

SPEECH AND LANGUAGE PATHOLOGY INTERACTIVE TOOLS FOR
TEACHERS IN PRE-SCHOOL AND PRIMARY EDUCATION

Speech Pathology Tools
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Intellectual output 4:
Resource Pack for Teachers at Primary Education



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Introduction

It is widely known that the speech and language development of the children of nowadays follows different periodic and dynamics than those of their parents, for example.

Most likely, each of us, under different circumstances, has found empirically that modern children are “late-talking children” - they tend to develop language skills at a later age, or that, because of their lower mastery of language, they increasingly rely on communication techniques as crying, tantrum, inarticulate speech, etc. However, without unnecessarily to delve into the reasons behind our empirical knowledge, we should all bear in mind that by the end of their third year of age, most children must have acquired linguistic competence which to enable them to communicate successfully in their mother tongue (first language) or in both parents’ languages, if they live in a bilingual family. Otherwise, we have a case of violated communicative development. The violation in communicative development is not **unimportant** and should not be expected that the child will overcome it naturally while growing up – actually it could and does affect the overall development of the child - psychic processes, communication abilities, learning abilities, emotional and behavioural functioning, etc. At a later stage, as the language and speech pathologies affect the ability of the child to receive, understand, produce and express verbal, non-verbal and graphic information, violated communicative development causes limited educational attainment, reduced employment opportunities and problems with social adaptation. For this reason, the effective and early detection of speech and language pathologies, as well as promotion, prevention and educational support are crucial for child’s personal development and his social functioning as an adult.

Speech Pathology Tools project’s consortium believes that timely intervention is what can create better opportunities for children with communication disorders, as well as that such children need appropriate support which to enable them to interact socially and participate fully in the educational process. In this regard, the consortium has created *Resource Pack for Teachers at Primary Education*, which includes information about the speech and language disorders and how they may affect children’s school life, information on assessment strategies, interventions and useful resources, etc. The main aim of this Resource pack is to increase teachers’ confidence in working with pupils who have speech and/or language difficulties.

1. Why communication abilities are so important?

Since we were children, we all know that the only way we can express our desires and wishes is by showing them through *facial expressions, gestures and sounds*. However, the more we grow, the more “understandable” our desires become for the others - the *words and intonation* take the lead from the facial expressions, gestures, and since this moment we realise the “power” of communication as the only way to exchange meaningful messages with other individuals from the surrounding environment. Since this moment we recognize the communication as the basic social process which determines each activity of our social behaviour and understand that good communication abilities are of high importance both for our personal development and our interpersonal relationships’ development. Good communication abilities are integral part of the full social functioning of the person as a society member because only by communicating the individual is able to convey and receive knowledge, thoughts, feelings, experience; to access culturally transmitted knowledge; to develops his thinking ability and the sense of self; to participate in social interactions and relationships - to establish and maintain strong family, peer, and community relationships.

2. What a communication disorder means?

Usually, we consider the speech and language as routine skills that people acquire automatically as they grow and do not think about the communication ability as an extraordinarily complex process, what it actually is. However, we shortly remember this when meeting a child or adult whose speech and language development have been interrupted or ceased. The approximate prevalence of the communication disorders in children is 25% - 1 of every 4 children has a communication disorder that impacts his ability to talk and/or understand (Cf. Robb, 2020:12).

2.1. The term “communication disorder”

The term “communication disorder refers to *disrupted ability to exchange meaning with another when sending and/or receiving information* (Cf. Prelock & Hutchins, 2018:1) usually refers to one or more speech, voice, language, and swallowing disorders, which means that the person faces communication difficulties due to some of the problems listed below:

- Lispering;

- Substituting or deleting sounds in words (e.g., saying “fwee” for “free,” saying “jo” for “joke”);
- Multiple pronunciation errors;
- Unintelligible speech;
- Omitting of word endings;
- Using incorrect pronoun;
- Low vocabulary;
- Inability for comprehending;
- Inability for understanding and following oral instructions;
- Speaking in grossly inaccurate word order;
- Hoarse or raspy voice (changing voice) or lack of voice;
- Fluency disruptions, etc.

Although we use the term “communication **disorder**”, which refers to the disability/impairment discussion, an only low percentage of all children with speech and language disorders have severe enough problems to meet the standard of disability. Of course, this conclusion is relevant only for those group of children whose communication disorders are **primary** and are not attributed to another medical condition, like Cerebral palsy, Down syndrome, etc.

However, the term “communication disorder” has been used synonymously both with impairment and disability, but in any case, it indicates some diminished communication structure or function, which does not necessarily mean that the person’s access to daily activities is hampered (*Cf.* Gillam, Marquardt, & N. Martin, 2010: 4-7). Translated in everyday language, this all means not more than that someone’s communication ability is different from what is typically encountered.

Still, not every child with limited language ability has a communication disorder. For example, a child whose mother tongue is different from the one of the national country he lives is not necessarily expected to have the same easiness to learn and to speak the national language as a native speaker does. If a Roma child who learns Bulgarian language as a second language, will most

probably require some extra time and help in learning the language, particularly in social and educational contexts, than the Bulgarian child. However, unless there is a communication impairment characterised by a loss of function or structure, Roma child's limited proficiency in Bulgarian should not be identified as a communication disorder, but as *communication difference*, and he should not be referred to a speech-language pathologist (*ibid*).

3. Classification of the communication disorders

The analysis and classification of the communicative disorders are based on two basic theoretical models - medical and linguistic-behavioural. The medical theoretical model was the first to emerge. It uses the following approach: the causes of the diseases and their symptoms are sought, treatment is determined and the outcome is predicted. Based on the knowledge of the *cause-symptom-treatment-outcome* relationship, the disease is diagnosed. From the second half of the 1970s and the beginning of the 1980s, the linguistic approach to communicative disorders was gradually introduced and strengthened. This shift is a consequence of the application of linguistics in the studies of communicative disorders and the increase in studies on the language development of the child. This creates a new theoretical model, called by some authors behavioural because it is derived from the behavioural sciences and is aimed at analysing communicative behaviour, and from others - linguistic because it is based on linguistic analysis in the diagnosis and treatment of communicative disorders. As the two terms equally reflect the same phenomenon, the term linguistic-behavioural model was necessary.

3.1. Classification of the communication disorders based on the medical model

According to the medical model, communicative disorders are divided into two large groups - acquired and developmental disorders. This division is made on the basis of the etiological aspects of the pathology, reflecting the moment of its occurrence (*Cf. Cenova, 2019:34-40*).

- **Acquired Disorders:** all disorders that occur after the speech has developed (for example due to traumatic brain injury, meningitis, etc.). They are characterized by decay, loss of speech and language ability (ex. *Acquired Dysarthria*)

- **Developmental Disorders:** all disorders that occur before speech development (for example, speech disorder due to a Cerebral Palsy). They represent underdevelopment, lack of speech and language ability (ex. *Developmental Dysarthria*)

Furthermore, according to the medical model of classification, the speech and language disorders are being categorised in two more groups depending on the etiological aspects of the manifested pathology (Cf. Prelock & Hutchins, 2018:1-3)

I group

- **Primary:** the disorder does not arise from an underlying medical condition (e.g., cerebral palsy, Down syndrome, hearing impairment, stroke).
- **Secondary:** the disorder can be attributed to another medical condition, like brain cancer.

II group

- **Organic communication disorders:** suggesting a physical cause, like hearing loss or brain injuries.
- **Functional communication disorders:** suggesting an unknown cause (ex. *Specific Language Impairment*).

3.2. Classification of the communication disorders based on the linguistic-behavioural model

According to the linguistic-behavioural model, communicative disorders are divided into two large groups depending on which aspect of communication is affected – *speech and language disorders*. The term “**speech**” refers to a complex of coordinated movements of the human’s oral mechanism which produces meaningful sounds (pronunciation). Each disruption in this complex of movements affects the production of the phonetic aspects of words, phrases, and sentences so that communication becomes partially or completely unintelligible to listeners. Stuttering, for example, is a form of speech disorder that involves disruptions in the rate and/or fluency of speaking due to hesitations and repetitions of speech sounds, words, and/or phrases. The elements of speech are:

- **Articulation:** how speech sounds are made (e.g., the [m] sound is produced by putting the lips together and letting air escape through the nose)
- **Phonology:** how speech sounds are put together (e.g., children must learn how to produce not only the [s] in “sap” but the [s] in “slap” which is more difficult as it occurs in a consonant cluster)
- **Voice:** the coordination of breathing and vocal fold vibration to produce sound (also referred to as phonation)
- **Fluency:** the smooth production of speech, including rhythm (e.g., stuttering is considered a fluency disorder)

“**Language**” refers to a code or system of symbols for representing ideas in various modalities, including understanding (comprehending) and speaking, reading, and writing. Language is a **rule-governed symbolic system** that is made up of socially shared rules. An impairment in person’s coding and decoding ability affects the language expression and comprehension, and this could be manifested as disruption in the acquisition of vocabulary (words), word endings, and sentence structure, extreme difficulty in using correct words and proper grammar, difficulties in understanding, etc. The elements of language are:

- **Semantics:** the meaning of the words (e.g., the word “wave” can refer to a water surface wave or a hand gesture or signal)
- **Morphology:** the rules of making new words (e.g., life, living)
- **Syntax:** the words’ order in a sentence (e.g., “Jill, my neighbour, loves to sing”)
- **Pragmatics:** the socially appropriate use of language (e.g., understanding sarcasm, using polite constructions like “please” and “thank you,” understanding how to take turns and initiate and conclude conversations)

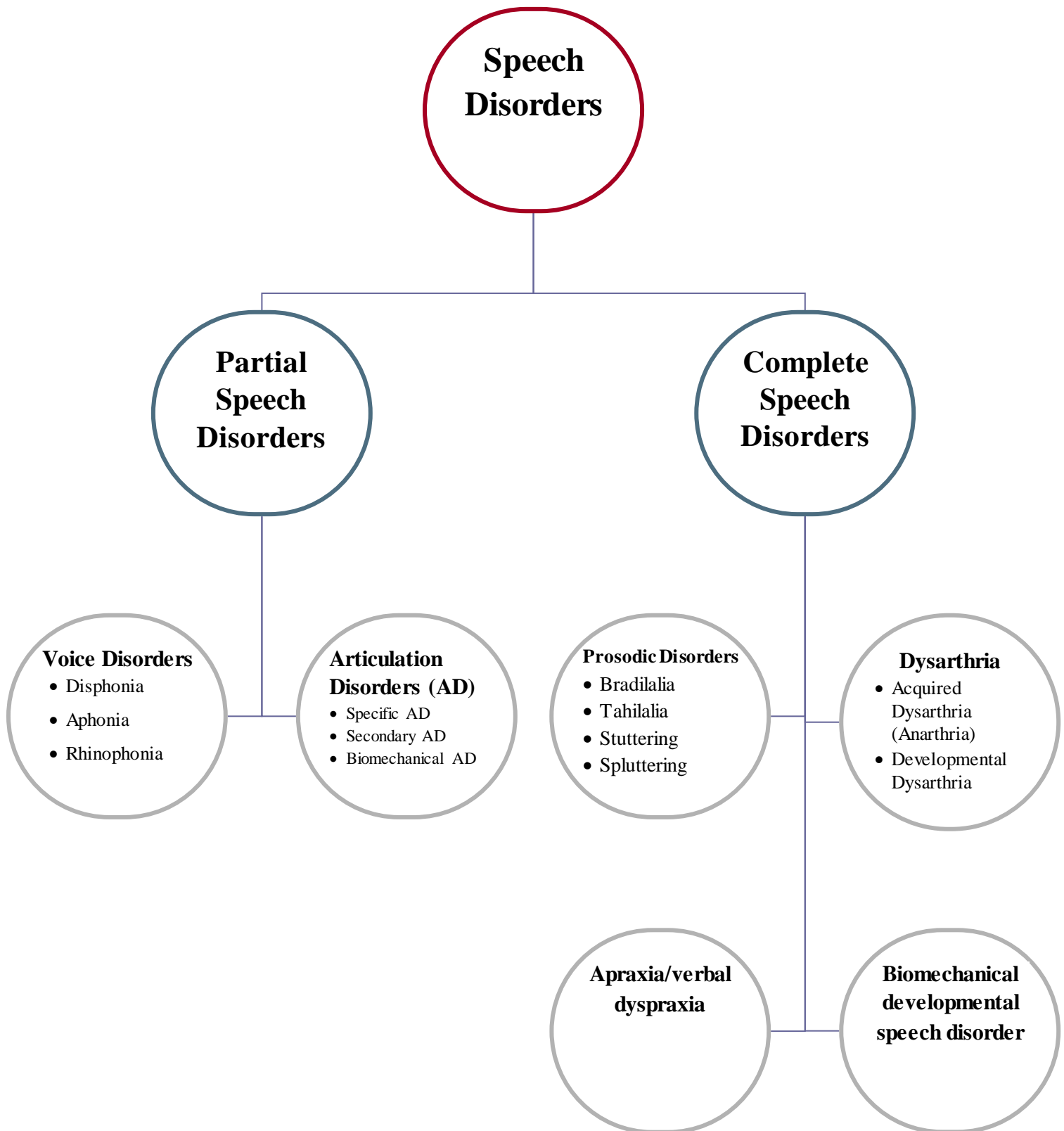
3.2.1. Speech Disorders

What is affected is the external form of the statement through the oral speech. Speech disorders are deficits that may prevent speech from being produced at all, or result in speech that cannot be understood or is abnormal in some other way.



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According to the linguistic-behavioural model, Speech disorders could be divided into the following **sub-types** (*Cf.* Cenova, 2019:34-38):



3.2.1.1. Partial Speech Disorders:

They are categorised by a violation of one of the elements of speech – either phonation or articulation. Partial speech disorders are divided in *voice* and *articulation disorders*:

Voice disorders:

- *Dysphonia*: pathological changes in the pitch, volume and tone of the voice
- *Aphonia*: lack of voice
- *Rhinophonia*: pathological changes in the voice resonance, known as nasal voice

Articulation disorders: inability certain word sounds to be formed correctly. Word sounds may be dropped, added, distorted, or swapped

- *Specific articulation disorders*: incorrect articulation of speech sounds in children with normal psychophysical development and without abnormalities in the speech organ's structure.
- *Secondary articulation disorders*: concomitant disorder, one of the symptoms of intellectual or sensory impairment.
- *Biomechanical articulation disorders*: impaired articulation due to congenital malformations of the speech organs

3.2.1.2. Complete Speech Disorders: They are categorised by a violation of two or more than two of the elements of speech. Overall, complete speech disorders are prosodic disorders, dysarthria and apraxia.

Prosodic disorders:

- *Bradilalia*: pathologically slow speech
- *Tachylalia*: pathologically fast speech
- *Sputtering*: episodic prosodic disturbances that can go stuttering
- *Stuttering*: impaired speech fluency characterized by repetition of sounds, syllables, words, lengthening of sounds, spasms and blockages of speech muscles

Dysarthria:

- *Acquired dysarthria (Anarthria)*: disorder of **the** articulation, breathing, phonation and prosody as a result of focal brain lesions. Depending on the localization of the injury, it is divided into bulbar dysarthria and pseudobulbar dysarthria.
- *Developmental dysarthria*: associated with Cerebral Palsy syndrome

Apraxia (Acquired and Developmental apraxia)

A disorder of the speech praxis resulting from local lesions of the central nervous system, characterized by impaired speech fluency and articulation.

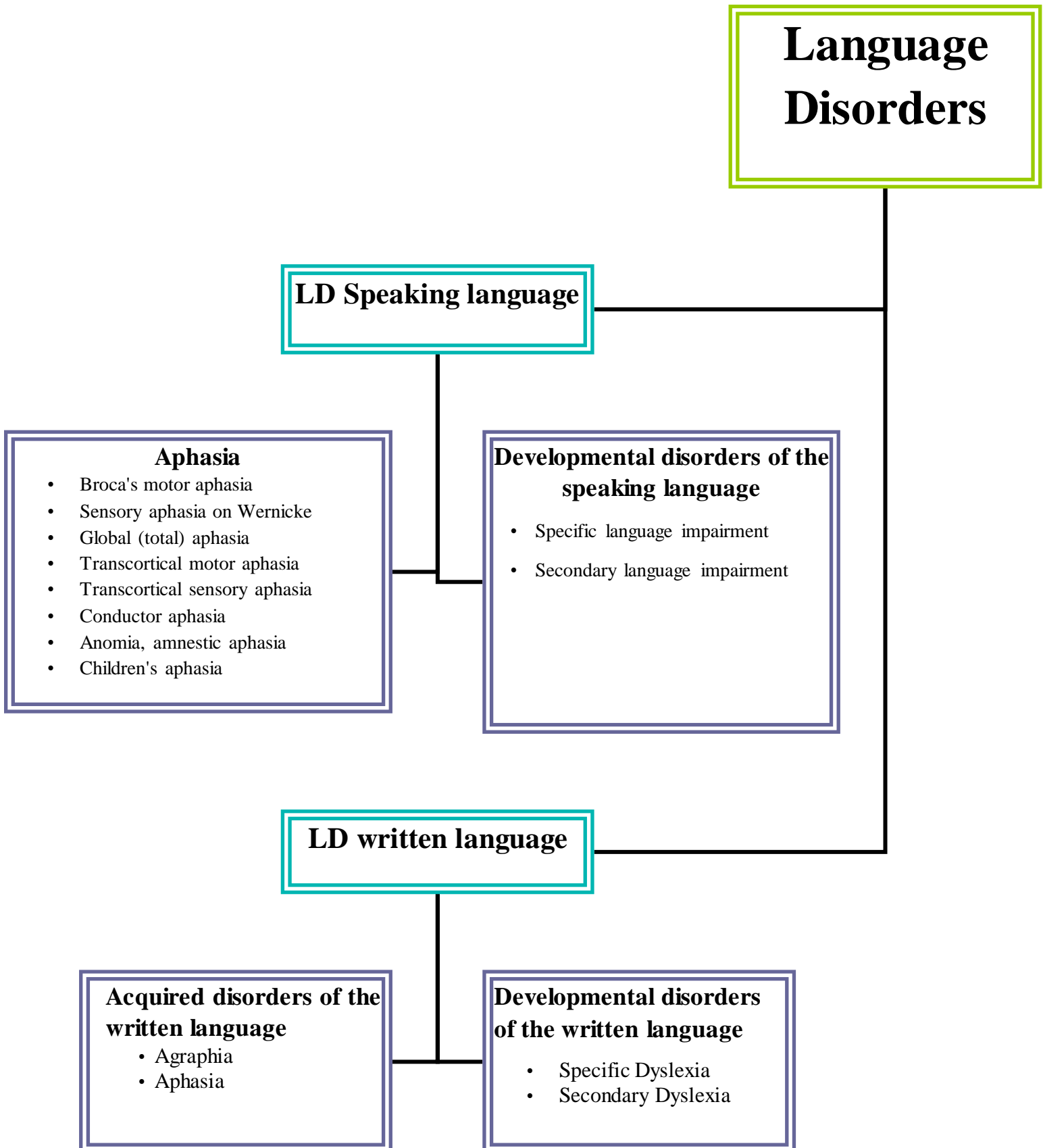
Biomechanical Speech Disorders

Disorders in breathing, phonation, articulation, and prosodic as a result of Congenital malformations in speech organs (ex. Congenital Cleft Lip and / or Cleft Palate).

3.2.2. Language Disorders

Language Disorders are characterized by a violation of language encoding and decoding. Language disorders are a heterogeneous group of violations in the comprehension or production of spoken language. This heterogeneity manifests itself in the severity of the disorder, with some children showing mild grammatical difficulties, others showing no syntactic knowledge, and others having no expressive language.

According to the linguistic-behavioural model, Speech disorders could be divided into the following **sub-types** (Cf. Cenova, 2019:38-40):





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3.2.2.1. Speaking Language Disorders:

What is affected are the language operations on the generation and comprehension of verbal messages. Speaking Language Disorders are divided in *Acquired disorders of the speaking language* and *Developmental disorders of the speaking language*.

Acquired disorders of the speaking language (Aphasia): **decay** of the language as a result of organic brain damage:

- *Broca's motor aphasia*

Also known as expressive aphasia, is a type of aphasia characterized by partially lost ability for language producing, while the comprehension can be relatively preserved.

- *Sensory aphasia on Wernicke*
- *Global (total) aphasia*
- *Transcortical motor aphasia*
- *Transcortical sensory aphasia*
- *Conductor aphasia*
- *Anomia, amnesic aphasia*
- *Children's aphasia*

Developmental disorders of the speaking language:

- *Specific language impairment*

Characterised by a significant deficit of spoken language ability - phonological, grammatical, semantic-pragmatic impairments with no obvious accompanying medical problems or neurological damage.

- *Secondary language impairment*

Significant deficit of spoken language ability due to intellectual disability, sensory deficiency, autism spectrum disorder, attention deficit hyperactivity disorder, etc.

3.2.2.2. *Written Language Disorders:*

Acquired disorders of the written language

- *Agraphia*

Refers to an acquired impairment of writing caused by damage to any of the cognitive, linguistic, or sensorimotor processes that normally support the ability for spelling and writing

- *Alexia*

Acquired reading impairments: peripheral (Alphabetic Alexia, Alphabetical reading, Spatial Alexia, Attentional Alexia) and Central (Lexical Alexia, Semantic Alexia, Phonological Alexia, Deep Alexia)

Developmental disorders of the written language

Congenital or early acquired disorder in the mastery of reading and writing as a result of organic brain damage.

- Specific Dyslexia
- Secondary Dyslexia

4. Why communication abilities are important for children's academic performance?

Speech and language skills that children have acquired through listening and speaking provide the foundation for their reading and writing abilities and these new literacy skills are critical for learning and social development through the school years and beyond. At the same time, ongoing growth in spoken language skills contributes to building personal and professional relationships and participating independently in society.

In this regard, speech and language disorders could be serious disabilities with long-term ramifications for cognitive and social-emotional development and for literacy and academic achievement and could have lifelong economic and social impacts. The disruptions in the communication skills are evidenced in increased risk for learning disabilities, behaviour disorders, and related psychiatric conditions have a significant adverse impact.

4.1. Impacts on Literacy and Academic Achievement

Severe speech and language disorders are associated with reading disabilities and general disruptions in literacy (*See Fletcher-Campbell, Reid, & Soler, 2009*). In essence, reading involves mapping visual symbols (letters) onto linguistic forms (words). When the acquisition and mastery of oral vocabulary are impaired, it is expected that the mapping of symbols such as letters onto words is also disrupted. In addition, broader language and speech disorders can make processing the visual symbols much less efficient and disrupt their mapping onto meaning. Even after vocabulary has been acquired, cognitive problems with translating text to language can continue. In languages such as English that use phonetic text, severe speech disorders also can disrupt the phonological processing associated with reading (*See Pennington & Bishop, 2009*). In sum, severe speech and language disorders often have direct or indirect adverse impacts on the development of literacy and fluent reading. In addition to their direct impact on literacy, severe speech and language disorders can have a deleterious cascading effect on other aspects of academic achievement. To illustrate, in a 15-year follow-up study of children with speech and language disorders, a high percentage (52 percent) of the children initially identified with such disorders had residual learning disabilities and poor academic achievement later in life (*Cf. King, Jones, & Lasky, 1982*). The overall long-term achievement in language-impaired children are also poor (*Cf. Hall and Tomblin, 1978*). More recently, a study of preterm infants with language disorders indicated multiple disruptions in subsequent achievement. With this regard, Stoeckel and colleagues (2013) report a strong correlation between early language problems and later diagnosis of written-language disorders.

4.2. How language and speech disorders may affect children in education settings?

The school years cover a broad developmental range, and language disorders during adolescence are as important to identify as disorders occurring at earlier ages. However, language development is more gradual and individual in adolescence than it is in younger children, and identification of a disorder may be particularly challenging. Later language developments, such as the acquisition of figurative language (e.g., metaphors and idioms), advanced lexical and syntactic skills (e.g., defining abstract words, using complex sentences), analogical reasoning, and effective conversational skills, such as negotiation and persuasion, each develops over an extended period. At the same time, competence with these language skills is fundamental for dealing effectively with the

academic and social curricula of high school. Adolescents with language disorders are at risk for dropping out of school or in other ways, not making a successful transition to employment or university after high school. Thus, emphasising adolescents' functional competence in social communication has been increasingly advocated.

4.3. Language Disorders in School-Age

Even though the symptoms and severity of a child's language disorder are expected to change over time, language disorders tend to be chronic. Preschoolers who are identified with language disorders are at substantial risk for experiencing language disorders during the school years and are also at risk for the academic, social, and vocational difficulties often associated with language disorders. School-age children with language disorders are characterised by their heterogeneity- from mild grammatical difficulties to no expressive language. For children with severe language disorders, spoken language may present extreme difficulties. In these instances, children may use augmentative forms of communication, such as graphics systems, manual signs, and electronic speech output devices, to facilitate language development or to serve as alternative forms of communication.

Across populations of children, difficulties in all domains of language, semantic, syntactic, and pragmatic, have been found. Current thinking in speech-language pathology, however, is not to address individual skills in isolation but to focus on broader aspects of the child's language and the learning environment that will best promote the child's current and future communicative success. This includes recognising the link between language, especially phonological awareness (awareness of the sound structure of words), and literacy skills.

Oral narrative production is another area that has received attention, in part because the ability to tell a cohesive story rests on other language and cognitive skills and in part because good narrative skills seem to be associated with good academic performance.

Also, children with language disorders are at risk for fewer and less effective social interactions than other children of the same age. Thus, the language foundations for social interaction, particularly conversational skills, constitute a major area to be addressed.

4.3.1. Phonology

Phonological errors can impair intelligibility and make the child overly self-conscious. For these reasons, they should be addressed during language intervention. Phonological disorders in young children are sometimes predictive of later problems in learning to read, particularly when additional deficits in phonological awareness are present. Problems in phonological awareness - the ability to analyse and manipulate the sounds of the language - commonly occur in school-age children with language disorders and underlie their difficulties in learning to decode and to spell words. Unfortunately, difficulties in decoding text can severely hamper a child's reading comprehension, just as difficulties in spelling can hamper the writing process.

4.3.2. Syntax and Morphology

The conversational speech of school-age children with language disorders is often characterised by utterances that are shorter and simpler than those of their peers with typical language development. Similar problems can be observed in written language when children are asked to produce a narrative, persuasive, or expository texts for school assignments. School-age children with language disorders characteristically produce shorter texts with fewer details, poorer organisation, and a greater number of grammatical and spelling errors than their age-matched peers¹. They may also show evidence of morphological difficulties in writing. For example, they may omit the plural and past tense markers (“They use their skate yesterday”), or they may fail to use past irregular verbs correctly in obligatory contexts (“He teached them to read”) even as late as 12 years of age.

4.3.3. Semantics

Compared to their age-matched peers, school-age children with language disorders frequently demonstrate limitations in lexical knowledge, particularly in relation to words that express abstract (pride, courage), polysemic (deep, absorbing), or technical (equation, parabola) meanings¹. Figurative expressions such as metaphors (The lawyer was a bulldozer questioning the witness), idioms (throw in the towel, read between the lines), and proverbs (Every cloud has a silver lining) also pose comprehension difficulties, along with slang expressions (grandma lane), sarcasm (“your room is SO clean now!”), and humour (Q: “which sport is the quietest?” A: “Bowling. You can hear a pin drop”)². Word retrieval, the ability to call up words with speed and accuracy, is often impaired as well, particularly in relation to low-frequency (tambourine) or abstract (religions) words.

Deficiencies in semantic development can severely limit a child's spoken and written communication, affecting social development and academic progress. For example, difficulties in word retrieval and humour comprehension can prevent a child from freely engaging in telling jokes and riddles, a popular pastime among school-age children. Because teachers' classroom talk and the textbooks used in schools frequently contain difficult words and expressions, children with semantic deficits often fail to understand much of what they hear and read. These effects are cyclical because listening and reading themselves are major sources of language learning input during the school-age years. As a result, children who are deficient in listening and reading will continue to fall farther behind their peers in language development as they grow older.

4.3.4. Pragmatics

Problems in pragmatics—the social use of language—commonly occur in school-age children with language disorders. Because of their phonological, syntactic, morphological, and semantic deficits, children with language disorders may receive social penalties from their typically developing peers in the form of teasing, harmful comments, and personal rejection. This type of negative feedback can cause a child to avoid social situations and the opportunities they present for language development. For example, through regular interactions with peers, children are able to observe others using complex language and can themselves practice using appropriate phonological patterns, syntactic structures, morphemes, words, and figurative expressions in varied contexts such as greeting others, having conversations, exchanging information, agreeing and disagreeing, and persuading others to do things. A variety of pragmatic difficulties have been reported in school-age children with language disorders. In relation to peer interactions, these difficulties include limitations in the ability to access ongoing playgroups; to collaborate, persuade, and negotiate; to engage in extended conversations; and to deliver bad news tactfully.

5. Pathology and disorders in the speech and language (national dimensions)

5.1. Speech and language disorders

The problem of speech and language functions, by its complexity, has a very wide variety of classification systems. For example: by cause, time of reporting, statement of characteristics, etc.

The broadest accepted classifications used by professionals in a world practice are:

- ICD-10 (Classification of mental disorders data provided by the World Health Organization, the latest issue - The International Statistical Classification of Diseases and Related Health Problems, World Health Organization)

F80-F89 Disorders of psychological development¹

- DSM-V (Classification of mental disorders by the American Psychiatrist Association, the latest issue - Diagnostic and Statistical Manual of Mental Disorders, 5th Edition, American Psychiatric Association)²

5.2. Speech and language pathology

5.2.1. *Speech and language Pathology in United Kingdom*

- Definition of SLP in **United Kingdom**

At the end of 2001, the Priority Program “Education for All” in the field of disability was launched in the European countries. The aim of the program was “to priorities disability issues on the agenda of development programs to promote inclusive education as a major approach to achieving universal education for all” (UNESCO, 2017). This initiative is dictated by the belief that “inclusive education offers a strategy for the introduction of effective universal education because it means building schools that are capable of meeting actual differences needs of children and communities.

Early childhood education and care also enable early identification of disabilities and children at risk of disability, allowing parents, health workers and teachers to better plan the needs of children with disabilities (World Education Forum, 2015).

In the UK, speech and Language Pathology is more commonly referred to as Speech and Language Therapy. The Royal College of Speech and Language Therapists (RCSLT) is the professional body providing leadership and setting professional standards for speech and language therapy in the UK.

¹ <https://www.who.int/classifications/icd/en/bluebook.pdf>

“Speech and language therapists (SLTs) provide life-improving treatment, support and care for children and adults who have difficulties with communication, eating, drinking or swallowing.”

“SLTs assess and treat speech, language and communication problems in people of all ages to help them communicate better.”

Children are the focus of the speech and language pathology tools for teachers project, and so the tools and materials developed will be of interest to the subset of SLTs in the UK who specialise in point 1 above.

Whilst in school in the UK children are continuously monitored by the teaching staff. There is expected to be a new baseline test introduced in reception classes (age 5) in the near future, which may also help in early identification of SLCN. There is currently also a phonics screening check in Y1 (age 6), an end of Key Stage test at the end of Y2 (aged 8), and another end of Key Stage test in Y6 (age 11). These tests and checks all offer additional opportunities for teachers to compare each child to expected standards and to identify potential SLCN in children.

Beyond Measure is a document produced by the Communication Trust on the use of the reception baseline assessment in identification and support for children with speech, language and communication needs.³

- **Links to a number of excellent resources for teachers on areas such as:**

- *Expected abilities of children by age*
(www.thecomunicationtrust.org.uk/universallyspeaking)
- Strategies for early identification of SLCN
(http://www.thecomunicationtrust.org.uk/media/267020/strategies_for_every_classroom_early_identification_of_slcn.pdf)
- *Teacher knowledge assessment and access to training*

5.2.2. *Speech and language Pathology in Bulgaria*

- Definition of SLP in **Bulgaria**

² <https://dsm.psychiatryonline.org/doi/book/10.1176/appi.books.9780890425596>

³ http://www.thecomunicationtrust.org.uk/media/382086/tct_beyondmeasure.pdf

In the scope of logopedics are children from preschool and school age as well as adults with abnormal speech status. The main aim of speech therapy is to develop and implement scientifically proven and practically verified methods for speech prevention and from speech pathologists through specialized systems for education and socialization.

According to the Ordinance on inclusive education⁴, logopedic prevention of communicative disorders and learning difficulties includes:

1. Study of the pupils' written speech from an initial stage
2. Determining the needs of children and students for speech therapy

Logopedic diagnosis of communicative disorders includes:

1. Diagnosis of speech disorders;
2. neuropsychological diagnostics of the entry and exit level of children aged 3 to 6 and of students from primary, lower secondary, first and second high school stage;
3. Diagnosis of the language competence of children from 3 to 6 years of age.

4 The therapeutic activity with established indications of communicative disorders includes:

- 4.1. Preparation of individual therapeutic plans;
- 4.2. Early speech therapy for children aged 3-4 years with complex communication disorders and at risk of learning disabilities;
- 4.3. Conducting therapeutic activities with children and students with communicative disorders.
5. Creation of methods and methodologies for specific speech effects, as well as for education and re-education of speech.
6. Research the stages of forming the right speech under the influence of corrective actions.
7. Prevention of speech disorders (Karagiozov I., Garbacheva A., 1996, 71).

⁴ Available at: https://www.mon.bg/upload/18440/nrdb_priobshavashto_181218.pdf

The “National Plan for Integration of Children with Special Education Needs” addressed towards children with physical, sensory, intellectual, speech and language or multiple disorders outlines the framework for implementation of inclusive education in Bulgaria.

In carrying out the assessment of the individual needs of children and students, the specialists from the team must use Methodologies approved by the Ministry of Education and Science (Examples include: Methodology for assessment of the educational needs of children and students; Methodology for functional evaluation and work with children with intellectual disability and autistic spectrum of development; Methodology for assessment of the individual needs of children and students with multiple disabilities; methods for verbal and non-verbal evaluation - PECS system; MACATON; hand-in-hand communication; Tadoma method; C-MAP method; standardization wounds instruments; Test “Binet-Terman”; Test Wexler, etc.)⁵.

5.2.3. Speech and language Pathology in Slovenia

- **Definition of SLP in Slovenia**

In Slovenia, speech and language pathology is more commonly referred to as speech and language disorders. National Education Institute Slovenia is the main national research, development and consultancy institution in the field of pre-school, primary and general secondary education and is the professional body, setting standards and definitions for speech and language pathology in Criteria for the definition of the types and levels of deficits, obstacles or disruption of children with special needs.

The speech-linguistic disorder is defined by a speech therapist according to professional standards per criteria for defining the disorder. Disorders appear on the continuum from easier to heavy disorders in one or more fields: pragmatics, semantics, syntax, phonology, articulation and fluency of speech. An important factor in defining a speech-language disorder is the finding that a speech-language disorder has a significant impact on children's educational attainment needs and performance, and performance in the educational process.

No official data about the prevalence of speech, language and communication disorders are currently available in Slovenia.

⁵ <https://mon.bg/bg/100382>

About 180 speech and language pathologists are responsible for the needs of children and adults with speech, language, and communication impairments. Twenty thousand users are examined by a speech and language pathologist annually, mostly children and adolescents.

According to the National Institute of Public Health, there had been 8.6 percent of preschool children identified as children with speech and language disorders in the year of 2012. Statistical Office of the Republic of Slovenia reports that 1.3 percent of children with special needs are included in preschool education, and 5.87 percent of children with special needs are included in primary school education including children with speech, language, and communication disorders.

Systematic evaluation of speech, language, and communication development in the preschool period is carried out by specialists in health institutions. Speech, language and communication function is checked within the general medical examination at the age of three for the first time and at the age of five, for the second time.

At the age of three, children undergo a paediatric preventive examination, which includes psychological examination, where next to other, the psychologist also checks speech and language functioning.

At the age of five, before the school entry, children undergo another paediatric preventive examination. Psychologist tests a child's functioning with the Denver Developmental Screening Test, which also includes items of speech, language, and communication.

5.2.4. Speech and language Pathology in Belgium (Flanders)

- Definition of SLP in **Belgium** (Flanders)

Language development follows a certain pattern (the different stages of language development). With a number of children, this development has a delayed or deviant course. Speech therapists then speak about a dysphatic development or a primary language development disorder. The disorder affects both the development of the language form (inflexions and conjugations and sentence structure), the language content (vocabulary) and language use. Sometimes the child also exhibits characteristics of hyperkinetic behaviour and disorders in attention and concentration. If the language does not develop

normally as a result of an intellectual disability, a hearing disorder or a mental disorder, then we speak of a secondary language development disorder.⁶

A limited survey in Flanders showed that speech and language development disorders occur in 8% of boys and 6% of girls (Scheiris J. and Desoete 2008). However, general prevalence figures for Flanders are lacking. We assume that the prevalence of problems in language development in Flanders is about the same as the prevalence mentioned in international literature:

7 to 10% of children have language development problems. In a part of the children, this can be eliminated by speech therapy (in that case we speak of a language delay or language disorder). Three to 5% of children have a primary language development disorder (Kind en Gezin, 2010).

Zink & Breuls state that developmental dysphasia has a prevalence of 3%, all secondary speech and language development problems together give a prevalence of about 2% (Zink & Bruels, 2012).

It has also been found that some children who were diagnosed with a primary language development disorder at three or four years of age, after a number of years were no longer within the criteria for this diagnosis (Van hell & Vederburg, 2007).

The Centre for Educational Guidance (CLB) is the institution for pupil guidance in Flanders in both primary and secondary education. The government considers a number of core activities to be the responsibility of the CLB (Leerlinggebonden aanbod, 2009), such as reception, clarification of questions, provision of information and advice, diagnosis and collaboration with the network with regard to care questions concerning speech and language development.

Accompanying activities in support of the speech and language development of a pupil can fit within the four guidance domains of the CLB: learning and studying, educational career, psychological and social functioning and preventive health care.

5.2.5. Speech and language Pathology in Turkey

- Definition of SLP in **Turkey**

Speech-language pathology/therapy (SLP) is a newly developing profession in Turkey.

⁶ See <https://www.vl.be/zorgverlener/taalstoornissen>

The largest linguistic minority is Kurdish, spoken in southeast Turkey. There are Jewish and Armenian minorities as well who have grown up as bilinguals.

Turkish is an agglutinating language, that is, a fairly large number of affixes may be added to the root, each of which has only one meaning or grammatical function.

The prevalence of hearing loss is 1-2 infants per 1,300 live births, and this number increases five times when the children reach 5 years of age in Turkey. Even if the hearing loss is mild, it may cause a delay in speech and language development, cognitive, social and emotional development, and in the academic performance of the child.

The Turk Stat study titled, “Problems and Expectations of Persons with Disabilities”, published in 2010, was limited to the persons registered in the National Database of Disabled People. According to the study, 4.9% of the individuals who had medical reports and were registered in the database were aged 0-6 years, and 16.2% were aged 7-14 years, while 17.2% were aged 15-24 years. The table provides an overview of disabilities across age groups.⁷

Speech-language pathology/therapy (SLP) is a newly developing profession in Turkey. Currently, in the entire country, only seven persons hold advanced (Doctoral level) degrees in speech-language pathology, having trained overseas at postgraduate levels, mainly in England and the United States. Historically, medical specialists provided most of the rehabilitation services, with a special emphasis on diagnosis. Speech-language services were first introduced through the efforts of governmental organisations.

Children having speaking difficulties continue their education through inclusive education at regular schools where special measures are taken. These measures may be informative meetings organized by the guidance and research centres and child psychiatry offices for teachers, institution administrators and parents on individual and development characteristics of the child, guidance on the measures that have to be taken at school, class, and home without interrupting the educational environment and in-service training seminars for teachers and parents. Suitable therapy services are provided for these students at guidance and research centres.

⁷http://en.egitimreformugirisimi.org/wp-content/uploads/2017/03/UnicefOzelGereksinimliRaporENG.08.06.16.web_.pdf

5.2.6. *Speech and language Pathology in Serbia*

- Definition of SLP in **Serbia**

The broadest accepted classifications used by professionals in world practice, and also in Serbia are:

ICD-10 (Classification of mental disorders data provided by the World Health Organization, the latest issue - The International Statistical Classification of Diseases and Related Health Problems, World Health Organization)

DSM-V (Classification of mental disorders by the American Psychiatrist Association, the latest issue - Diagnostic and Statistical Manual of Mental Disorders, 5th Edition, American Psychiatric Association)

In Serbia, the accepted world practice, as highlighted above in the world practice section, is followed by professionals. The most frequent Dyslalia dislocations in the Serbian language are sigmatism (refers to the voices S, Z, C, Ć, Đ, Š, Ž, Č, Dž), lambdacism (refers to voices L and LJ) and rotatism (refers to voice R).

According to the ULS (Association of speech therapist of Serbia) data, all the speech therapists that work in the health system, the education system and the social protection system are collected, and it follows that in Serbia on 20,000 people, comes in one logopedist.

According to the Institute of Phonetics, more than 60 percent of children in Serbia have a speech disorder, eight times more than fifty years ago.

SLT provision in In Serbia

The common practice in Serbia is that each nursery and primary school has its own logopedists. They work with children, and they are supposed to identify and treat any type of speech and language disorder.

6. Mobile application

Usage scenarios (instructional approach for pre-school and elementary school)

- Age-based test
 - The age-based test is an orientation tool to understand a child's speech development and to identify possible delays or issues. It can be administered by the pre-school teacher, teacher, or a parent/caregiver. After entering the birth date, the age calculator calculates the child's age.
 - The 'Language skills' button will display expected language skills for entered age and indicate when the child may be appropriate to be referred to visit the speech and language therapist.
 - The 'Start test' button will begin the articulation test.
 - The test shows a set of images which the child should attempt to say. The facilitator should encourage the child: „What do you see in the picture?“ If the child says a different word or if there is no response, prompt him with two words: „Is this a rat or a mole?“ If still no response, prompt him with an expression such as: “I say mole, what do you say?”
 - The facilitator should listen and observe the child's attempts carefully. The facilitator indicates if the presented sound was articulated correctly or not.

At the end of the test, the results will be presented on the screen, and available to save as a pdf file.

- Flashcards
 - Flashcards are intended to practice chosen sounds in different word positions (final, medial, initial, mixed). Please mind, that flashcards are appropriate only when the child's production of the sound in syllable position is mastered (“sa”, “se”, “is”, “os”).
 - It is advisable that the child practices only one problematic sound at a time. If a child struggles with more than one sound (for example both “r” and “s”), exclude all the problematic sounds, except the one you currently practice, by simply selecting the sound you want to practice, and on the next screen select the sound to be excluded.
- Worksheets

- The worksheets present several words with the sound in each position, simple phrases with the sounds, sentences including the sounds, and a story using the sound in many ways.
- Worksheets can be used as practice material for literate children or as a list of words that a parent can practice with a child.
- Link to animated video: <https://youtu.be/vEve9Ni7zJI>
- Link to download the app (Google Play):
<https://play.google.com/store/apps/details?id=com.softqnr.SpeechPathologyEN>

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Disclaimer:

For further information, related to the “Speech and Language Pathology Interactive Tools for Teachers at Initial Education” project, please visit the project’s website at <http://speechpathologytools.eu> or visit us at <https://www.facebook.com/SpeechPathologyTools> .



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