



Special learning difficulties: The situation in Greece, compared to the European and international context

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ABSTRACT

The term "special learning difficulties" (SLDs) is used to describe intrinsic disorders that make the learning process difficult. These disorders may relate to a single cognitive or functional field, or more. Their early diagnosis by a team of experts is particularly important, as it can largely determine a person's learning path.

The aim is to participate in intervention programmes that teach students to manage their difficulties and develop alternative ways of learning according to their abilities.

We present an overview of the definitions, epidemiological data and classification of SLDs. We are referring to the evaluation process in Greece and present our conclusions from articles that study the symptoms, the possible causes, the ways of intervention as well as the comorbidity related to SLDs. Next, we present international approaches in the field of SLDs as well as new approaches that will lead to future planning.

Key Words: *specific learning difficulties , international approaches, Greece*

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Introduction

Learning Difficulties are divided into two major categories: Special Learning Difficulties and General (or Generalized) Learning Difficulties. In the category of Generalized Learning Difficulties students with mental and emotional difficulties are included. Specific learning difficulties are a developmental disorder associated with lower-than-age educational skills such as reading, writing and math skills (1).

Several studies have been carried out on the concept of dyslexia. Recent studies from the 21st century show that epidemiological data are equally widespread and affect 20% of the population, both boys and girls (2).

Specific Learning Disabilities according to DSM-V or Learning Disabilities according to ICD-11 (they have replaced the term 'dyslexia'): they refer to a separate category of learning difficulties and more specifically they refer to processing of written speech (3). SLDs affect students' school performance and can lead to problem behaviors (4).

Classification of developmental disorders of school skills (according to ICD and DSM) (5), (6):

- *Special reading disorder*
- *Special spelling disorder*
- *Special disorder of arithmetic skills*
- *There are also the remaining categories "not otherwise determined" and "with other specific learning impairment"*
- *Reading disorder is what we call in everyday speech 'dyslexia' and includes the other two, which are less common on their own.*

Classification Problems - Heterogeneity:

In contrast to DSM 5, many researchers classify children based on an evaluation vs. the presence of persistent difficulties. (7) In addition, the heterogeneity of the assessment tools creates problems in classification. (8) Heterogeneity is observed even in children who have already been classified in the same disorder (9).

Risk factors:

The risk factors for developing SLDs are primarily inherent, genetic and inherited. Family tensions and the quality of teaching significantly affect the intensity and frequency of symptoms.

Features of people with SLDs:

Children with SLDs have difficulty in recognizing the sound of letters and automating words. (10) Many children have speech delays and slow reading. (10). They show low self-image (12), they have anxiety and in severe cases they express depression.

Epidemiological data:

With reference to Greece and the population aged 6-18 years, the prevalence of dyslexia is 5-12% (14). The percentages of boys who present dyslexia and difficulty in reading are higher than girls (15).

According to researchers, about 5-15% of the school-age population in different countries and languages have SLDs. (5) Based on epidemiological data, it is supported that 4-9% of the school-age population have reading deficits and 3-7% have difficulty with mathematics. Data of 2009 referring to the case of USA reveal that 5% of school-age children have SLDs. This percentage is the 42% of all children who have some special educational needs and receive a form of special education (17).

A common criterion for diagnosing dyslexia is reading accuracy at 1.5 SD below the average age, having as a result a percentage of 7% of the population being diagnosed as dyslexic (18). Studies have shown that 44% of children under family risk of dyslexia may develop dyslexia. The prevalence of children with dyslexia in Hong Kong is about 9.7-1.6% according to a 2007 survey (19). More specifically, after an epidemiological study conducted in 2019 in Guangzhou, China, the prevalence rate was found to be 4.9 %.

Boys have OR = 4.17 to develop dyslexia compared to girls (19). A percentage of 3% to 11% of students have difficulty with reading skills related to word recognition and text comprehension (20).

Law framework:

In Greece, learning disabilities and dyslexia (as a subcategory of SLDs), were considered a distinct disorder based on the ability-performance fluctuation approach, while the possibility of high intelligence was particularly emphasized. According to law 3699/2008 on special education and people with disabilities or special educational needs, students with learning disabilities can attend classes in the inclusive primary and secondary education (21).

Diagnostic criteria:

Regarding the diagnostic criteria, they refer to the school performance of the child when he or she does not reach the levels predicted according to the index of his or her mental ability, his or her chronological age and the education he or she has received. (4) The diagnosis of learning difficulties can take place at the end of the 2nd grade (14).

Diagnostic procedure:

The diagnosis of learning difficulties is carried out by scientific staff of KESY (educational and counseling support centers) and in the Medical-Pedagogical Centers certified by the Ministry of Education. Both Greece and countries abroad have large waiting lists (22), (23).

After the end of the evaluation process by KESY, the interdisciplinary team prepares an evaluation report - opinion and the appropriate educational framework for inclusive education is proposed (23).

The importance of interdisciplinarity:

Learning disabilities as a multifactorial phenomenon that needs to be evaluated by multiple scientific and expert perspectives. This leads to synergies, holistic approaches, analyzes, investigations and finally to compositions that emphasize the importance of interdisciplinarity (26). Proper assessment leads to diagnosis and is the basis for planning interventions, while it documents the rights arising from the law of rights (14). Early diagnosis of learning difficulties and the creation of an appropriate and effective intervention programme are key parameters for improving difficulties (14) (25).

There are numerous studies on SLDs that cover a large part of the phenomenon by investigating the causes, diagnosis, evaluation criteria, treatment methods, methods of intervention and prevention of Special Learning Difficulties. According to medical studies, anatomical differences are observed in areas of the brain in people with SLDs. Metabolic differences related to the middle frontal lobe are found in girls with dyslexia and reading difficulties compared to typical readers (27). Reduced ability to control emotional and perceptual disorders are found in children with reading difficulties compared to typical readers (27). Typical readers have better cognitive control, better reading and emotional abilities (28).

SLDs and behavioural problems:

A synchronous study on SLDs and behavioural problems was conducted in a sample of 200 students from the 1st to the 6th grade, 100 of which have SLDs and 100 don't have SLDs (the clinical and control group respectively). The students in the clinical group had more problems internally and externally compared to the control group. No statistically significant differences were found between boys and girls in the occurrence of the majority of behavioral problems. The findings of the study showed that many family factors are related to the occurrence or not of dyslexia (13).

Dyslexia underdiagnosis:

A synchronous study in 9 regions of Italy showed that there is a underdiagnosis of dyslexia (3). Successive levels of evaluation were given to students (questionnaires, weighted tools, informal tests). Two of three children in primary education (8-10 years old) had not previously been diagnosed with dyslexia. The prevalence before the study was 1.3% (1.1-1.5%) and after the study it was found to be 3.5% (3.2-3.9%). There reveals an urgent need for adequate human and financial resources in both health care and education (29).

Dyslexia and dyscalculia:

By studying the relationship between dyslexia and dyscalculia, children with dyscalculia have 12.25 odds to experience dyslexia compared to children who do not have dyscalculia (22) Co-morbidity is noted at 30-40% (30). Rehabilitation programmes should be carried out by therapists and educators with appropriate training. Co-morbidity with other psychiatric disorders should be taken into account (31). Intervention should start in the early years of school age (32).

SLDs and writing problems:

According to existing research, it has been concluded that children with special learning difficulties also face problems in writing – motor skills. These coexist because they rely on underlying related processes. (12) Science has conducted studies to analyze these difficulties and investigate whether there are strategies that could be followed to improve children's motor skills (33).

Phonological deficits in dyslexia and illiteracy:

Deficiencies in phonological awareness are one of the first features of dyslexia. (34) Many people with dyslexia also experience additional difficulties such as phonological representation (speed of processing and retrieval from vocabulary) and coding, storage and retrieval of representations (short-term and long-term memory). (35) According to a meta-analysis, the relationship between phonological awareness and reading is influenced by the spelling characteristics of each language. The exact nature of phonological deficits can be investigated through comparative linguistic studies taking into account the spelling and phonological characteristics of each language (36).

Dyslexia and Developmental Language Disorder (DLD):

A study of Greek-speaking children with dyslexia and children with DLD presented difficulties in semantic activities compared to their classmates. These difficulties were due to slow recall from the semantic dictionary rather than poor semantic vocabulary. (37) There is a comorbidity of dyslexia and developmental language disorder. (38) Studies in children with a family history of dyslexia show that they had severe language deficits in preschool age associated with an increased likelihood of developing dyslexia during the school years. (39). Children with dyslexia and / or DLD have difficulty in understanding text but show different symptoms, due to lack of coding in the case of dyslexia or lack of language skills in the case of DLD. Different forms of intervention are required on a case-by-case basis. (39)

Eye movement in children with dyslexia and dysgraphia:

In a study on eye movement in children with dysgraphia and dyslexia, 29 children participated: children without special learning disorders, children with dysgraphia and children with dyslexia. Significant effects were seen in the group of children with dysgraphia and special learning disorders: 1) in the time it takes for the eye to focus and 2) in the number of focusing that the eye makes. Children with dyslexia mentioned more time to focus on more points than normal children. The group of children with dyslexia differed from the other two groups in the possibility of internal reading in a condensed text (40)

SLDs and comorbidity:

Studies show that children with SLDs are more likely to have psychiatric disorders than children without SLDs. (41). Comorbidity often includes: Anxiety disorders (20% prevalence), depressive symptoms and ADHD (4 times more common in children with SLDs, prevalence 8-18%),

behavioral disorders. (41) For social phobia there are indications that the risk is six times higher (42).

Study of cognitive and socioeconomic factors that affect children with dyslexia:

A study conducted in two schools in the United Kingdom evaluated the cognitive and socioeconomic factors that affect children with dyslexia. One school was in a run-down area and the other in a less disadvantaged area. A cross-sectional study was performed to examine whether visual sensitivity to genetic stimuli could predict reading performance. Taking into account age, gender, school and various phonological and cognitive abilities, the findings showed that visual sensitivity is a weak predictor of the development of specific learning disorders. The most important predictors are socio-economic and phonological awareness factors (43).

The role of visual-spatial abilities in dyslexia:

The aim of the study was to investigate the visual-spatial skills of children with developmental dyslexia, compared to typical children of the same age. The group included primary and secondary school-aged children. In order to verify whether the visual-spatial measurements could predict reading performance, regression analysis was performed on young and older children. (35). The results showed that younger children with developmental dyslexia performed significantly less in specific areas than children without developmental dyslexia. However, older children with developmental dyslexia have shown a general lack of visual perception. Current findings show that visual-spatial deficits in children with developmental dyslexia are age-dependent and the visual-spatial skills used in reading vary in relation to the different stages of academic education (35)

RADAR method:

RADAR method is a multimeter tool. It concerns a software of 25 parameters (custom algorithms), with texts on the computer (silent reading). The method evaluates dyslexia and reading difficulties. It draws objective and measurable conclusions about the level of concentration of the reader, the ability to decode and synthesize words as well as his or her reading ability. Due to the accurate observation of eye movements the focus and saccadic movements in the visual processing of the text (silent reading) are determined. The reading path is recorded, which contains all the necessary information, from which we can draw useful conclusions (44).

Compensatory reading therapy:

A meta-analysis of 4 studies shows that remunerative reading therapy has the potential to be reproduced offering good results (effect size $G = 1.72$). In the intervention, pseudo-words with letters in different positions were presented. There was a change in each reading error in the parameters of time and of the order of the letters. The readers gradually developed self-correction and reading strategies. In persons with reading disorder the following were observed: Insufficient stabilization time, large saccadic movements and reduced ability to simultaneously recognize a sequence of letters. (45) A meta-analysis of 49 studies was carried out on the effectiveness of intervention approaches for illiteracy. According to the results, the phonological exercises are the most effective. (46)

Oral language deficits in children with dyslexia :

In a meta-analysis of 95 studies, the results of studies showed that children with a family risk of reading disorders who continue to meet the criteria for dyslexia have more serious disorders in preschool than those who do not meet the criteria. The same is true for school-age children, where the family risk of dyslexia is associated with poor phonological awareness and cognitive skills. (47)

Dyslexia and ADHD:

There is a close relationship between dyslexia and ADHD, as there is coexistence of reading difficulties with attention deficit hyperactivity disorder (41). A percentage of 10% to 40% of children with ADHD have difficulty in reading, spelling, writing and / or math. (36), (41) Regarding gender and ADHD, findings showed that boys with reading difficulties had higher rates of attention deficit (60%) and hyperactivity (30%) than girls with reading difficulties who had mainly characteristics of carelessness (24%). (41) In a subsequent study, the association of reading difficulties with behavioral problems was studied. In conclusion, both boys and girls with reading difficulties showed ADHD and mainly hyperactivity (46).

The role of technologies in special education:

Many new technology tools are used successfully in the education of children with SLDs. (48) All research studies show that if students with LD use appropriate IT (information technologies), they will better cope in the areas of education (49).

Students with learning disabilities are facilitated by frequent repetition, by the multi-sensory approach to cognitive material, by providing patterns of desired behavior. The brains of these children have been shown to work better with technology (50).

International approaches in SLDs:

In an article which includes an overview of 10 countries for students with LD, differences are observed regarding the laws enacted, the policies pursued by governments, the definitions, the assessment process and the interventions / services provided. Most countries follow their own criteria for detecting SLDs. These discrepancies reflect cultural, economic and social parameters. In Botswana, for example, the definition given by the National Council LD is used (dysfunction with deficits in academic subjects that are not a result of mental retardation or other conditions). There exist special education classes in segregated schools. Other provisions involve a Central Resource Center for students with LD. (20) In Norway the difficulties relate to an ecological model. There is no specific and clear definition. There is counselling, support for teachers, family and help for finding a job (20).

New approaches – Planning for the future:

Policies should be adopted that facilitate early detection, evaluation and intervention. (52) In the USA and Canada there are effective detection and intervention models in early school age. (53) Sweden and the United Kingdom are comparatively less focused on early detection and intervention. Instead, they provide strong legislation to support higher education (52). Ontario provides significant educational funding for both diagnosis and intervention (53).

Conclusion

Central governments and the policies they pursue should promote intervention and support programs for people with SLDs and their parents. Early detection, early intervention, parent education, interaction between parents, therapists and the school setting are essential elements for the smooth running of people with SLDs.

The use of assistive technology and educational software seems particularly useful in intervention programs, however additional studies are required.

Adequate support at all levels, combined with proper management by qualified scientific staff, will alleviate the difficulties associated with education, future job rehabilitation and social inclusion of people with SLDs, by giving them the opportunities they are entitled to.

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