

Learning Disabilities

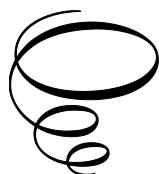
Learning Disabilities:

From Assessment to Intervention

Edited by

Maria Tzouriadou and Sotiria Tzivinikou

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INTRODUCTION

MARIA TZOURIADOU
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The “phenomenon” of learning disabilities (LDs) has been attracting the attention of interdisciplinary researchers and professionals for more than 100 years. Numerous empirical researches have been conducted in order to identify learning disabilities and provide an answer to two crucial questions: what are learning disabilities and why do they occur? The need to create a specific category for LDs is based on two key parameters. Firstly, on the nature of special problems in speech and reading as a result of brain dysfunction, and, secondly, on the construct of special education as an independent field among educational policies. The identification of any given category is reflected in its definition. This constitutes a scientific process, which integrates representing terminology and the key elements that scientifically differentiate it from other disability categories, leading to the formulation of a conceptual definition, which must be precise, valid and reliable. The first attempt to formally identify LDs as an independent scientific entity was made about 60 years ago, with the first definition (1968)* by Samuel Kirk; to this day, though, there is no consensus on the nature and roots of the disorder. The failure to reach consensus has been the source of controversy, debate and doubt (Keogh, 1988). Although the field met unexpected growth in the years that followed and significantly affected special education, it remains among the most problematic categories due to the ambiguity regarding its identification (Mather & Roberts, 1994).

Historical Review

In order to understand LDs, along with the contradictions and dissent around them, but also for the purpose of advancing research, we shall refer to the major currents that have historically shaped the field from the first case reports of the 17th century until today. The earliest mentions were made by Schmidt, who was a Prussian doctor; he reported the case of an

adult who had lost the ability to read after a stroke, but had maintained the ability to spell correctly. However, the first reports that were made by doctors (biomedical orientation) concerned patients with intra-individual strengths and weaknesses, including deficits in linguistic, reading and cognitive abilities. To cite just one example, Broca (1865) provided the basis of specificity in the nature of LDs by attributing them to damages to the left hemisphere. Respectively, Wernicke (1894) introduced the concept of the disconnection syndrome in the areas of speech, which resulted from motor difficulties in speech due to damage to the left hemisphere. Towards the end of the 19th and the beginning of the 20th century, more cases of unexpected cognitive and language difficulties were added to the context of otherwise normal functioning. It has actually been reported that those cases were one-of-a-kind, because they did not appear to have the same neurological characteristics as acquired speech disorders. Kussmaul (1877) described the case of a patient who was unable to read, despite possessing adequate mental and perceptual skills. Moreover, the case reports by Hinshelwood (1895), Morgan (1896) and others identified a specific type of learning disability, characterised by the “inability to read”, despite normal intelligence and adequate learning opportunities. Hinshelwood, an ophthalmologist from Glasgow, was the first to begin collecting data on cases of acquired and congenital word blindness in children from the late 1880s until the beginning of the 20th century, which were later published in his classical book “Congenital Word Blindness” in 1917. Hinshelwood emphasised the innate or traumatic nature of reading difficulties, as well as the relation between visual memory and reading. He also referred to the peculiarity of mathematical skills, which he associated with memory. He claimed that those children were able to recognise letters and shapes, but not words. They were able to copy written material, because this is a process that does not involve memory. Their problem was related to visual memory only, while their acoustic memory as well as their mental function remained intact. He also mentioned that those children exhibited reading difficulties without having a history of acquired brain damage or disease. However, he did not specify in which case and to which degree of severity one can claim the existence of disorder. On the contrary, he argued that children with such difficulties are unable to learn with classical teaching methods, but rather need to be treated as trainable mentally retarded (MR) (Kavale & Forness, 1985). He attributed these difficulties to developmental damage or “agenesis” presented during the first stages of foetal development in the angular gyrus of the dominant hemisphere. The importance of his contribution is that he made a distinction between LDs and MR.

In the beginning of the 20th century, evidence from various sources helped to identify a unique type of learning disability with specific rather than general characteristics, which was not associated with sensory impairment and mental retardation. Hynd and Willis (1988) summarised five key characteristics of these difficulties, namely: (1) children's difficulties present inherent learning problems, (2) they affect more boys rather than girls, (3) they are diversely manifested in relation to the profiles and the severity of the deficits, (4) they are associated with developmental processes occurring mainly in the left cerebral hemisphere and in the centre of speech, and (5) formal classroom instruction is not sufficient to meet the educational needs of children with these difficulties.

During the 1920s, Samuel Orton extended the study of reading difficulties with clinical trials that he designed in order to test the hypothesis that reading impairment is associated with problems caused by the dominance of the left hemisphere, which is responsible for language functions. He limited himself to the characteristics of the reversals of symbols, letters and words, and introduced the term "strephosymbolia" (Orton, 1928). Orton distinguished five main types of these disorders: developmental alexia, developmental agraphia, developmental word deafness or developmental aphasia, developmental expressive aphasia and developmental apraxia. He attributed those disorders to difficulties in the visual-coordinating domain of cerebral function, appearing mostly among left-handed rather than right-handed people (Farnham-Diggory, 1992; Lachmann & Geyer, 2003; Thomson, 1978). Orton's theory, however, did not stand the test of time, even though his work influenced research and motivated groups of teachers and parents to place emphasis upon reading difficulties and other learning disabilities. Thus, instructional techniques were developed to treat children with reading disabilities. Orton's influence on the modern conceptualisations of LDs was indirect and impacted the classification of speech disorders and motor disabilities (Doris, 1993). Moreover, Orton (1937) was the first to claim that reading disabilities presented at a symbolic level appeared to be associated with cerebral dysfunction rather than cerebral lesions, as argued by Hinshelwood and other researchers, and could be identified in children with intelligence ranging from average to above average.

Even though Orton's contribution was important for the scientific and clinical research in reading disabilities, it was the work of Strauss and Werner (1943) and other colleagues (Strauss & Lehtinen, 1947) during the period after World War II that raised the status of the generic category of LDs to that of an independent field (Rutter, 1982; Torgesen, 1991). Strauss

and Werner attempted to understand the difficulties in the behaviour of children described as hyperactive. In a series of clinical observations, they identified over-activity, impulsivity and concrete thinking as a result of cerebral damage, without any physical evidence of disorder in the neurological system. They also expanded their research on children with intellectual disabilities (ID), especially on children whose deficiency was associated to brain damage, albeit not attributed to neurological impairment, but to familial causes. They found out that those children exhibited difficulties in figure-ground perception and attention tasks that also led to hyperactivity. However, they also noted that there were children without brain damage who had ID and functioned in a similar way. Finally, in the course of their research, they identified children with average intelligence and a corresponding behaviour and performance pattern, who manifested behavioural and learning difficulties. They attributed the problems of all those children to a syndrome that they called “minimal brain dysfunction”. The above positions were adopted by the first edition of the American Psychiatric Association’s manual, DSM. In the first edition DSM-I (1952), reference is made to a category of chronic cerebral syndromes of unknown causes with major behavioural manifestations, which today are identified as Attention-Deficit-Hyperactivity-Disorder (ADHD). In the 1968 edition of DSM-II, this category was called “mild brain damage” for cases that originated in unapparent organ damage, and many children with this disorder presented poor academic performance. Actually, it took 50 years of studies in the category of minimal brain dysfunction before it began to include children with average or above-average general intelligence exhibiting learning or behavioural difficulties associated with deviations in the CNS (Clements, 1966). What was also recognised, was the heterogeneity of these children and their failure to respond to the same intervention for all (“one size fits all”). The Straussian movement had an important impact on the development of the LD field (Hammill, 1993; Kavale & Forness, 1985); and it was summarised in three emerging concepts that formed a distinct field in education. The three concepts were the following: (1) individual differences in learning can be understood by examining the different ways these children approach learning tasks, (2) educational processes must be adapted to the standards of the processing strengths and weaknesses of the individual child, and (3) children with deficits in learning processes can be facilitated to learn by the use of teaching methods focusing on processing strengths rather than weaknesses.

In 1985, Kavale and Forness extended these three concepts by adding that: (1) the focus of a learning disability affecting an individual represents a medical model (disease), (2) LDs are connected (or attributed) to neurological

dysfunction, (3) academic achievement deficits observed in children are linked to deficits in the psychological processing and mainly in the perceptual-motor area, (4) the failure of children with LDs may exist regardless of their intelligence, which may be average or above average, and (5) LDs are not primarily caused by other conditions of deficiency.

Ever since the 1960s, the study of LDs in the U.S. included scientists and professionals from the field of behavioural sciences, and mainly psychology and pedagogy, who focused on cognitive or linguistic models that were associated with obvious learning disabilities and contributed to the assessment and the educational interventions needed for treating these children. Notable researchers of this approach include Cruickshank, Myklebust, Johnson and Kirk, who studied the psychological and cognitive basis of LDs, in order to establish approaches for their treatment or management. Kirk claimed that LDs form a broad category of written speech disabilities, which includes reading difficulties—dyslexia, mathematical difficulties—dyscalculia, and writing difficulties—dysgraphia. Finally, he made a distinction between these difficulties and other developmental dysfunctions like ID, as well as disabilities caused by adverse conditions, and he suggested the use of the term LD (1963). Based on these studies, the first official definition was formulated by the United States Office of Education (1968). This definition linked minimal brain dysfunction to the criterion of unexpected low performance among the exclusion criteria, meaning that unexpected low performance was not primarily attributed to MR, sensory impairments, cultural and language diverse backgrounds or low socioeconomic status. Despite the fact that it specified the exclusion criteria, it did not provide clear inclusion criteria for unexpected low performance. We must understand that the official definition of 1968, which remains unchanged to date, is vague and hardly functional, such as “The term specific learning disability means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, speak, read, write, spell, or to do mathematic calculations”. Since 1968, the separate field of LDs began to acquire a formal term status, as a special difficulty entitled to civil rights and the provision of special services with specialised educational interventions, not for purposes of identification, but with the aim of supporting children at school. In order to achieve those goals, changes were proposed on the classroom environment, such as with the elimination of stimuli, based on the assumption that anything distracting children must be altered because it affects learning. Moreover, numerous studies were conducted regarding the different types of speech and

perception deficits affecting academic and social learning among children. Intervention programmes were also developed for the treatment of deficits in abilities linked to academic learning difficulties (Johnson, & Myklebust, 1967). Both educational and health services initially defined LDs more on the basis of service provision rather than systematic scientific research. The diagnostic conceptualisation of LDs gained ground in the 1960s and 1970s, thus multiplying the children that were diagnosed during those two decades (Zigmond, 1993). The term LD was not causing stigma. Parents and teachers felt more at ease with this term, because children with LDs were thought to have disabilities in learning despite their normal intelligence and adaptive behaviour, intact hearing and vision, as well as good emotional state. The fact that children were considered to have normal intelligence sparked hope among parents and teachers that their difficulties could be overcome with the provision of appropriate teaching methods. Thus, the field started to turn to enhance clinical observation and provision of special services.

In 1977, the U.S. Office of Education, among adjustments of the definition of LDs, included the concept of high IQ-low performance discrepancy as an inclusion criterion. This discrepancy was considered as a sign for the unexpected under-performance, and it affected education policy and LD practices not only in the U.S., but on an international level. To this day, this discrepancy is still considered to be key for the identification of difficulties by many institutions around the world, and it is included in IDEA of 2004. The single inclusion criterion concerned the following manifestation areas "... a severe discrepancy between achievement and intellectual ability in one or more of the areas: (1) oral expression; (2) listening comprehension; (3) written expression; (4) basic reading skill; (5) reading comprehension; (6) mathematics calculation; or (7) mathematical reasoning" (United States Office of Education, 1977, p. G1082). Notwithstanding disagreements on the reliability and validity of the discrepancy criterion, for the next 30 years this definition prevailed and the construct of LDs became aligned with the ability-performance discrepancy, despite contrary evidence and measurement issues that were not given serious consideration. It was only in DSM-5 (2013) that this approach was challenged as evidence-lacking, and philosophical and technical disagreements were expressed regarding this concept (Fletcher, Lyon, Fuchs & Barnes, 2019).

In the IDEA 2004 statute, RtI was introduced as an alternative inclusion criterion, according to which LDs represent an inadequate response to adequate instruction. RtI is a means of monitoring a child's progress in

evidence-based instruction, through which low performance or under-performance emerges as the main characteristic of children in school reality; this is because in the formal definitions, LDs are defined on the basis of what they are not, with a focus on exclusion factors. Since the revision of the definition in 2004 and the issuing of circulars, various school districts in the U.S. started to implement inclusion-based LD identification models, which also included the RtI-based model. According to this, a child is considered to have LDs when not making sufficient progress to meet age, state-approved, grade-level standards in one or more of the 7 areas of achievement that were proposed in the 1977 revision, and later in the area of reading fluency, despite the fact that scientific evidence-based interventions are used (Fletcher, 2009). So, today the criterion of IQ-performance discrepancy has prevailed in the U.S., while districts with special permits may implement the RtI criterion or a combination of both criteria. Usually, when LDs are identified on the basis of the two criteria, the assessment must include areas in which children could potentially exhibit low performance, as a different inclusion criterion.

Summarising the review, the field of LDs has historically emerged from studies by physicians, mainly neurologists, as an undetectable central nervous system (CNS) disorder, which was initially identified with minimal brain dysfunction or damage. It has officially formed a diagnostic category that has attracted the interest of clinical practice and educational policy since the 1960s, mainly by parents, educators and other children's advocates who have dealt with this category as a separate case of special education (Lyon & Moats, 1997). The advocacy groups that implemented the educational reforms legitimised the concept of LDs and assisted in systematic research that may continue to support definition elements. This might have led to the dissemination of an ineffective, but research-based definition and intervention practices (Fletcher et al., 2003). These practices could potentially improve adverse long-term effects that are often associated with LDs (Bruck, 1987; Spreen, 1989). However, only during the last 30 years have there been systematic research attempts to understand the causes, the developmental course, the treatment conditions and the long-term effects of LDs. In spite of systematic research progress, these attempts have not led to a more precise definition and intervention methods. In the IDEA 2004 revision, it was confirmed that policies and practices must be based on corroborative scientific evidence. The revision of the historically unfounded hypotheses about LDs, which collapsed after careful scientific scrutiny, may have been hampered by what we have learned from significant research advances. Research on substantiated identification so far is based not only on the exclusion criteria proposed by

the international official definitions, but also on the inclusion criterion, that is the common feature of low performance or under-performance proposed by the RtI approach. The formal integration of RtI models into the 2004 revision marked a major change as it enabled schools and services to use it in order to include special education students in the category of LDs and to develop effective educational interventions. This significant change has an impact on the scientific basis of understanding, identification and intervention regarding LDs. To achieve this, we must become aware of the changes that will affect the accuracy and usefulness of diagnostic decisions. Moreover, studies so far have been based mainly on the problem's phenomenology, whilst the attempt of fundamental research began only recently and mainly from the cognitive neuropsychology point of view, not yet leading to valid and reliable results.

Identification Difficulties in the Field of LDs

To date, the failure to identify and formulate a commonly accepted definition for LDs, but also the difficulty of universally using a single term, means that the category of LDs lacks two basic elements, which, as mentioned above, concern the nature of the problem and the interpretation of why a student has LDs. In the absence of these two elements, the scientific positions for LDs remain unsubstantiated and lead to a lack of consensus on how the category should be better identified (Doris, 1993). In the case of LDs, some concepts are axiomatic, that is they are interconnected in a fixed form, such as ability-performance, and, while this connection seems logical, the scientists who use these concepts may assign their own meaning to them (Kavale & Forness, 1985). Kavale and Nye (1986) had argued that such terms and definitions lack coherence, because a complex, multi-factorial phenomenon like LDs, involving neuropsychological, behavioural and academic achievement factors, includes 38 parameters, from which it is impossible to single out a dominant one. Additionally, the prevailing term LDs is chaotic and confusing, while terms such as retardation, minimal brain dysfunction, dyslexia, and so forth are being used in the same sense. This "chaos" stems from the ambiguity of definitions and the general "laxity" in the use of terms, but it may also be caused by the very nature of learning disabilities (Kranzler et al., 2019).

LDs can be understood on the basis of two different approaches. One approach interprets them in a broad sense, which has prevailed among some groups of mainly professionals such as educators, while the second

approach interprets them in a more limited sense, which has prevailed mainly among researchers. The first one concerns children and adolescents with general learning disabilities and borderline or below average IQ, but without mental retardation. A lot of times, the terms “slow learners” or “learning difficulties” are used in association with those children, because they do not make curriculum-based progress in areas that cover language, literacy and numeracy. Their problems could be related to one cognitive object or permeate all cognitive objects. Their main feature is that these children have difficulty in acquiring concepts at the same pace and depth of understanding as their peers (Shaw, 2010). These students are not easily identified at school and, therefore, the percentages vary from school to school by 12-30% of the student population (Butterworth & Kovas, 2013; Silver & Hagin, 2002; Westwood & Graham, 2000). Students with such problems are common in schools and, because of their diversity, they have been described as “garden variety LDs”. They often present disproportionate percentages of low socioeconomic backgrounds, disadvantaged or cultural and language diverse environments. The broad approach is based on under-performance, which essentially means that those children do not perform academically as well as their innate potential should allow, as evidenced by intelligence tests. Many objections have been raised in the past regarding this position (Rutter & Yule, 1975), because intelligence tests provide a sample of behaviour that covers a range of skills which is independent of school. For this reason, it must be studied in relation to under-performance in reading and mathematical skills acquired through education and practice. IQ could be an indicative factor, because it is associated with reasoning skills upon which school learning is built. The learning disabilities that children exhibit at school can be caused by a combination of endogenous and environmental factors (MacMillan & Siperstein, 2002; Westwood, 2003), such as: inadequate or inappropriate instruction, inappropriate curriculum, socioeconomically adverse conditions, health problems, and so forth. Teachers usually blame low motivation or non-supportive families for the children’s difficulties. Henderson (2002) refers to this attitude of teachers as deficit discourse, while Bearne (1996) had argued that the “blame-the-victim-perspective” could negatively influence the teachers’ practices. Finally, McLaren (2003, p. 236) refers to “psychologizing failure”, as failure attributed to psychological factors, such as lack of motivation and low self-esteem, which protects teachers and the school environment from negative criticism.

The second approach interprets LDs in a limited sense concerning a very small subset of students with average or above average intelligence, without any other obvious problems either inherent or environmental. The

terms LDs or special LDs have been used for these students, in order to distinguish them from the diversity of other disorders. In the U.S., a percentage of 5-6% of the student population is reported, while in other countries this quote is lower (Gorker, 2019; Grigorenko et al., 2020). LDs, in the limited sense of the term, reflect children and adolescents who exhibit unexpected under-performance. These children face difficulties in some but not all areas of academic performance (reading, writing, mathematics), despite adequate teaching opportunities, motivation and cognitive ability. This is the narrow conceptualisation that Kirk had in mind when he introduced the term LDs (Kirk, 1963). Kirk (1977) also referred to a discrepancy between a child's achievement and his apparent capacity to learn as indicated by aptitude tests, verbal understanding, and arithmetic computation. Thus, they attempted to operationalise the learning ability based on the general IQ. According to this method, also known as the method of IQ-performance discrepancy, a student can join the category of LDs when the level and rate of acquisition in a particular area of school learning are significantly lower than expected based on the IQ. Kirk, finally, introduced exclusion criteria such as MR, sensory impairment, cultural or instructional factors. These factors are part of the approach of severe ability-performance discrepancy.

Based on the above views, the "special" LDs were officially recognised in 1968 as a deficiency in the U.S. (Donovan & Cross, 2002; President's Commission on Excellence in Special Education, 2002). LDs are a very common disorder and affect approximately 50% of all students receiving special education services in the United States. In the academic year 2014-15, 47% of all children and adolescents receiving special education services in the U.S. were diagnosed with LDs (National Center for Educational Statistics, 2018). In other words, the increase of the percentages from 1975 to 2004 was over 100%. Despite this increase, LDs remained the least understood and most controversial category of student-affecting impairment (Bradley et al., 2002). Although these disabilities concern a single condition of difficulties, it is scientifically established that they constitute a general category, including disabilities in specific areas of learning (Kavale & Forness, 2000; Lyon, Fletcher, & Barnes, 2003). The diverse nature is depicted with different types of difficulties in seven domains (see above, p. 5). It has been argued that these difficulties often coexist with other conditions of inadequacy, such as difficulties in social skills, behaviour or attention (Fletcher et al., 1999). Although LDs have often been considered as synonymous with reading difficulties or dyslexia, this is not the case, even though the majority of children with LDs (80-90%) present reading difficulties (Kavale & Reese, 1992; Lyon et al., 2001). Two out of five

students in the U.S. receiving special education services have difficulty learning to read (President's Commission on Excellence in Special Education, 2002).

The goal of understanding LDs is to provide the most effective instruction in order to improve the characteristics of students' difficulties. But, according to researchers and professionals, there are difficulties in understanding the nature, causes and parameters that must be taken into account when instructing a child with LDs. Much progress has been made in the field of LDs and, from simple interpretations focusing on the phenotype of behaviour and cognitive characteristics, attempts have been made to give more complex interpretations linking cognitive, neurobiological and instructional factors. If a student is found to have LDs, but there is no other information to expand teachers' knowledge regarding instruction, then the concept only makes sense for the administrative integration of children with disabilities based on the formal definition. The complex interpretations suggest that the field of LDs was developed to meet two serious needs: firstly, the need to understand individual differences in the learning and the performance of children with *special* difficulties in oral or written speech, but without any problems in the adaptive functions; and secondly, the need to provide special educational services.

The phenomenological research has so far shaped the terminology, the definitions but also the controversy around LDs. In a review of the World Federation of Neurology regarding dyslexia, Rutter (1978) stressed that if all the causes of reading difficulties were known, then the term "unknown aetiology" should be removed from the definitions. The essence of the LD construct is the concept of unexpectedly low performance concerning a population that cannot learn to read, write, and so forth, despite the absence of any conditions that could technically hinder success. Unfortunately, the measurement of unexpected performance has not been successful, because it has resulted in heterogeneous subgroups, including children of diverse cultural and language environments or low socioeconomic backgrounds. The unexpected low performance is a construct that cannot be measured in the likes of IQ. When the measurement is used simply to rule out known causes, then the definition is void and inaccurate, and leads to contradictions and impasses.

The book consists of the following chapters:

Chapter 1. Learning disabilities: An ambiguous category

This chapter examines the epistemological ambiguities in the field of learning disabilities. Different definitions of learning disabilities (operational, technical, formal) are discussed. It is argued that the scientific community seems to have difficulties in understanding the nature and causes of learning disabilities; the relevant standpoints are put “into question” or considered “unfounded”, which leads to the “identification problem”: the lack of consensus on how to better define a classification category for LD.

Chapter 2. Assessment and learning disabilities

The present chapter examines the aims of comprehensive assessment and evaluation in the context of learning disabilities (discrepancy model, curriculum-based assessment). It is argued that the aim of comprehensive assessment and evaluation is to accurately determine the pattern of the student’s needs and abilities. Tools and theoretical foundations for the measuring of ability in the context of identifying learning disabilities are described, based on non-theory-based tests, theory-based tests and new assessment approaches for learning disabilities.

Chapter 3. Assessment of academic achievement and learning disabilities

In this chapter, the main methods in assessing academic achievement in the context of learning disabilities are examined. The main approaches employed for learning disabilities’ identification are discussed, in relation to the use of the criterion of underachievement in the LD diagnosis. Regardless of the approach used, it is argued that any evaluation of a child for LDs must include a valid assessment of academic achievement. Emphasis should be placed on strengthening the assessment validity of students’ academic achievement and the accuracy of teachers’ judgements regarding students’ achievement.

Chapter 4. Response to intervention for assessment and intervention of learning disabilities

This chapter examines response to intervention (RtI), a model of prevention and early intervention for learning and behavioural problems, which aims to meet the educational needs of all students, including those with learning difficulties or disabilities. It includes a network of assessments and interventions implemented in a multi-tiered educational system, aiming at improving academic achievement and addressing behavioural problems.

Despite the continuous and extensive research on the model, various limitations are reflected upon the results.

Chapter 5: Dynamic assessment approaches for children with learning difficulties: Advantages, limitations and instructional utility: An overview

This chapter sheds light on dynamic assessment models and approaches. The origins and main principles underlying the theory and practical applications of dynamic assessment techniques are examined. In addition, an attempt is made to evaluate the nature and utility of the information provided by dynamic assessment procedures, regarding the learning and teaching processes of children with learning disabilities. The advantages and limitations of dynamic assessment approaches are also being considered. Finally, several practical applications of dynamic assessment procedures are discussed with reference to intervention processes for children with learning difficulties.

Chapter 6: Remedial intervention programmes for learning disabilities

This chapter examines the main principles and methods of the educational interventions for children with learning disabilities. First, the treatment system of language development is discussed, followed by a description of treatment systems of psycholinguistic training. In addition, the treatment systems of perceptual-motor development are analysed, together with direct instruction interventions. It is argued that elements of these educational interventions have been integrated into new interpretive models and frameworks of treatment, which are based on the new principles of knowledge and learning.

Chapter 7: Contemporary intervention approaches for learning disabled students

This chapter examines the development of cognitive and metacognitive approaches for the intervention of learning disabilities from the first researches of university research institutes until the evidence-based intervention programmes. The contribution of the institutes was the emergence of two different approaches: the learning strategy programmes and the curriculum-based interventions. Nowadays, evidence-based interventions use both strategies and curriculum activities on a personalised or inclusive level.

Chapter 8: Inclusive education for learning disabled students: differentiated instruction

The current chapter examines the main models and approaches of differentiated instruction in the context of learning disabilities. Differentiated instruction has proven to be an important tool for the implementation of new approaches in the use of school curricula. It is argued that differentiation is a responsive reaction to the individual needs of the students. Differentiated instruction in children with learning disabilities is based on modifying the content, process, and products and emphasises the use of personalised instruction.

Chapter 9: Specific learning disabilities in students from diverse backgrounds: Discussing disproportionality issues

The present chapter examines issues of special education disproportionality in minoritised and culturally and linguistically diverse students. The dimensions of under-representation and over-representation of culturally and linguistically diverse students in special education are discussed, alongside the disproportionality in specific learning disabilities' identification. Finally, the possible consequences of disproportionality for diverse students are addressed.

Chapter 10: Differentiating difference from disability in specific learning disabilities' assessment of diverse students

This chapter examines current assessment practices with a focus on non-discriminatory and equitable practices, which aim to address the disproportionate representation of culturally and linguistically diverse students identified with specific learning disabilities. Commonly used assessment models of specific learning disabilities are described and reviewed. In addition, guidelines for promoting fair and equitable practices for dual language learners and other minoritised student populations are being addressed. The overarching goal of the present chapter is to provide practitioners and scholars with adequate information and knowledge in order to be able to distinguish specific learning disabilities from cultural and linguistic differences.

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CHAPTER ONE

LEARNING DISABILITIES: AN AMBIGUOUS CATEGORY

MARIA TZOURIADOU

Introduction

During the past 60 years, learning disabilities (LD) or specific learning disabilities (SLD) have emerged as the most well-studied and recognised classification of special education, with the term almost becoming synonymous with special education itself, on account of the large numbers of students who are placed under this category. The scientific community seems to have difficulties in understanding the nature and causes of learning disabilities; the relevant standpoints are put “into question” or considered “unfounded”, which leads to the “identification problem”: the lack of consensus on how to better define a classification category for LDs (Doris, 1993). Over a course of more than a century of studies, we have yet to present a unanimous and conclusive answer to a plain question: What are learning disabilities? Ever since the beginning of the 21st century, scientists from various disciplines—but mostly educators—are often faced with parents’ questions, such as “My child—a kindergartener—writes backwards, is this considered dyslexia?”, “Will my child be the next Einstein?”, “My child has difficulty in understanding concepts. Could this be a form of dyslexia?”, or “My child is distracted and performs poorly at school. Is this a sign of learning disabilities?”. With the help of international organisations, such as the Learning Disabilities Association (LDA), scientists have tried to functionally operationalise the field (i.e., to conclude whether it forms a scientific discipline with particular characteristics, or a “pseudoscience”, covering all and nothing), and have attempted to identify the operational characteristics that would help children reach their full potential, both academically and also socially (Kavale & Forness, 1985).

Epistemological Ambiguities of the Field

Learning disabilities or specific learning disabilities had not been an issue of interest for education up until the late 1960s, because they represented the lowest level of distribution of students in general education; scientifically, however, they had been concerning scholars from various disciplines—mainly doctors—for over 150 years. Nevertheless, the generalisation and expansion of compulsory education, its focus on school dropout, and the development of the knowledge-based character of school led to the enlargement of special education and the construction of a new distinct category, namely learning disabilities. The fact that academic achievement was linked to the social and professional success of the individual also contributed to this construction.

Over time, this aspect has consolidated, and learning disabilities have turned into the most important category of special education. A key indicator of this is the fact that programmes for children with LDs are the most populous among students with special educational needs. In 2009, 2.5 million school students in the United States (U.S.)—approximately 5% of the total public-school enrolments—were identified with learning disabilities. These students accounted for 42% of the 5.9 million school-age children, with the percentage varying across states (NCLD, 2011). For instance, in Kentucky, 3.18% of students were placed under the category of specific learning disabilities, whereas in Massachusetts and Port Island the correspondent figures were 9% and 9.6% (NCLD, 2011). Similar variations were also observed both in Canada and in certain European countries (Tzouriadou, 2011). This diversification in prevalence is related to numerous factors, such as the diversity of the population under this category, the establishment of higher academic standards due to the increasing school pressure for higher achievement, the use of different criteria for the evaluation of achievement, as well as the criteria applied to delineate the field of learning disabilities. Due to such determining factors, we witness the rates of students with LDs fluctuating among the different U.S. States. Consequently, LDs represent the largest field within special education.

With the introduction of learning disabilities as a distinct scientific field, an operational definition was required that would include the characteristics of students with learning disabilities, and be useful for education. By 1968, when the first official definition was formulated in the U.S., various definitions had been suggested that encapsulated specific characteristics in an axiomatic manner (Outhwaite, 1983). Many of the concepts introduced

in the category had a nominal form, that is they connected words with concepts, even in a pre-agreed way.

Kavale and Forness (1985), while analysing the definitions of LDs, identified five pre-agreed elements-hypotheses: (a) They detect that there is something “wrong” going on with the child (i.e., the difficulties *come* from the child; (b) These difficulties are associated with or explained by neurological dysfunction; (c) The academic difficulties are associated with disorders in psychological processes; (d) LDs are associated with academic underachievement or low achievement; and (e) They are not caused by other conditions of deficiency. Kavale and Nye (1985-86), pointed out that the pre-agreed definitions are inconsistent due to the complexity of the phenomenon. Operational definitions also present problems, especially in the way they are perceived and implemented because they are not directly related to experience. Out of the five elements-hypotheses, only academic underachievement or low achievement can be transferred to practice, which is why it is still, regardless of definitions and limitations, the constant criterion for inclusion in the category of learning disabilities.

The term *learning disabilities* was coined by Kirk, who also came up with the first relevant definition (Kirk, 1962). It was the first time that the concept of disorder in the psychological processes was introduced in academic learning. However, the definition still contains ambiguities in terms of the field’s identification (e.g., it mentions that disabilities refer to *retardation, disorder or delay*, without differentiating these terms). Moreover, it introduces the element of exclusion from other conditions of deficit, suggesting the case of differential diagnosis. Nevertheless, exclusion *per se* is not a criterion for specifying the characteristics that differentiate LDs from other conditions. Despite its ambiguities, Kirk’s definition succeeded in establishing the new field of LDs, and laid the groundwork for every formal definition in the U.S.

Despite definitions, studies and research, there is still disagreement between scholars, researchers and educators, given that LDs have not been established as a distinct discipline. Up to date, no causal relationship has been determined between the phenomenology of LDs and their causal factors. There is little understanding in terms of their nature, whilst the interpretation of observations is still problematic, both indicating that the main objective of forming a distinct discipline has not been fulfilled (Cattell, 1886). The key objective of conceptualising LDs is to offer effective and appropriate instruction, which will help to improve the

disabilities that students demonstrate. As a field, we have advanced from simplistic interpretations that focused on the phenomenology of behaviour and cognitive characteristics to more intricate ones, that take into account cognitive, neurobiological, and educational factors. However, we must still reach a consensus on what makes LDs a single and distinct entity, and why.

In the U.S., there has been continuous research on the nature of LDs and the determination of best practices for their identification. In 1989, the National Joint Committee on Learning Disabilities (NJCLD), based on new evidence and scientific findings, tried to remove inherent ambiguities from the field's identification attempts, and came up with the following formal definition:

Learning disabilities is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. Problems in self-regulatory behaviours, social perception, and social interaction may exist with learning disabilities but do not by themselves constitute a learning disability. Although learning disabilities may occur concomitantly with other disabilities (for example, sensory impairment, intellectual disabilities, emotional disturbance), or with extrinsic influences (such as cultural or linguistic differences, insufficient or inappropriate instruction), they are not the result of those conditions or influences. (NJCLD, 1989)

The NJCLD definition emphasises the vagueness of the term “in general” (Kavale, Spaulding, & Beam, 2009), much like the term “specific” in the Individuals with Disabilities Educational Act (IDEA, 2004) definition, which allowed different interpretations.

In 2004, the IDEA regulation in the U.S. maintained the same definition for SLD as previous legal and regulatory wordings. Notably, there was an attempt to expand the identification process by including both a process based on the child's response to scientific, research-based intervention (e.g., response to intervention, RtI) and the use of other alternative research-based processes, such as the patterns of strengths and weaknesses (PSW) model. The IDEA definition reads as follows:

Specific learning disability means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen,

think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. (IDEA, 2004, §300.8.10.i), and:

Specific learning disability does not include learning problems that are primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or environmental, cultural, or economic disadvantage. (IDEA, 2004, §300.8.10.ii)

The IDEA definition introduces a hierarchy of processes, with the language being higher up, both in oral and written form. Moreover, the disorder is not only associated with difficulties in academic achievement, but also with cognitive deficits (reasoning disorders), which pertains to what we nowadays call *meta-cognitive function*. No mention of central nervous system dysfunctions appears yet, however, there are references to similar cases deriving from neurological disorders.

The formal definition of 2004 introduces the “specific” aspect of the disorder, via the ambiguous distinction “in one or more”, without determining the number of potential problems, for the disorder to be considered specific. Furthermore, it does not proceed to clarify what “specific” means (e.g., whether it refers to particular characteristics in the relevant subjects and the psychological structure, or whether the term “specific” suggests that the disorder is idiopathic (Eisenberg, 1978), namely of unknown aetiology).

The Diagnostic and Statistical Manual of Mental Disorders (DSM) utilises the term *specific learning disorder*. Revised in 2013, the current version, DSM-5, expands the previous definition to include the latest scientific findings for the condition. The most important changes in this revised edition relate to the need for support depending on the level of severity, similarly to other developmental disorders (Scanlon, 2013). Moreover, this change represents a conceptual change in how we, as educators, think about what it means for individuals to have a disability and how they respond to it.

The main traits of these attempts to define and conceptualise LDs are linked to the idea of “unexpected underachievement” (Kirk, 1962), because individuals with LDs do not learn to read, write and/or do arithmetic, despite the absence of conditions that are associated with low achievement, such as intellectual disability, sensory impairment, and so forth. These conditions are usually considered as exclusionary because their presence is consistent with low achievement. All the above, represent