

## PRIMARY ARTICLE

## The Effects Of Practical Practices On The Brain Functions Of The Students Suffer From Learning Disorders

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## ABSTRACT

Particular disability in learning comprises an incongruent group of children who have some problems in the various areas of learning.

These problems make life time effects for individuals that seems to be much more than reading, writing, and accounting and heavily influence on some areas such as health, (ROGVANHA and coworkers, 2004) mental health, interpersonal relationships, keeping education, employment facilities and so on.

**Keywords:** Practices On The Brain Functions.

### Introduction :

An important point that exists regarding to these disabilities is that if they are diagnosed in the early stages they can make considerable success in the life of these individuals especially now that modern technologies can have a major role in the pedagogical and compensative supports from them.

The number of children who suffer from learning disorder as well as other types of disabilities has increased rapidly.

In the academic year 1998 to 1999, more than 2.8 million children who suffer from the specific learning disability covered by the act of disabled individuals. (The US Education ministry, 2000 quoted by OMIDVAR, 1994)

The main feature of children with the specific learning disorder is the lack of attention and memory and attention effects

In this regard, learning disorder –relevant theories consider the specification of these children problems and issues each of which with a specific angle to the problem.

More recent theories believe that the main weakness of these children is disability in morphological and verbal actions and disability in the visual and acoustic information processing.

Using the Meta cognitive methods and ways is also difficult to the students who suffer from learning disorder.

Some of these problems are the categories of executive functions that have various components such as: self-determining, working memory, perception of internal time and language.

Although executive functions changes within the growing up process, training appropriate ways to achieve and development of these functions in the children with the specific learning disability gradually help them to be able to do more complex and difficult practices. (ALIZADE, 1995)

Dawson and GURE (2004) categorize the most important types of these functions in the form of planning, organizing, working memory, response provision time management, starting the practice and objective-based resistance.

Any kind of defect in the growing of these functions can lead to attention disorder, hyperactivity or defect in the planning for starting and ending the practice, reminding the practice, memory and learning disorder (Anderson and CASTILLEO 2002)

The relationship between executive functions in various aspects of

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behavioral, cognitive, social and communicative has been considered in many studies.

Failure in the executive functions in the children with the lack of attention disorder, OTISM spectrum disorder, growth disorder, learning disorder has showed some evidence from the executive functions and working memory defect in transferring the visual-spatial working area and this defect will raise In the mathematical problems, telling time, approximate computing and also arising the reading disorder, weakness in the verbal short time memory and processing speed.

In many studies using the children Acid profile and VEKSLER is recommended to recognize learning disorder. (GROTH, MARNAT, 1997)

The results showed that 12 percent of the children who suffer from hyperactivity revealed this profile. Although in Acid profile only one percent of the norm patterns have been occurred.

PRIFITEARA and DERSH (1993) compared the percentage of the children with Acid profile in VEKSLER of the children who suffer from learning disorder to the patterns of hyperactivity with the percentage of the norm patterns.

Among many psychologists this belief has been generalized that there is a specific interpretation of the patterns or profiles of VEKSLER sub-tests; although there is a broad popularity of analyzing the VEKSLER sub tests from these activities is based on clinical diagnosis or personality description

Ward et al (1995) studied about the prevalence of the children s VEKSLER Acid profile among 382 students or learning disorder and they reported the prevalence range of 4.7 percent

DELLE and NAGLLA (1996) suggested that whenever there is the possibility of obtaining initial information about the initial diagnosis of learning disorder, using Acid profile in diagnosing learning disorder has a more application.

As a result, attention to the executive functions and the students' performance in the VEKSLER sub tests for diagnosing specific learning disability should have useful applications and by knowing these sets of elements it should have effects on various service systems for evaluation, educational methods, and finally treating the children who suffer from specific learning disability.

The studies have shown that growing and development of executive functions as like as other abilities change during the childhood. (Diamond, 2000)

There are some supporting data regarding to the weakness of executive functions and Meta cognitive skills in the students who suffer from learning disorder that shows the importance and considering of the effects of teaching these skills in this kind of students.

Executive function is a general term that covers the entire complex Meta cognitive processes which are necessary in doing difficult or new objective-oriented practices. (Hughes and Graham; ALIZADE, 1994).

Diamond (2000) also showed in a study that the executive functions mal-growing in the growing up time have a close relationship with learning disorder and communicative social disorders.

In a study, BROSNON and coworkers also considered training the prevention of response, sustainable attention, and working memory in order to sensory- dynamic activities that lead to reinforce nerve hybrids in forehead functions in the children who suffer from learning disorder.

The results of their monthly education were improvement in the educational scores and reinforcing executive functions in these students.

ARSID Reiter, Oliver TUCHA and KLAWS WLANG showed that disabled students in terms of reading have complex errors in different kinds of executive functions component..

So the development of executive functions in the treatment methods of reading disability should be considered Blaire, ZELAZE, Greenberg showed that those students who have specific educational weaknesses will obtain lower scores than other students in terms of executive functions James H,SMIT-spark (2007) showed that it may be possible to increase defect in the controlled attention system in the reading disabled students based on the loss in the executive functions and working memory It is clear that working memory problems in the reading disability is a more explicit defect in the executive functions among adults who have serious learning problems.

In a study, JANKS, Mur and LIESHOT (2002) showed that children who suffer from brain disability are likely subject to executive functions and working memory defect and this defect increases the risks of arising math problems in these children.

In a 3-year linear study on the students with some kinds of learning problems ,Anderson (2010) shows that both groups had several weakness points in 4 areas of computing components ( fundamental, conceptual, methodological and problem solving skills)in the lines of all 3 measured standpoints.

Children with mathematical disorder also were confused in telling time and approximate computing and also coexistence of mathematical disorder along with reading disorder, weakness in the short memory performance, processing speed and executive functions are shown.

During that 3- year linear study the 4 groups had grown identically in all areas especially in the major components of executive functions.

In order to represent different treatment ways for these children, intervention strategies are used to enable they obtain the primary skills required to being success in the future educational learning. (LOENTHA, 1996; Lion Forman, Francis and Shivwits, 1998; quoted by ALIZADE, 1385)

Training the learning strategies help the students suffer from learning disability undertake their learning, being active learners, and learn a sets of learning strategies, being able in selection of appropriate strategy for any situations and can extend these strategies in the other situations. (Groteluschen, BROKOWEK and Hall 1990, quoted ALIZADE, 1996)

The aim of this study is examining the effect of executive functions in the improvement of children s VEKSLER Acid profile in 4 sub tests of computing, coding, information, and fourth grade of elementary school students with specific learning problems in Rasht.

**Procedure**

Regarding to the nature of this study the aim of and the areas of chosen executive facilities from the empirical way of pretest – posttest random subject design as well as control group are used that are presented in table 1

Table1-pretest-post test shame with control group

=24n	=24	n	
gruop	Pre test	Independent varible	Post test
test: RGE	T <sub>1</sub>	X <sub>1</sub>	T <sub>2</sub>
Control: Rgc	T <sub>1</sub>	-	T <sub>2</sub>

**Sample**

The sample of study were 48 children from the third and fourth elementary school students with specific learning problems whose average age was 10.6 were selected which they had meaningful weakness in Acid elements within the interpretation of ( Wisk-R) and they include ( computing, coding, information and numerical memory)

In this way '50 students with the low scores of the list (50 percent of the list ) were chosen after providing a list of total score of 100 student in the third and for the grade of school that obtained by summing the & famous acid subtests . And after separating the gender and, observing the prevalence of boys compared to girls which is 3 to 1. 48 sample people were selected randomly

After examining and restudy the students files were replaced in terms of age, intelligence ability , type of disorder, father 's job and education in the two witness and examination group

**The Study Tools**

The test was provided by WECHSLER. and was normalized in 1974. This scale is for evaluating the student's intelligence whose age was ranged between 6 to 13 has translated and adopted and it has normalized in Shiraz (SHAHIM '1997)

To narrating the scale the relationship between intelligent with age, job type of father the level of his education has stated a meaningful relation in terms of economic – social criterion and also the relationship between the intelligent with the last educational average is considered for determining the narrating scale . (SHAHIM 1996

The strength of reevaluation is consistent with the median of the final coefficient %73 and the strength of its composition is consistent with the median of the final coefficient %69 (SHAHIM 1998)

The examiner can obtain comprehensive information from the examinable through...

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considering the obtained scores from all units of scale profiles and total intelligent and also from the difference between practical and verbal anesthetist derived from WISK – R scale together with clinical and informal observations, and by doing so he can have a deep interpretation from examining performance in the scale and finally to re cognize some problems such as ne urologic disorders (black 1947) learning disorders (RUGEL 1974 ' WIELKIEWICZ, 1990) sentimental disorders (DEAN 1977 SATLER 1988) CIME ( Haynes and BENSH 1981) and epilepsy (OLEARY) et al 1983) is used . (quoted by SHAHIM 1377) ACID Profile is made from computing substest signal adjustment number information and memory.

Low scores in each profile are often seen among the population of learning disabled persons. ( KAFMAN ' 1990 ' 1994)

These four substests are a combination of two elements include being free from confusion ( computing and recalling numbers) and the speed of understanding(information and signal adjustment ) ( KAFMAN 1994)

**Procedure**

All of the recommended practices in the treatment plan was conducted properly to consider the effects of executive functions .

In order to solidarity of treatment short – time objectives recommended practices and required tools was designed in the form of a treatment plan and for this purpose recommended practices and commercial and teacher – induced educational tools was provided.

After matching students in terms in of age gender and intelligence 48 learning disordered students were conducted to two testing groups of executive functions with the reinforcement level of components such as planning organizing response provision and working memory about the testing group for 3 months and 20 days and in general 42 sessions randomly.

The current educational method in the learning disorder centers was also accomplished for witness group within the same time and then acid profile post – test was conducted

In order to control the incentive variable which is necessary in development of executive functions and concluding the practices the treatment inventory list was designed and concluding the practices the treatment inventory list was designed and implemented findings

Descriptive statistical (mean standard deviation, correlation matrix) was used for drawing the tables and the arguing statistical of covariance analysis was used to determine the meaningful statistical difference of the executive functions method on children VEKSLER acid profile substests.

Descriptive information such as mean and standard deviation of variables is represented in table 2.

Acid profile indicator in the witness and testing group

		witness		test		group		
		Post-test	Pre-test	Post-test	Pre-test			
Standard deviation	mean	Standard deviation	mean	Standard deviation	mean	Standard deviation	mean	
2/27	8/45	3/03	8/66	2/79	9/04	2/46	7/68	computing
2/91	9/08	2/96	9/37	2/88	11/80	2/73	9	coding
2/11	9/62	2/44	8/70	2/20	9/16	2/19	8/32	Numerical memory
2/10	9/08	1/83	8/53	2/20	9/76	1/98	7/04	information

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As it is clear from table number two, compare to witness group the mean of acid profile post- test in the testing group is increased. That has been the most increasing in the coding subtests

In the order to consider the effectiveness of testing procedure of executive fun cottons on the computing subtests, the post test score of control group was compared to the testing group be means of covariance analysis.

Table 3 corelational matrix between subtests of acid indicator

Post - test of information	pre test of infomation	Pre test of memory numerical	Pre test of memory numerical	Post test of coding	Pre test of coding	Post test of computi **	Pre test of comput ing	
							1	Pre test of computing
						1	** 0/59	Posttest of computing
					1	* -0/30	* -0/33	Pre test of coding
				1	** 0/56	-0/1	-0/23	Post test of coding
			1	0/24	-0/03	** 0/46	** 0/44	Pre test of memory numerical
		1	** 0/68	0/22	0/05	* 0/32	* 0/32	Pre test of memory numerical
	1	0/17	* 0/31	* -0/32	-0/17		** 0/4	pre test of information
1	* 0/36	* 0/30				** 0/48	** 0/40	post test of information

In the order to consider the effectiveness of testing procedure of executive fun cottons on the computing subtests, the post test score of control group was compared to the testing group be means of covariance analysis.

The computing pre - test score was introduced as the control variable in this analysis



Tabl4 covariance analysis for comparing witness group and testing group in the computing subtest with the control of pre-test

P<	A mount of F	Mean square	A mount of free dam	Sum of square	Variance resources
0/001	15/84	82/19	2	164/39	Pre test of computing
0/048	4/11	21/33	1	21/33	groups
		5/18	46	238/66	error
			48	403/06	total

NS 0/05 تفاوتی معنادار وجود ندارد. P< there is no meaning ful difference

As it is clear from the table 4 there is a meaningful difference between the testing and control groups

As the mean of the testing group posttest (9/04) is higher than the mean of control group (8/45) this difference is useful for the testing group that is, training the executive functions lead to increase the testing group's student

In order to consider the effectiveness of training the executive functions method on the VEKSLER coding subtest performance, the control group post – test score was compared to the testing group by means of covariance analysis.

The coding pre-test score was introduced as the control variable in this analysis. Table 5 represents the results of this analysis

Table 5 covariance analysis to compare the testing and witness groups in the computing subtest with control of coding pre-test

P<	A mount of F	Mean square	A mount of free dam	Sum of square	Variance resources
0/001	35/86	173/41	1	173/41	Pre-test of coding
0/001	22/5922	107/48	1	107/48	Groups
		4/83	46	222/42	error
			48	486/204	total

NS: 0/05 تفاوتی معنادار وجود ندارد. / P< there is no meaning ful difference

As it has shown in the table 5 there is a meaningful difference between the control and the testing groups .as the mean of the test group's post – test (11/8) is more than the mean of the control group's posttest (11/80>9/08) this difference is useful for the test ins .group that means training the executive functions leads to increase the executive functions leads to increase the testing group students' performance in the computing subtest.

In order to consider the effectiveness of training executive function s method on the children VEKSLER numerical memory subtest the post – test scare of the testing group was compared to the control group by means of covariance analysis .

In this analysis the score of numerical memory pre – test introduced as the control variable. Table 5 represents the results of this analysis.

Table 6 covariance analyses for comparing the testing and witness groups in the numerical memory pre – test.

Variance resources	Sum of square	A mount of free dam	Mean square	A mount of F	P<
Pre test of memory numerical	97	1	97	36/14	0/001
Groups	0/69	1	0/69	0/27	NS
error	113/98	46	2/47		
total	213/63	48			

NS: 0/05 تفاوتی معنادار وجود ندارد / P< there is no meaning ful difference

As shown I table 6 there is a meaningful difference between the testing and control groups that is, training the executive functions do not lead to increase the students' performance in the numerical memory subtest

In order to consider the effectiveness of training executive functions method on the children VEKSLER performance in the formation subtest, the score the control group posttest was compared to the testing group by means of covariance analysis

In this analysis the score of information pre-test introduced as the control variable .table 7 indicates the results of this analysis.

Table 7 covariance analysis for comparing the two testing and control groups in the information subtest with control of information pre – test

Variance resources	Sum of square	A mount of free dam	Mean square	A mount of F	P<
Pre-test information	45/91	1	45/91	12/24	0/001
Groups	22/70	1	22/70	6/05	0/018
error	172/48	46	3/74		
total	224	48			

NS: 0/05 تفاوتی معنادار وجود ندارد / P< there is no meaning ful difference

As table 7 indicates , the results of covariance analysis test for comparing the two testing and control group in the formation subtest with the control of information pre-test show that there is a meaningful difference between those two groups

As the mean of the testing group post-test (9/76) is higher than mean of the control group post – test (9/8) this difference is useful for the test group that means training of executive functions lead to increase the students' performance in the information subtest

### Discussion and conclusion

The findings from this study showed that training of executive functions lead to increase performance of 3 sub – test such as computing ,coding and information from 4 famous children VEKSLER test in the children who suffer from learning disorder

Although training of the executive functions not lead to increase the performance of the children with learning disorder in the numerical memory sub-test ,those student s who trained with the executive functions method have higher performance in 3 sub tests of 4 famous Acid profile subtests than those who trained with current methods in learning disorder centers

The findings of MIR MAHDI SEYF NARAGHI (1998) and MIR MAHDI (1995) showed that training of the executive functions for treating and reforming the students who suffer from learning disorder such as reading, mathematical comprehension and writing disorders are useful

and they have known training of executive functions as effective element in the improvement of the performance of the students with learning disorder, attention defect and hyperactivity.

Therefore, it could be effective on the main producing this element or let say on the clinical characteristics of these students such as Acid profile obtained by the children VEKSLER analysis BEDLI and HICH (1974) believed that Atkinson and SHAFFIN's memory model in which short-time memory considered within a unique system had some problems and disabilities.

The results from this study based on the uninfluenced of training executive function on the numerical memory is not consistent with the findings from the students of LOTFI(1386). Mir Mahdi (1386), SEYF(1389), Spark and Fig(2007), BENTAL and /TRUSH (2007), JANKS, Mur, LIESHOUT(2009).

They showed that training of executive functions leads to increase the working memory performance in the students with learning disorder.

Also, there is a positive and direct relation between working memory in reading disability and increasing the working memory performance have been effective in the development of reading ability in the reading disabled students.

That is, training of the executive functions leads to increase learning ability for doing unfamiliar works, improving the visual skill increasing the level of persistence and stability in work, increasing the speed of learning performance, increasing flexibility in the general psychological-dynamic ability, improving the visual short-time memory and the ability of reminding it, increasing the organizing ability for understanding unfamiliar issues, describing lag in the perception system and reducing tension, increasing long-time memory. cognition of verbal understanding being conscious to the environment, cultural likes and dislike, the insight about conceptual curiosity, social culture and high level of accuracy, link with reality and mental conscious, institutional learning, abstract and logic reasoning, analyzing numerical issues in the examined students which likely leads to increase the performance of students in the computing, information and coding sub-tests

According to them, although there is a consistency and overlapping between working memory and acoustic short-time memory, these two cases in some aspects are different from each other. Short-time memory refers to well storing that these data are not depending on our stable and linear knowledge structure, whereas working memory is a multi-unit system that can do temporary storage and processing of the data in the same time.

Working memory is the workbench of memory system or a connective component of memory in which new data are maintained temporarily and combined with long term memory; so they consider working memory as a replacement for acoustic short time memory.

Working memory is a term emphasizing that the most important part of short time memory is not its stability but is its activity.

Working memory is where our mind work on data and organize it for storage or discarding it and relates to other data (ALVALINE 2006, translated by MOHAMMADI, 1385)

Whereas by means of numerical memory test we can achieve some diagnostic data such as: immediate linear memory, concentration and accuracy ability of replacing conceptual pattern, sequence acoustic memory and flexibility of respiting several numbers directly or reserved that requires short-time acoustic memory concentration.

Numerical memory sub-test is of course one of the sub tests which has the most possibility of vocular against tension and is one of the sides of tension triangle along with the coding and computing sub tests and those who easily be distracted indicate a considerable weakness in this sub tests.

Therefore, compare to other VEKSLER subtests they have a weaker performance in the population of learning disordered individuals and And it makes a situation in which considering memory problems become one of the initial actions for treating these children.

Hence, treating executive function and attention to the capacity of VEKSLER Acid profile components to the learners with learning disorder has a useful effect on the efficiency of educational process And presenting educational material aimed at producing, developing and facilitating the learning, and teachers of learning disorder centers through the treatment planning can executive function as a modern approach in treating the specific learning disability

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