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The comparison of linguistic components in boys with and without learning disability

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ABSTRACT

The study considered differences of linguistic components (spoken language, listening, organizing, speaking, semantics and syntax) between boys with and without learning disability. The statistical population included those student boys in the second and third grades of primary schools of Damavand County during 2011-2012. Learning disability group (n=43) selected via the convenience sampling and normal group (n=43) was randomly selected via cluster method. To measure linguistic components, Test of Language Development –Primary (TOLD-3) was applied. MANOVA and tests of *t* in independent groups were used for analyzing of data. The results showed that there is a significant difference between the level of linguistic components in children with and without learning disability. The score normal boys were higher than boys with learning disability in all components of linguistic levels.

Key words: Learning, linguistic components

INTRODUCTION

When some of children begin go to school, they may feel and experience many different problems in relation to academic activities such as, reading, writing or mathematics [3]. In the recent decades, educational psychologists and other experts have noticed to the issue of learning disability [2]. The term ‘learning disability’ indicated a disorder in one or more of basic psychological process involved in understanding or using spoken or written language [8]. Children with disability face with various challenges in learning which include difficulty in learning and apply the mathematics or have problems in the perception and understanding the tasks completely. They are a dissimilated group having their own special features [14]. Children with learning disability may have moderate or higher intelligence but they can’t attain academic achievement adequately and they often need to special supports in school setting. The learning disability involves a vast spectrum of deficiencies with unknown causes that may along with language skills problems [2]. Also, reading and writing problems have been considered as the foundation of language growth [14]. Among these children, palingraphia (backward writing) or bad-writing is seen, but the reading problems are the most basic subject in these children [18]. Consequently, the best method for modification of language structure for children with learning disability is reading practice; Children with Learning disability have little progression in acquisition the tool of knowledge such as: lexical organizing, use metaphors, and implication of irony and comic issues [21]. The language deficits not only effects on social and communicative problems but also it impacts on their educational achievements considerably [2]. Since problems in the language skills and educational

performance have close relationship together, it is often difficult to determine which problems can be prior than other one; it means, it is firstly related to the reading disability or the language problems is prior in this regard [5]. Other weakness related to children is subjected to their spoken skills being observed in different forms. Generally, the highest problem of these children is the lack of success in speaking clearly (clear language) and some of these children also cannot understand what others say (perception language). They have problems in the combination of different sounds for saying, determining and discriminating the words as well as letters sounds and composing sounds; of course, they have some problems in the grammar and cannot speak according to the language grammatically structures like others [2]. Also, these students are getting low socially in compare to their peers. This issue may arise from their weak social skills [21]. They severely hate of traditional learning environment, because, they have got very low level of self-esteem and self-concept [12]. Students with learning disabilities may have aptitudes, but they have not good performance, because they have not positive orientation to traditional education systems. Thus, it is necessary to pay attention to their aptitudes and talents in relation to language knowledge subject in this regard [12]. In spite of the language establishment in the mind practically, it is considered as the developed knowledge foundation [8]. The language is one of the most essential factors in the brain activity such as thinking, reasoning, imagination, judgment, and even perceptions and emotions. Hence, the study of this subject can be a great key for entering to the secrets of the brain superior activity [8].

The language growth is divided into four steps as followings:

Phonemes, syntax and grammatical structures, verbal semantics and its application are the language important dimensions that a child gets familiar with them during his or her growth path [3]. The language tool includes the knowledge of phonology (sound system), vocabulary structure (semantic system), syntax (vocabulary combination system in grammar structures) and vocabulary culture (a list of words giving information about the applied semantically and grammatically aspects of words in the language communications) [28]. Many linguists' theories such as Bloom, Ingram and Chapman have categorized the language based on listening (perceptual), organizing (combinative-intervention), and speaking (utterance) issues. *Listening*: it is defining the coding operation that formulates semantically utterance. *Organizing*: this system refers to the capacity of the brain for separation or regulation linguistic information via classification [8]. According to Lerner (1998), prevalence of learning disability are different and it has range between 2.7% until 30%. The most common estimation of these disabilities is between 5-10% [8]. Learning problems not only effect on academic failure but also these problems lead to self-blaming, self-humiliation and low self-esteem and creation anxiety in the family environment; the whole of these issues make potential problems and pitfalls conducting the health of a society worse in this regard [24].

Learning disability children have been studied by many researchers in terms of educational affairs. The results of Jalali's study (2009) showed that there is a significant difference between the dyslexia and normal children in terms of language features and it seems that these children have weak language ability such as semantics, syntax and phonology. Also, the study of Cawthon et al (2012) showed that the reading subject is very difficult for LD children and the language complexity is a significant predictor for reading performance. In addition to these results, it is represented that the language complexity effect in children does not depend on the type of accommodation received ((presentation, response, setting, or timing). The results of Morris and Hingham's research (1987) showed that the linguistic stress task was more difficult than the semantic interpretation task for children with learning disability, and normal children performed significantly better than LD children on both tasks. Lyon (1981) showed that children with and without learning disability significantly have difference in oral reading, reading comprehension, and spelling skills. Hamfrizer and et al (2004) also showed that the group of children with non-verbal learning disability was weaker than normal group in the reasoning, understanding and comprehension. Based on what is said, the analysis of language problems in children with learning disabilities pertain to the different components of language cognition such as spoken language, listening, organizing, speaking, semantics and syntax. These subjects explicit language growth importance for specialists, teachers and counselors, and researchers. Also, main purpose in this research is to investigate differences between the linguistic components among boys with and without learning disability.

MATERIALS AND METHODS

The method of present study is ex-post facto. The research population included that all of students in second and third grades in the primary schools of Damavand County in 2011-2012.

Learning disability group (n=43) selected via the convenience sampling (due to administration limitations) and normal group (n=43) was randomly selected via cluster method. In normal group, the first some schools randomly were selected and then from any school selected some classes and all of students in these classes were examined.

Screening step:

Due to the importance of determining students with learning dysfunctions, the screening step has been fulfilled as followings:

1)The first based on Diagnostic and Statistical Manual of Mental Disorders (DSM), teachers were asked to introduce students with low performance in areas of reading, writing and mathematics, so as level of these areas were lower than from expected level for 2 and 3 grades students. Then, reading and writing levels were measured and students with the low level of writing were selected in the study.

2)The second, in order to determine intelligence and physical and emotional problems of selected students in prior step, intelligence of selected students was measured by test of intelligence of Raven and for identification physical and emotional status were considered their documents by researcher. After the identification of students with learning disabilities, the test of language growth was completed by students with and without learning disability

Research tool:

In this research, in order to study the language cognitive components, the test of Language Development –Primary (TOLD) 1997, was applied. This test is one of the most common and comprehensive tests in the field of measuring children language growth. This test was firstly published in 1977 by the name of TOLD having five sub-scales. In 1982 the following of important changes, this test was changed to TOLD-P and finally in 1988, and the name of test was also changed its name to TOLD-P: 3 to measure the language skills among children ranging between 4-9 years old. The test of language growth has a manual with related pictures, 6 sub-scales and 171 questions being completed as individually in this regard. The duration of doing of this test depends on personal ability in response to the questions.

This test is based on a two-dimensional model:

1. Components of Linguistic systems such as listening, organizing and speaking. 2. Components of linguistic features such as semantics and syntax. The following combinations can be categorized and construct six sub-scales in the test:

1. Listening (picture vocabularies + grammatical understanding), 2. organizing (relative vocabularies + sentence imitation), speaking (oral words + grammatical completion), semantics (imaginative vocabularies + relative vocabularies + oral words), syntax (grammatical understanding+ sentence imitation + grammatical completion) and spoken language including the whole six combination of the sub-test [3].

The six sub-tests are as followings:

1-Picture vocabularies: this sub-test of semantic-cognition has 30 questions as picture measuring, the degree of children understanding from the related meanings with Persian words.

2-Relative vocabularies: it is a sub-scale of semantics test with 30 questions and measure comprehension and oral utterance, between two words too.

3-Oral vocabulary: this test have 28 questions and measures a child's ability for explaining oral definitions that are current in Persian language such as parande (bird) which is being represented by an examiner.

4-Grammatical understanding: this sub-test has 25 visual questions that measure a child's ability in understanding the meaning of the sentences and statements. Of course, the main emphasis of this sub-test is roughly on the syntax aspects in this regard.

5-Sentence imitation: this subscale includes 30 questions that measure a child's ability in producing the most accurate Persian statements.

6-Grammatical completion: this subscale is consisted of 28 questions that try to investigate a child's ability in the recognition, understanding and applying the cognitive morpheme in Persian.

In Iran, there is only this test for measuring of language growth has been standardized and normalized in this regard. The range of inter-correlation coefficients of sub-scales is 0.44 to 0.79 with median 0.55 in this study. The range of

Cronbakh’s alpha for different age levels, α was 0.77-0.92. Also, the range of test-re test reliability of this test was from 0.78 until 0.82 [8].

To evaluate the criterion validity of sub-scales in this test, the relationship between selected subscales and other tests were represented as following:

Test of phoneme information, Wepman’s diagnostic auditory test, sub scales of similarities and words in test of Wexler were obtained 0.70, 0.42, 0.71, and 0.57, respectively. All of These correlations were significant ($p < 0.01$) [8].

RESULTS

In table (1) descriptive indices of studying variables were reported.

Table 1. The descriptive indices of language cognition elements scores

Language level	Group	Number	Central indices	Contribution indices	Distribution indices	Score range	Slope	Elongation
			Mean	Middle	Deviation			
Listening	Normal	43	45.81	46	3.59	15	-0.329	0.011
	LD	43	43.07	43	4.60	19	-0.541	0.037
Organizing	Normal	43	43.21	43	9.43	36	-0.409	-0.301
	LD	43	34.98	35	9.23	34	-0.287	-0.690
Speaking	Normal	43	41.16	41	7.46	31	-0.613	0.425
	LD	43	33.70	3	7.24	32	-0.305	-0.202
Semantics	Normal	43	69.49	71	10.42	43	-0.708	0.285
	LD	43	61.12	62	8.92	38	-0.576	0.160
Syntax	Normal	43	60.70	62	10.33	41	-0.453	-0.400
	LD	43	50.63	49	11.19	45	-0.327	-0.262

The results of table 1 indicate that based on the descriptive indices, the mean linguistic components scores in normal children are higher than scores of children with learning disability. The highest difference is related to the syntax and semantics components and the lowest difference is subjected to the listening component in this regard. In order to compare the difference of language components between both groups, multivariable analysis of variance (MANOVA) was applied in the study.

First, assumption of homogeneity of variance and covariance were evaluated and then this test is applied. Significance level related to tests of MANOVA (Pillai’s trace, Wilk’s Lambda, Hotelling’s trace, Roy’s greatest root) have been shown in table two, for evaluation the effect of the group on the components of language growth.

Table 2. Multivariate test

Variable	Test	Value	F	Df1	Df2	Sig
Group	Pillai’s-trace	0.214	5.529	4	81	0.001
	Wilk’s Lambada	0.786	5.529	4	81	0.001
	Hotelling’s trace	0.273	5.529	4	81	0.001
	Roy’s largest root	0.273	5.529	4	81	0.001

As shown in table 2, because significance levels related to tests of MANOVA are lower than 0.01 ($p < 0.01$, and in attention to value of Wilk’s Lambada = 0.786, $F = (81.4) = 5.529$); could be said the effect of group on the linguistic components is significant and it can be stated the difference of combination of dependent-variables in groups is significant. As a result, there is a significant difference between linguistic components in children with learning disability and normal ones in this study. The results test of between subjects effects for the evaluation the effect of each dependent variable are given in table 3, separately.

As shown in table 3, the between-groups differences in all linguistic components are significant ($sig < 0.05$) and the mean scores in normal children are higher than children with learning disabilities in linguistic components. Partial Eta square shows that the variable variance of speaking is predicted higher than other variables by the group factor. In addition to this variance, listening is little predicted than other variables in the group factor.

Table 3. Test of between subjects effects

Source of changes	Dependent variables	Sum of squares	DF	Mean squares	F	Sig	Partial Eta Squared
Group	Listening	161.907	1	161.907	9.502	0.003	0.102
	Organizing	1457.163	1	1457.163	16.735	0.001	0.166
	Speaking	1198.151	1	1198.151	22.193	0.001	0.209
	Semantics	1506.977	1	1506.977	16.025	0.001	0.160
	Syntax	2180.105	1	2180.105	18.803	0.001	0.183

DISCUSSION AND CONCLUSION

Based on data analysis and obtained results in this study, there is a significant difference between the language levels of normal children and children with learning disorders in the language cognition components. This result is concurrent with the findings of Jalali (2009) and Lyon et al (1981), Morris and Hingham (1987) and Catwathon et al (2012). Therefore, according to the findings, normal children have high level of language cognition components. Although the deficits of language in children with learning disabilities are not clearly clarified, but these deficits can be specified gradually in terms of language and academic performance. For explaining language problems, cognitive psychologists believe that main problem of children with learning disability is related to apply of strategies and deficits in information processing. Some researchers believe that these deficits can only devote to verbal processing. Krichner and Klutzy and Baddeley, Gathercole showed that children with learning disability represent the weak phonology memory (Adams et al 1997). Also, the results of Lorbach (1986), Jerrold (2004), Swanson (2000), HamFritz (2004). Humphries and Esaki (2008) confirm the weak performance of memory in children with learning disorders. Ferry also (1981) recalls the delay or problems in the language growth due to the brain's function in this regard. Since the memory as an information processing system plays a key role in producing speaking and verbal skills, the memory problems have great impacts on students' language production. It seems that the deficits in fundamental process of language influence in performance of students with learning disabilities, such as writing, reading, perception, and reasoning. In spite of children with language disorders seem to be health in the primary neural experiments but it should not be forgotten that these language disorders may come from a neural problem [21]. According to the present research findings, it is suggested to teaching of language components insert in the educational programs of children with learning disorders, for reinforcing the skills of speaking, listening, organizing, semantics, and syntax and learning strategies. It seems that considering these educational programs can facilitate the information processing in children with learning disability and can decrease of the learning problems, too.

REFERENCES

- [1] Adams C, Brown B B, Edwards M, *Developmental Disorders of Language*, London: Whurr, **1997**.
- [2] Afrouz G, learning disorders, Payam-e-noor University, **2009**.
- [3] Bateni M, the language and thinking, Danesh and Hona Publication, **2006**.
- [4] Casey FP, ProQuest information and learning Company, <http://books.google.com>, **2006**.
- [5] Cawthon WS, Kaye DA, Lockhart L, Beretvas SN, *J School Psych*, **2012**, 50, 3, 293-316.
- [6] Jalali Sh, *Novin Rehabilitation disabil*, **2009**, 8, 40-46.
- [7] Hardman ML, Drew CJ, Egan MW, *Human Exceptionality*, 10th ed. Australia, Belmont, **2011**.
- [8] Hassanzadeh S, Minaiee, normology of language growth test, Tehran: education research and study center, **2010**.
- [9] Highnam C, Morris V, *Journal of Communication Disorders*, **1987**, 20, 2, 93.
- [10] Humphries T, Cardy J, Worling D, Peets K, *Brain and Cognition*, **2004** 56, 1, 77-88.
- [11] Isaki E, Spaulding TJ, Plante E, *J Commun Disord*, **2008**, 41, 6, 512-530.
- [12] Jalali SH, *Novin rehabilitation disabilities*, **2009**, 8, 40-46.
- [13] Jarrold C, Baddeley AD, Hewes AK, Leeke TC, Phillips CE, *J Memory Lang*, **2004**, 50, 2, 134-148.
- [14] Karimi Y, learning disorders, practical and theoretical issues, Savalan Publication, **2004**.
- [15] Kirk S, Gallagher J, Ruth Coleman M, *Educating Exceptional Children*, USA. Belmont, CA, **2011**.
- [16] Lyon R, Reitta S, Watson B, Porch B, Rhodes J, *J School Psych*, **1981**, 19, 2, 152-166.
- [17] Lorbach TC, Baddeley AD, Hewes AK, Leeke TC, Phillips CE, *Contemp Edu Psych*, **1986**, 11, 1, 68-78.
- [18] Naderi A, SeifNaraq M, learning disorders, Amir Kabir Publication, **2003**.
- [19] Newcomer P, Hammill DD, *Test of Language Development-Primary*, 3rd Ed, Austin Empiric Press, **1997**.
- [20] Robson C, Deluca M, Bevans P, *Students with Disabilities Learning Difficulties and Disadvantages*, Paris, **2007**.

- [21] Seif S, *learning disabilities*, Noor Fateme Pub, **2010**.
- [22] Stamenov LM, *Language structure*, Benjamins. USA, **1997**.
- [23] Swanson HL, Ashbaker MH, *Intelligence*, **2000**, 28, 1, 1-30.
- [24] Tabrizi M, *Treatment of reading disorders*, Faravan Pub, **2011**.
- [25] Unger H, *Encyclopedia of American Education*, **2008**, 1, NY Inc.
- [26] Wong B, Graham L, Hoskyn M, *The ABCs of learning disabilities*, Amsterdam, Elsevier/Academic Press, **2008**.