [13] Kimred A, Vayn PH, *J Psych*, **1981**.
- [14] Lerner J, Learning disabilities, Theories, diagnosis, and teaching strategies, *Bosten Houghton Mifflin*, **1993**.
- [15] Martin RC, Feher E, *Brain and language*, **1990**, 1- 20.
- [16] Maaike A, Vandermosten JP, *Research in developmental Disabilities*, **2011**, 5, 593- 603.
- [17] Pennigton BF, *Psychological from work*, New York, Culiford, **1991**.
- [18] Martin RC, Breadin SD, *cognitive Neuropsychology*, **1992**, 509- 534.
- [19] Nakhaaiee S, MA thesis, Iranian medical and health services University, (Tehran, Iran, **2006**).
- [20] Shahbodaghi M, Scientific-Research Magazine, **2002**, 11.
- [21] Swanson HL, Jerman G, Zheng X, *J Psycho edu Assess*, **2009**, 27, 175- 196.
- [22] Swanson, HL, *J Experi child psych*, **1999**, 110- 56- 87.
- [23] Swanson HL, *J learn Disabil*, **1993**, 23. 59- 67.
- [24] Scott K, Antony R, *J Chiro practice med*, **2010**.
- [25] Vallas J, Macfin JA, *The concepts of learning disabilities and its features*, Mashad: Astan-e-gods Razavi Pub, **1997**.
- [26] Victor K, Julie V, *J Memory Lang*, **2011**, 42- 73.