

The Relationship between Speech and Language in Children's Performance in Writing, Reading and Mathematical Arithmetic

PhD (C.) Shukrije Baruti
University Goce Delčev-Stip

BSc Marigona Mulaku
Heimerer College, Prishtina, Kosovo

MSc. Miranda Baruti Sylejmani
University of Prishtina "Hasan Prishtina"

Abstract

The main purpose of this research was to understand the relationship between speech and language in children's performance in writing, reading and mathematical arithmetic.

The research focused on six schools in the Municipality of Drenas, where as a sample of research were the teachers of classes III, IV and V, who had students with speech and language disorders.

The instrument used for this research was a standardized and adapted questionnaire in Albanian, which assessed a total of eleven areas (reading, pronunciation, fine motor skills, mathematics, language, knowledge, memory, art, physical education, and spatial awareness). The results of this research help us understand that shows that there is a significant positive correlation between the variables "Language skills" and "Reading skills" $r = .673^{**}$, $p < 0.01$; "Language skills" and "Writing skills", $r = .381^{**}$, $p < 0.01$; "Language skills" and "Pronunciation skills" $r = .600^{**}$, $p < 0.01$; "Language skills" and "Skills in mathematical calculations", $r = .617^{**}$.

Keywords: speech and language disorders, mathematical calculations, reading skills, writing skills.

Introduction

In everyday life it often happens that we encounter children who face disorders of language and speech, according to different ages. Thus, a large number of individuals become curious to understand how much these disorders affect children's academic achievement within the classroom.

Based on daily life, it is understood that teachers often encounter difficulties with these children, as they not only get stuck with lessons, but are also ridiculed and discriminated against by their peers.

According to Schleppegrell (2007), each subject has its own ways of using language to build knowledge and students should be able to use language effectively to participate in ways of knowing.

Getty and Summy (2006) also pointed out that academic subjects are language-based where a different "language" is used to teach each subject. Students who have difficulty with receptive and expressive language skills during typical communication are more

likely to experience difficulty with academic subjects (Getty & Summy, 2006, p. 17). Children with receptive and expressive language impairments are more likely to have their own use in handling incoming language, initiating communication with another, and formulating their own interventions, so they are more likely to defend school requirements (Law, Boyle, Harris, Harkness & Nye, 2000).

Lack of basic skills (eg phonological awareness, alphabet knowledge, sound knowledge), necessary for the continued development of reading and writing comprehension, preach persistent low-level achievement of skills in primary and secondary school as and in life as adults (Justice et al., 2008). For example, children diagnosed with a language and speech disorder between the ages of 4 and 6 had poorer scores on language, literacy, and reading at age 14 (Lewis et al., 2015). These deficiencies have been found to be related to poor mathematical achievement, an area considered separate from literacy (Abedi & Lord, 2001).

1. Method

1.1 Sample and Procedure

The sample of this research are the teachers of the third, fourth and fifth grade students, who in their class had children with language and speech disorders, in six primary schools of the Municipality of Drenas. The selected schools are: "Rasim Kiçina" Drenas; "7 MARSİ" Kizhnarekë; "Arif Shala" Low Korrotica; "Bajram Curri" Nekoc; "Abedin Bujupi" Arllat; "Luigj Gurakuqi" Flamuras.

For the organization and collection of data it was necessary to first obtain permission from the directorate of education in the municipality of Drenas, meeting with school principals in order to inform about the explanation of the purpose of the research, the method of data collection, the form of the questionnaire and the duration of the instrument. Data collection was carried out during the break without interfering at all with the smooth running of the learning process.

1.2 Measures

The research approach of the research is quantitative where through the survey method the data are collected from the selected sample. Participating subjects were subjected to a pre-prepared questionnaire which in addition to the basic part of the instrument contains various demographic questions and a set of skills for measuring performance in key areas of learning.

The questionnaire included demographic data, and assessed a total of eleven areas (reading, pronunciation, fine motor skills, mathematics, language, knowledge, memory, art, physical education, and spatial awareness), and had four assessment scores (major concerns), minor concerns, no concerns, advanced for age).

2. Results

The research questionnaire aimed to collect data on the link Between Speech and Language in Children's Performance in Writing, Reading and Mathematical Arithmetic, the findings are presented below.

Table 1 with Correlation Analysis shows that there is a significant positive correlation

between the variables “Language skills” and “Reading skills” $r = ,673^{**}$, $p < 0.01$; “Language skills” and “Writing skills”, $r = ,381^{**}$, $p < 0.01$; “Language skills” and “Pronunciation skills” $r = ,600^{**}$, $p < 0.01$; “Language skills” and “Skills in mathematical calculations”, $r = ,617^{**}$.

Table 1. Correlation analysis about the questionnaire variables

	1	2	3	4	5
1. Reading skills	1				
2. Writing skills	,557**	1			
3. Pronunciation skills	,721**	,530**	1		
4. Skills in mathematical calculations	,584**	,316**	,458**	1	
5. Language skills	,673**	,381**	,600**	,617**	1

According to the results of the analysis of the T-test, in tables 2 and 3 we understand that the average of 25 male participants is 1.68 and the average of 15 female is 1.93. So women with speech disorders have better reading performance than boys. But, it is seen that there is no significant difference between the groups.

Table 2. T-test Analysis about Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Reading skills	Male	25	1,68	,748	,149
	Female	15	1,93	,596	,153

Table 3. Independent Sample Test

T-test for Equality of Means						
Reading skills		Sig (2-tailed)	Mean Difference	Std. Error Differences	95% Confidence Interval of the Difference	
					Lower	Upper
		Equal variances assumed	,272	-,253	,227	-,713
Equal variances not assumed	,245	-,253	,215	-,688	,181	

According to the results of the analysis of the T-test, from tables 4 and 5 we understand that the average of 25 male participants is 1.48 and the average of 15 female is 1.53.

Even in writing, girls with speech disorders perform better than boys. But, it is seen that there is no significant difference between the groups.

Table 4. T-test Analysis about Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Writing skills	Male	25	1,48	,770	,154
	Female	15	1,53	,514	,133

Table 5. Independent Sample Test

T-test for Equality of Means						
Writing skills		Sig (2-tailed)	Mean Difference	Std. Error Differences	95% Confidence Interval of the Difference	
					Lower	Upper
					Equal variances assumed	,814
Equal variances not assumed	,795	-,053	,203	-,466	,359	

According to the results of the analysis of the T-test, from tables 6 and 7 we understand that the average of 25 male participants is 1.96 and the average of 15 female is 1.73. In math, girls with speech disorders have lower performance than boys. But, it is seen that there is no significant difference between the groups.

Table 6. T-test Analysis about Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Skills in mathematical calculations	Male	25	1,96	,888	,177
	Female	15	1,73	,703	,181

Table 7. Independent Sample Test

T-test for Equality of Means						
Skills in mathematical calculations		Sig (2-tailed)	Mean Difference	Std. Error Differences	95% Confidence Interval of the Difference	
					Lower	Upper
					Equal variances assumed	,406
Equal variances not assumed	,379	,226	,254	-,289	,742	

3. Discussion

The results of this research agree with a large number of studies which have reported

that children with language and speech disorders have difficulties in academic subjects and specific areas of literacy such as pronunciation, reading comprehension, phonological concerns and writing.

The findings of this study support research which has shown that children with language impairments have a higher risk of having subsequent learning difficulties (e.g., Catts, Bridges, Little & Tomblin, 2008; Catts, Fey, Zhang, & Tomblin, 1999; Grizzle & Simms, 2009; Scott, 2011).

This study supports the research findings of other authors (Catts, Fey, Tomblin & Zhang, 2002; Young et al., 2002) who reported that children with language disorders are at high risk for negative long-term outcomes, including reading and other academic difficulties.

Current research results support the results of previous research whose reports have shown that teachers can make accurate judgments about children's achievement outcomes (Perry & Meisels, 1996) and that their judgments are more valid and reliable by accurately discriminate between children who are or are not at risk (Meisels, Bickel, Nicholson, Xue & Atkins-Burnett, 2001).

Limitations

In Kosovo, the number of children with speech and language disorders varies from city to city and from school to school. As this study was conducted in six schools in the municipality of Drenas, statistical data are incomplete, as in this municipality we have a larger number of schools. This stands as the first limitation.

Another limitation is the lack of such research in this city and in other cities of Kosovo, as recently individuals have become aware of the existence of disorders in language and speech and its impact on disorders in reading, writing and mathematical arithmetic.

References

- Abedi, J., and Lord, C. 2001. The language factor in mathematics tests. *Applied Measurement in Education*, 14, 219–234. Academic performance? *Working Paper No. 96-08*. Washington DC: National Center for Education Statistics, U.S. Department of Education and Hearing Services in Schools, 33,84–10.
- Catts, H., Bridges, M., Little, T., and Tomblin, B. 2008. Reading achievement growth in children with language impairments. *Journal of Speech, Language, and Hearing Research*, 51, 1569–1579.
- Catts, H. W., Fey, M. E., Tomblin, J. B., and Zhang, X. 2002. A longitudinal investigation of reading outcomes in children with language impairments. *Journal of Speech, Language, and Hearing Research*, 45(6), 1142-1157.
- Catts, H. W., Fey, M., Zhang, X., and Tomblin, J. B. 1999. Language basis of reading and reading disabilities: Evidence from a longitudinal investigation. *Scientific Studies of Reading*, 3, 331–361.
- Getty, L. A., and Summy, S. E. 2006. Language deficits in students with emotional and behavioral disorders: Practical applications for teachers. *Beyond Behavior*, 15, 15-22. Available at <http://www.ccbd.net/Publications/BeyondBehavior>
- Grizzle, K., and Simms, M. 2009. Language and learning: A discussion of typical and disordered development. *Current problems in pediatric and adolescent health care*, 39, 168-189.
- Justice, M. L., Mashburn, A., Hamre, B., and Pianta, R. 2008. Quality of language and Literacy instruction in preschool lassrooms serving at-risk pupils. *Early child Res Q.* 23 (!): 52-68.
- Law, J., Boyle, J., Harris, F., Harkness., and Nye C. 2000. Prevalence and natural history of

- primary speech and language delay: findings from a systematic review of the literature. *International Journal of Language and Communication Disorders*, 35,165- 188.
- Lewis, B.A., Freebairn, L., Tag, J., Ciesla, A.A., Iyengar, S.K., Stein, C.M., and Taylor, H.G. 2015. Adolescent outcomes of children with early speech sound disorders with and without language impairment. life outcomes. *American Journal of Speech-Language Pathology*,19, 51-65.
- Meisels, S. J., Bickel, D. D., Nicholson, J., Xue, Y., and Atkins-Burnett, S. 2001. Trusting teachers' judgements: A validity study of a curriculum-embedded performance assessment in kindergarten to grade 3. *American Educational Research Journal*, 38, 73- 95.
- Perry, N. E., and Meisels, S. J. 1996. How accurate are teacher judgements of students' academic performance.
- Scott, C. 2011. Assessment of language and literacy: A process of hypothesis testing for individual differences. *Topics in Language Disorders*, 31, 21-39.
- Schleppegrell, M. J. 2007. The Linguistic Challenges of Mathematics Teaching and Learning: A Research Review. *Reading & Writing Quarterly*, 23, 139-159.
- Young, A., Beitchman, J. H., Johnson, C. J., Atkinson, L., Escobar, M., Douglas, L., and Wilson, B. 2002. Young adult academic outcomes in a longitudinal sample of speech/language impaired and control children.