
CHILDREN WITH MULTIPLE DISORDERS AND THEIR LANGUAGE DEVELOPMENT

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Abstract: Developmental Language Disorder (DLD) is a neurodevelopmental disorder that causes difficulties or problems in understanding and expressing speech, a fact which hinders children's language development, making the learning process difficult and appears with various clinical pictures. DLD is associated with a high risk of developing special educational needs and causes disorders in the emotional and social adaptation of children. Early identification of difficulties and early speech therapy intervention is the most effective way to support these children.

The present primary research focuses on the language development of children to which multiple disorders appear, and was conducted through a structured questionnaire, which had a total of 54 close-ended Likert scale questions, divided into 3 sections. This was distributed to teachers of special and general education, working in primary and secondary education of the Region of Central Macedonia, while the responses were collected on the "Google Forms" platform. In the main survey participated 365 teachers (173 - 47.40% men and 192 - 52.60% women), while 45 teachers participated in the pilot research (20 - 44.44% men and 25 - 55.56% women).

In conclusion, the responses of the 365 teachers who participated in this research confirm the 3 research hypotheses while the answers to the 3 research questions are as follows:

1st R.Q: Students with multiple disorders and learning difficulties face difficulties mainly in reading, writing, spelling and understanding concepts but also social and behavioral challenges.

2nd R.Q: There is a need for a holistic approach to supporting students with learning difficulties, which should include the cooperation of all those involved and the provision of specialized services.

3rd R.Q.: Younger teachers have more positive views on all dimensions, which vary depending on age, years of experience, type of education, school level and their professional position.

Therefore, regarding the recommendations for the successful and effective language development of children with multiple disorders and learning difficulties, as they arise from this study, the following could be said:

- Cooperation and strengthening of relationships between all professionals, teachers and parents.
- Appropriate school infrastructure.
- Training and professional development of all teachers regarding the education of these children.
- Acquisition of basic teaching skills by teachers to address the difficulties related to the subject.
- Targeted interventions based on documented scientific findings.

Keywords: Children's language development, diagnosis, language disorders and multiple disorders.

1. INTRODUCTION

Children's language development and speech disorders, the latter being mainly identified in preschool age and resulting in the child having difficulties in understanding their native language, are issues of ongoing scientific interest, (Faldt et al., 2020). Also, the smooth development of language in children plays a crucial role in their subsequent academic and professional career (Adlof, Baron, Bell & Scoggins, 2021).

The functions of speech include comprehension, as well as the formulation/transmission of ideas and emotions, using verbal symbols, signs, sounds and gestures, which follow accepted grammatical and syntactic rules. The speech of the person when speaking is directly related to the neuromuscular coordination of his articulatory and vocal system, which is necessary to produce sounds and phonemes (Eberhart et al., 2017).

Regarding language, it is considered a complex system, which contains phonological sets with semantic content that are associated with structural rules and convey complete messages (Antoniou, Ralli, Mouzaki et al., 2022). It has been established that language is not just an achievement of academic content, but a useful social tool (Bruce & Bashinski, 2017).

2. MULTIPLE DISORDERS

The multiple disorders that occur during childhood, among others, include:

Physical disabilities: They are usually due to damage to central nervous system, musculoskeletal disorders, or chronic diseases (Depountis et al., 2019), and cerebral palsy e.g. manifests itself with disturbances in mobility and posture (Ferreira et al., 2019).

Developmental or neurodevelopmental disorders: They are observed in a category of students with special educational needs, who present delays and deviations in the development of social skills, language, communication and behavior (Ferreira et al., 2019).

Mental disorders: These include, among others, autism, Asperger's syndrome, childhood disorders (Depountis et al., 2019), schizophrenia, delusional disorder (Van Bakel et al., 2015), anxiety neurosis, hysteria, obsessive-compulsive disorder, phobias, depression, inhibitions, personality and adaptation disorders, mental or developmental disorders, disorders of special functions (Van Bakel et al., 2015), behavioral disorders, and disorders with physical expression.

Communication/behavioral disorders: In specific developmental disorders of speech/language, the normal patterns of language acquisition are disrupted from an early stage of development (Depountis et al., 2019). Children with complex cognitive, emotional and social difficulties also have problems at school, express negative emotions and do not easily form relationships (Depountis et al., 2019).

3. LANGUAGE DEVELOPMENT

The phonological development of language in the child is related to the knowledge that he acquires, so that he can distinguish, understand and produce sound combinations (Stoel-Gammon, 2019), while the syntactic development of his language is related to the identification and acquisition of syntactic rules that help in the structuring of sentences (Monaghan & Rowland, 2016). Assessing a child's language development is a process of collecting data that helps in making a clinical decision, which aims to detect and assess whether and to what extent a formal assessment is needed (Phair, 2021). During formal assessment, which is done using weighted or psychometric tests where the examiner asks the child questions, while then evaluating their written or oral responses, according to specific standards (Alexopoulos, 2004). During informal assessment, a child's speech is observed and judged through discussion or the use of materials which, however, are not adapted or weighted for the general population (Grigorakis, Kargiotidis, Mouzaki & Manolitsis, 2022).

4. LANGUAGE DISORDERS IN CHILDREN WITH MULTIPLE DISORDERS

Oral speech disorders

Speech disorders in childhood are classified according to their etiology into motor disorders, sensory deficits, central nervous system damage, severe emotional-social dysfunctions and cognitive impairments (Giannopoulou, Giannopoulou, Efstathiou et al., 2024). While depending on the developmental disorder of the child, there are difficulties in learning the language form, its content, using the language, form content, and delayed language development (Bishop et al., 2016).

Agnosia is considered a peripheral disorder (Guerra & Cacabelos, 2019), while aphasia is a disorder of the patient's ability to process symbols, a condition that negatively affects language comprehension and expression (Henrichs et al., 2011). Dyslexia is the most common speech disorder in children in which one or more phonemes, or combinations of them, of a person's native language cannot be formed correctly (Helland et al., 2017). Dysphasia is a language disorder and represents a fairly early damage to the brain structure responsible for processing linguistic information (Mazeau, 2000).

Reading, writing and voice disorders

The most important causes of learning disabilities are probably related to intelligence, physical disabilities, attention and concentration disorders, psychoses, memory disorders, psychological causes and unknown causes (Michelogiannis & Tzenaki, 2000). Also, dyslexia is a learning disability in children which manifests itself mainly in reading, writing and spelling (Kasseris, 2002). Disorientation may also indicate a speech disorder or a combination of disorders, while children with this disorder have difficulty remembering spelling, even though they know its rules (Michelogiannis & Tzenaki, 2000).

Aphonia is a voice disorder during which there is no speech (Guerra & Cacabelos, 2019), while its causes are many and varied. Dysphonia is a momentary or persistent disorder of voice function where there is a change in the characteristics of the voice (e.g. in frequency, intensity) (Guerra & Cacabelos, 2019). Hoarseness is perhaps the most common voice disorder, the causes of which may be organic or functional (Henrichs et al., 2011; Ralli, Kalliontzi & Kazali, 2022).

Speech, articulation and pronunciation disorders

This category of disorders also includes infacility, which is the inability of a child to express his thoughts correctly, according to the rules of grammar and syntax (Law, Dennis & Charlton, 2017). Another speech disorder is stuttering

which falls in the category of communication disorders (Law, Dennis & Charlton, 2017). Cluttering is usually expressed by an excessively rapid speech, where there is a mismatch in the speed of thought and expression, which is mainly observed during adolescence (Sansavini et al., 2021).

Regarding articulation and pronunciation disorders, dysarthria falls under articulation disorders and is caused by some damage to parts of the brain involved in speech (Sansavini et al., 2021). In anarthria the child has a voice and understands speech but has a problem with articulation due to the paralysis of some of its organs (Stathis, 1994). In the disorder of lalling a sound is omitted, replaced or altered, while rhinolalia is perceived as ‘nasal’ speech and is mainly due to anatomical damage to the oral and nasal cavities of the child (Bishop et al., 2016).

5. RESEARCH METHODOLOGY

Purpose – objective

The main purpose of this quantitative primary research is to investigate issues surrounding the language development of children with multiple disorders and the factors that influence it, to detect their language and learning disorders, but mainly to suggest ways and help them to improve it. Its goal is to identify the appropriate specialists who can contribute more effectively to the detection of language and learning disorders in these children, and to propose modern methods that will help them to cope more easily with their difficulties.

Research questions – research hypotheses

From the purpose and object of the research, the following most important research questions (R.Q.) arise:

1st R.Q.: Primary and secondary school students who have learning difficulties, what problems do they face and what is the special help they need?

2nd R.Q.: Are the teaching methods applied in schools today to support students with learning disabilities, as well as the resources allocated for this purpose, respectively effective and sufficient or could some improvements be made?

3rd R.Q.: How do the demographic characteristics (e.g. age, years of service) of teachers influence their views?

The following most important research hypotheses (R.H.) also emerge:

1st R.H.: Primary and secondary school students who have learning difficulties face academic, social and behavioral problems, and therefore need help in many areas of their development.

2nd R.H.: The teaching methods applied in schools today to support students with learning difficulties, as well as the resources allocated for this purpose, are not sufficient, and therefore more effort should be made in these directions.

3rd R.H.: Certain demographic characteristics (e.g. age, years of service) of teachers influence their views accordingly.

Research sample – questionnaire

The questionnaire used in this study consisted of 54 questions on a closed-ended Likert scale. Also, the teachers of primary and secondary education, of general and special schools of the Region of Central Macedonia, who ultimately participated in it, were 365 (173 men & 192 women), and their selection was carried out by random sampling.

The questionnaire for this study consisted of 3 sections, respectively with 7, 25 and 22 Likert-type questions in each of them. The questionnaire was distributed to teachers online (e-mail, viber, messenger, etc.), while their responses were collected through the “Google Forms” application. The study was conducted from October 2024 to December of the same year, while the fully completed questionnaires, which I received as the researcher from the teachers, were 365.

Pilot test – questionnaire’s reliability – results’ processing

In order to make this study more reliable, to identify any shortcomings and to correct questionnaire’s problems, a pilot study was conducted in September 2024 with the participation of 45 (20 men & 25 women) out of a total of 365 teachers.

Regarding the reliability control of the questions of the 3 sections of the questionnaire used in the research, the Cronbach's alpha index (α) was found to be high and > 0.80 . More specifically, regarding the reliability analysis of these sections and the value of (α) index of their questions, the following emerged: The range in which the alpha index (α) varies but it is between 0.965 and 0.802. This indicates a very good level of internal consistency, while if any item of the questionnaire is removed, this would not bring about substantial changes in the reliability of the scale.

Furthermore, the teachers' responses were processed using IBM's SPSS Statistics - Version 27, the statistical significance level was set at $p < 0.05$, descriptive and inferential statistics were used, as well as the chi-square test to investigate the proportionality of the sample and any effects between demographic characteristics.

Research limitations and ethics

The sample of 365 teachers is considered small for the generalization of the conclusions of this research, while the time allocated for its conduct was not considered satisfactory. These are negative elements for the research and

therefore the necessity arises for conducting a new one with a larger sample, more available time and greater dispersion.

During this primary study, all ethical rules and obligations, which relate to the law and protect the participants, were observed. The consent of the teachers for their voluntary participation was also obtained and they were informed about the purpose of the research and the preservation of their anonymity.

6. RESULTS' PRESENTATION AND ANALYSIS

In the continuation of this chapter, the individual analysis of the most important questions from the 3 sections of the research questionnaire will be carried out, so that in the sequel the research questions posed can be answered and the research hypotheses can be confirmed or not.

Teachers' demographics (1st section)

The following Table 1 refers to the 1st section ("A. Demographics") of the questionnaire, which has 7 questions and shows in detail the individual demographics of the 365 teachers (173 men - 47.4% and 192 women - 52.6%) who participated in the survey. 145/39.73% of them were 25-34 years old, 102/27.95% were 35-44 years old, 74/20.27% were 45-54 years old, and 44/12.05% were over 55 years old. 132/36.16% of the teachers had 1-10 years of experience, 114/31.23% had between 11-20 years, 82/22.47% had between 21-30 years old, and 37/10.14% had over 30 years old.

Table 1. Distribution of participating teachers' demographics

Teachers' Demographics in Main Research						
Gender						
Male	Female	Total				
173 (47,4%)	192 (52,6%)	365 (100%)				
Age						
25 - 34	35 - 44	45 - 54	55 +			
145 (39,73%)	102 (27,95%)	74 (20,27%)	44 (12,05%)			
Years of Service						
1 - 10	11 - 20	21 - 30	30 +			
132 (36,16%)	114 (31,23%)	82 (22,47%)	37 (10,14%)			
Education. Level						
Basic Degree	MSc	PhD				
272 (74,52%)	85 (23,29%)	8 (2,19%)				
Education Type						
General Education	Special Education					
301 (82,47%)	64 (17,53%)					
School Level						
Primary Education	Secondary Education					
238 (65,21%)	127 (34,79%)					
Work Position						
Directors	Deputy directors	Permanent teachers	Deputy teachers	Speech therapists	Psychologists	Occupational therapists
18 (4,93%)	22 (6,03%)	171 (46,85%)	128 (35,07%)	11 (3,01%)	7 (1,92%)	8 (2,19%)

Source: Vasilakaki Eleni-Magdalini (2024)

Main questionnaire's analysis (2nd section)

The following is referred to the 2nd section of the questionnaire ("B. Main Questionnaire"), which contains 25 questions. From the answers of the 365 teachers to these questions, the following were found:

Questions 1-3: In the classrooms where the teachers participating in this study were teaching, there were students with learning disabilities, multiple disorders and language disorders, with the first being the most common (56.2%). Therefore, care should be taken to find appropriate systems and methods to support them.

Questions 4-8 (Table 2): The 45.2% of teachers said that can manage "A little" the children with learning and language disorders, 29.3% "Very little", and 6.8% "Not at all". Also, a very large percentage of teachers (50.7% and 53.7%) consider that speech therapists are very useful for these students, while approximately 1/3 of teachers (28.5%) consider special educators to be quite necessary.

Table 2. Assessment of speech therapists/special teachers in supporting students with learning/language disorders in primary/secondary education

	Not at all	Very little	A little	Very	Too much
	N (%)	N (%)	N (%)	N (%)	N (%)
4. Do you think you can manage the children with receptive language disorder and/or expressive language disorder you have in your class?	25 (6,8)	107 (29,3)	165 (45,2)	39 (10,7)	29 (7,9)
5. Is the presence and action of a speech therapist necessary in primary/secondary education?	2 (0,5)	13 (3,6)	42 (11,5)	123 (33,7)	185 (50,7)
6. How useful do you think that a speech therapist's assessment is for a child with learning disabilities who attends primary/secondary school?	4 (1,1)	15 (4,1)	18 (4,9)	132 (36,2)	196 (53,7)
7. How useful do you think that a speech therapist's assessment is for a child with multiple disorders who attends primary/secondary school?	12 (3,3)	25 (6,8)	38 (10,4)	118 (32,3)	172 (47,1)
8. Is the presence and action of a special teacher necessary in primary/secondary education?	15 (4,1)	44 (12,1)	65 (17,8)	137 (37,5)	104 (28,5)

Source: Vasilakaki Eleni-Magdalini (2024)

Questions 10-12: From these 3 questions arises the necessity of cooperation between teachers, speech therapists, special teachers, etc., in order to better address the different needs of students with learning disabilities.

Question 15 (Table 3): As can be seen in this table, the most important role of special education teachers, according to their views and in order of priority, is: providing support, offering information, therapeutic and diagnostic functions.

Table 3. Roles of special education teachers in supporting children with learning disabilities

15. The role of special teachers in relation to children with learning disabilities is:	Not at all	Very little	A little	Very	Too much
	N (%)	N (%)	N (%)	N (%)	N (%)
a. Therapeutic	37 (10,1)	115 (31,5)	105 (28,8)	63 (17,3)	45 (12,3)
b. Diagnostic	23 (6,3)	112 (30,7)	79 (21,6)	87 (23,8)	64 (17,5)
c. Informative	35 (9,6)	71 (19,5)	78 (21,4)	92 (25,2)	89 (24,4)
d. Supportive	8 (2,2)	10 (2,7)	55 (15,1)	137 (37,5)	155 (42,5)

Source: Vasilakaki Eleni-Magdalini (2024)

Question 16: Teachers' responses to this question indicate that speech and occupational therapists have the most important role in supporting children with learning disabilities. Psychologists, special education teachers, and general education teachers follow in order.

Question 17: Teachers' responses to this question show that those most competent to identify students with learning disabilities are speech therapists (47.4% and 39.7%) and special teachers (37% and 36.4%), followed by psychologists and pediatricians.

Table 4. Effectiveness' evaluating of teaching strategies for student with learning disabilities

25. How effective are the following ways in which teachers can contribute to students learning disabilities?	Not effective	Little effective	Effective	Very effective	Absolutely effective
	N (%)	N (%)	N (%)	N (%)	N (%)
a. Referral to a speech therapist	---	5 (1,4)	47 (12,9)	126 (34,5)	187 (51,2)
b. Referral to a teacher	255 (69,9)	46 (12,6)	27 (7,4)	23 (6,3)	14 (3,8)
c. Referral to a psychologist	214 (58,6)	75 (20,5)	32 (8,8)	28 (7,7)	16 (4,4)
d. Informing them of learning disabilities	2 (0,5)	18 (4,9)	65 (17,8)	143 (39,2)	137 (37,5)
e. Referral to centers of diagnosis, evaluation and support	---	2 (0,5)	18 (4,9)	76 (20,8)	269 (73,7)

Source: Vasilakaki Eleni-Magdalini (2024)

Question 25 (Table 4): Regarding the effectiveness of various teaching methods for supporting students with learning disabilities, the teachers' responses showed that referring them to a speech therapist (51.2% and 34.5%) is the one that has value and is the most effective. Also, informing teachers about learning difficulties was deemed "Absolutely effective" or "Very effective" by 37.5% + 39.2% = 76.7% of respondents respectively, while referring the above students to diagnostic centers had the highest acceptance, with 73.7% of participants evaluating it as "Absolutely effective".

Children with multiple disorders (3rd section)

The following tables refer to the 3rd section of the questionnaire ("C. Children with multiple disorders"), which contains 22 questions. The responses of the 365 teachers show the following:

Question 1: The responses show that 73.7% of teachers believe that they do not have sufficient experience, while 22.7% believe that they have sufficient experience, in terms of managing children with multiple disabilities.

Question 2 (Table 5): The responses to this question show that teachers have more experience with students who fall into, for example, the combination of autism and speech problems (31.3% + 28.9% = 60.2%), while less experience, for example, to the combination of mental retardation and hearing impairment (51.8% + 28.9% = 80.7%).

Question 3: More than half of the teachers (53.2%) believe that their experience is sufficient to deal with the children who have receptive and/or expressive language disorders. On the contrary, 46.8% of them believe that their experience is not sufficient.

Questions 4-5: Most teachers (75.6%) believe that children with receptive and/or expressive language disorders should go to mainstream schools, while 64.1% of them believe that children with multiple disabilities would benefit more if they went to a special school.

Question 6: According to the teachers' answers, they believe that e.g. children with intellectual disabilities combined with motor, speech, or hearing impairments would be preferable to attend special schools, while e.g. children with autism and speech problems would be preferable to be included in regular schools.

Table 5. Experience according to type and frequency of work on children with multiple disabilities

2. With which kind of the following children's multiple disabilities and how often have you worked?	A few times	Several times	Many times	Always
	N (%)	N (%)	N (%)	N (%)
a. Intellectual disability and motor disability	13 (15,7)	32 (38,6)	23 (27,7)	15 (18,1)
b. Intellectual disability and mental retardation	33 (39,8)	20 (24,1)	18 (21,7)	12 (14,5)
c. Intellectual disability and autistic spectrum disorder	13 (15,7)	37 (44,6)	25 (30,1)	8 (9,6)
d. Intellectual disability and deafness	52 (62,7)	21 (25,3)	7 (8,4)	3 (3,6)
e. Intellectual disability and speech problems	24 (28,9)	29 (34,9)	19 (22,9)	11 (13,3)
f. Mental retardation and visual impairment	45 (54,2)	18 (21,7)	13 (15,7)	7 (8,4)
g. Mental retardation and hearing impairment	43 (51,8)	24 (28,9)	11 (13,3)	5 (6,0)
h. Mental retardation and speech problems	6 (7,2)	32 (38,6)	27 (32,5)	18 (21,7)
i. Mental retardation and speech/language impairment	11 (13,3)	31 (37,3)	25 (30,1)	16 (19,3)
j. Autism and speech problems	5 (6,0)	28 (33,7)	26 (31,3)	24 (28,9)
k. Autism and speech/language impairment	7 (8,4)	31 (37,3)	23 (27,7)	22 (26,5)

Source: Vasilakaki Eleni-Magdalini (2024)

Questions 7-22: The result from this group of questions reveals that for identifying, managing, and teaching children with disabilities there should be: better effectiveness and planning for children with language disorders compared to those with multiple disabilities. Also, more resources, increased training and modern assessment tools for children with multiple disabilities should be made available. Finally, educators have conflicting views regarding the resources available, planning, and setting goals for children with language disorders.

Effect of demographics on questionnaire's modules

The 2nd and 3rd sections of the questionnaire, which consist of 25 and 22 questions respectively, were divided into a total of 15 categories from which corresponding qualitative dimensions emerged that helped to provide answers to the research questions that were posed from the beginning. It was also investigated whether the demographics of the teachers influence these 15 categories of the questionnaire, which resulted in the following findings:

- There are no statistically significant differences between the 173 male and 192 female teachers, regarding the roles of specialists, challenges, and resources related to learning disabilities.

- There are significant differences according to the age of teachers, with younger teachers (25-34 years) having stronger perceptions of the roles and importance of specialists, collaboration and resources concerning students with learning disabilities supporting.
- There is the trend that teachers' perceptions of support, collaboration and understanding of learning disabilities decrease with increasing age.
- Teachers with 1 to 10 years of experience appear to be more optimistic about strategies, resources, and collaboration in supporting students with learning disabilities than teachers with more than 21 years of experience.
- Teachers with an MSc or PhD better understand and recognize the different roles, challenges and strategies related to supporting students with learning disabilities than those with only a basic degree.
- Special education teachers have a better awareness and understanding of supporting students with learning disabilities than general education teachers.
- For the two groups, that is of primary and secondary education teachers, there were no statistically significant differences in terms of the management of students with learning difficulties.
- Finally, regarding the job position of teachers, significant differences were found in all areas, with principals showing greater emphasis on collaboration, special support and teaching strategies for students with learning difficulties, than the other permanent and substitute teachers.

7. CONCLUSION - RECOMMENDATIONS

Through the analysis of the responses of the 365 teachers to the questions of the research questionnaire, it appears that all 3 research hypotheses that were initially raised are confirmed, while at the same time the answers to the 3 research questions are as follows:

Answer to 1st R.Q.: Students with learning disabilities face difficulties, mainly in reading, writing, spelling and understanding concepts. Sometimes they face social and behavioral challenges, which require specialized help in various areas and throughout their development.

Answer to 2nd R.Q.: There seems to be a need for a holistic approach to supporting students with learning disabilities, which should include the collaboration of all those involved and the provision of specialized services. The teaching methods applied and the resources available for these students are currently considered to be of moderate effectiveness, and therefore targeted improvements in teaching methods and resource allocation should be made.

Answer to 3rd R.Q.: The younger and more educated teachers are, the more positive they express views on all dimensions. In general, teachers' views vary from case to case and depending on their age, years of experience, type of education, level of school and job position.

In conclusion, the education of students with learning disabilities is complex and requires a multifaceted approach that includes collaboration, early identification, effective support strategies and inclusion practices. Finally, the analysis of the results of this study confirms the need for substantial changes in practice, so that these students can ensure an equal education.

Regarding the recommendations for the successful and effective language development of children with multiple disorders and learning difficulties, as they arise from this study, the following could be said:

- Cooperation and strengthening of relationships between all professionals, teachers and parents.
- Appropriate school infrastructure.
- Training and professional development of all teachers regarding the education of these children.
- Acquisition of basic teaching skills by teachers to address the difficulties related to the subject.
- Targeted interventions based on documented scientific findings.

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