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Accurate definition of dyslexia

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Introduction

There are some myths gathered around learning disorders, among which some have grown to the rank of stereotypes. Hence in certain opinions dyslexia has become a synonym for all learning disorders. Few teachers perceive dyslexia other than a mysterious illness that causes reading and writing disorders among their pupils who are suspected of being lazy or for no particular reason averse to school (and the reason is the negligence and no proper treatment of dyslexic pupils). Dyslexia is said to be a result of low IQ and there is no cure for it. Dyslexia is also seen to as a problem of exclusively poor families, probably for its developmental character, which is partially true. Dyslexic children are said to be bound to learn worse than the others and the following reading is to suppress harmful opinions.

World Health Organisation on learning disabilities

The research on learning difficulties (also called disabilities) and specific learning difficulties (or disabilities), specific reading writing or maths disorders shows that these difficulties exist independently of the child's intellectual development¹. This means that neither dyslexia is a result of low IQ or a source of it, or that it must affect learning at all.

There are many classifications of the learning disabilities, for example World Health Organisation (WHO) defines them as “disorders of psychological development” referring to “mental and behavioural disorders (F00-F99)”².

¹ M. Bogdanowicz, *O dysleksji czyli specyficznych trudnościach w czytaniu i pisaniu – odpowiedzi na pytania rodziców i nauczycieli*, Wydawnictwo Popularnonaukowe LINEA, Lubin 1994, p. 23.

² *ICD-10*, World Health Organization, <http://www.who.int/classifications/apps/icd/icd10online/>, 2006 [accessed on 1 June 2012].

Some learning disabilities are also defined by WHO as “symptoms and signs involving speech and voice (R47-R49)”³.

Marta Bogdanowicz is a famous Polish methodologist, who in 1985 finished translating French method *Bon Depart* to Polish language. She focuses on the most common learning disabilities and operates on the terms: “dyslexia” as a reading disorder, “dysorthographia” as a grammatically incorrect writing and “dysgraphia” as a handwriting disorder⁴.

Some countries, for example Germany, according to M. Bogdanowicz, do not use the international terminology for learning disabilities⁵.

M. Bogdanowicz claims that about 70–72% of children who have problems at school also have various learning disabilities⁶. Moreover, one of each ten students experience problems in writing, reading and maths, which is often accompanied by low morale at school⁷. About 23 percent of students experiencing learning disabilities, have got a combination of reading, writing and maths disorders⁸. It often happens that parents accuse schools and the education system.

The numbers speak of themselves. Moreover, in three of four cases they support the statement that all children have inborn desire to learn and the fact that they become irritated by school is just a result of problems with learning.

R. Warszawski claims that the welfare system is inadequately financed and ineffective in practice for children with dyslexia and that about thirty percent of children are dyslexic⁹.

At the same time, E. Górniewicz observes that pupils who experience learning disabilities are not pathological neither unwilling to learn¹⁰. She points out many differences in children’s development which explains why the typical school programmes are insufficient for the individual needs of the dyslexic¹¹.

The above statement may suggest that the problem with learning disabilities may lay deep in the schools’ teaching process. But not in the children themselves. In fact, E. Górniewicz observes only few methods and the same requirements for all pupils, independently of their abilities in most schools¹².

Teachers are aware of the problem of learning disabilities. Moreover, they can provide definitions of dyslexia. However, there is a problem finding the most suitable methods and accurate diagnoses.

The problem of learning disabilities exists and is quite common, with dyslexia being about 80% of the most frequently diagnosed learning disabilities. The problem occurs in

³ Ibidem.

⁴ M. Bogdanowicz, *Trudności w pisaniu u dzieci. Skrypt uczelniany*, Uniwersytet Gdański, Gdańsk 1984, p. 32.

⁵ M. Bogdanowicz, op. cit., 1994, p. 32.

⁶ Ibidem, p. 38.

⁷ Ibidem.

⁸ Ibidem, p. 39.

⁹ R. Warszawski, *Jak wyleczyłem dziecko z dysleksji*, Tower Press, Gdańsk 2002, p. 24.

¹⁰ E. Górniewicz, *Pedagogiczna diagnoza specyficznych trudności w czytaniu i pisaniu*, Wydawnictwo Adam Marszałek, Toruń 2001, p. 8.

¹¹ Ibidem.

¹² Ibidem.

all countries, from Europe to the United States. The fact that from 5 to 17% of school-aged children in the USA are dyslexic, with 40% reading below grade level, is shocking¹³.

Specific reading disability

ICD-10 code F81.0 provides the following synonymic expressions for specific reading disabilities: “ ‘backward reading’, developmental dyslexia, specific reading retardation”¹⁴.

Focus on Basics, a magazine published by the U.S. National Center for the Study of Adult Learning and Literacy (NCSALL), presents an article that describes dyslexia as “an unexpected difficulty in reading experienced by children and adults who otherwise possess the intelligence and motivation considered necessary for accurate and fluent reading”¹⁵.

Dyslexia and the fact that it does not affect intelligence nor directly motivation is easier to be understood if familiarized with the history of its research – which might as well be totally unrelated to the learning process.

Hence, dyslexia was first discovered in 1887 by Rudolf Berlin, a German ophthalmologist who studied a case of a person experiencing reading difficulties. He claimed that the person had difficulty in learning to read and write in spite of being very intelligent and physically fit¹⁶.

A few years after Berlin, in 1986, William Pringle Morgan described dyslexia in *British Medical Journal* as a reading-specific disorder. Since then, the research on dyslexia has been performed by many scientists, for example James Hinshelwood, the author of *Congenital Word-blindness* who providently described the symptoms of dyslexia in 1900 and 1917. Hinshelwood was the first to use the term *developmental dyslexia* for the specific problem with reading.

The term “developmental” means that the reading disabilities are specific and according to the World Health Organisation “specific developmental disorders of reading are commonly preceded by a history of disorders in speech or language development”¹⁷. Therefore, the World Health Organisation treats developmental dyslexia as an evolution of language development disorders.

The analysis of Samuel Orton’s discoveries in neurology and more precisely in the interactions between the hemispheres in language processing had a great impact on all of the later discoveries on learning disabilities. Samuel Orton and Anna Gillingham have

¹³ S. E. Shaywitz, B. A. Shaywitz, *The Neurobiology of Reading and Dyslexia*, “Focus on Basics”, 5(A), 2001, p. 11.

¹⁴ *ICD-10*, World Health Organization. <http://www.who.int/classifications/apps/icd/icd10online/>, 2006 [accessed on 1 June 2012].

¹⁵ S. E. Shaywitz, B. A. Shaywitz, *op. cit.*, p. 11.

¹⁶ *Dyslexia*, Wikipedia. <http://en.wikipedia.org/w/index.php?title=Dyslexia&oldid=233095914>, 2008 [accessed on 21 July 2012].

¹⁷ *ICD-10*, World Health Organization. <http://www.who.int/classifications/apps/icd/icd10online/>, 2006 [accessed on 1 June 2012].

developed multisensory teaching methods that are gaining in popularity at schools and are preferred by both dyslexic and non-dyslexic pupils for being highly motivational, activating and entertaining.

Margaret J. Snowling is the author of the thesis that dyslexia is mainly a result of a phonological deficit. The distinction between the phonological and surface dyslexia has been formulated a little earlier by Castles and Coltheart who have referred to dyslexia as of a combination of many underlying symptoms¹⁸.

A. Grabowska and K. Rymarczyk after an analysis of M. J. Snowling's research have claimed that in dyslexia there is a correspondence to memory, what is following, surface dyslexia regards the inability of lexical analysis of the word and phonological dyslexia regards the interpretation of letters and phonemes. They claim that the phonological disorders which are observed in the phonological dyslexia regard the short-term verbal memory and the deficit of phonological awareness¹⁹.

There is a scholarly attention to the problem which lies in understanding the written text. In such cases there is no deficiency in the phonological awareness or in the short-term memory.²⁰ There is however a deficiency in the abstract memory which results in a poor vocabulary and difficulties in naming abstract objects, difficulties in distinguishing between objects of one semantic category, for example *cup-saucer*, *boat-ship*, however, the students see the reference between the objects, for example *nail-hammer*, *broom-floor*²¹.

It has been confirmed by the researchers that some dyslexic children experience difficulties with long-term verbal memory, which may be responsible for many problems, including remembering the days of the week, months of the year, a multiplication table and learning foreign languages²². One of the famous researchers, who has been analysing the cognitive subtypes of dyslexia, was Stefan Heim.

John Stein, a neurologist researched neurological origins of specific reading and writing disabilities. According to the results of his research, magnocellular audio-visual processing played an important role in developing orthographic and phonological skills associated with the aforementioned function of the brain²³.

John Stein, the author of the magnocellular theory of developmental dyslexia, has conducted research on various areas of the brain which are responsible for language functions. His research has been seen in many publications, like "Dyslexia" magazine on behalf of the British Dyslexia Association. Stein separates low literacy from the developmental dyslexia.

¹⁸ *Dyslexia*, Wikipedia. <http://en.wikipedia.org/w/index.php?title=Dyslexia&oldid=233095914>, 2008 [accessed on 21 July 2012]

¹⁹ A. Grabowska, K. Rymarczyk, *Dysleksja: od badań mózgu do praktyki*, Instytut Biologii Doświadczalnej im. M. Nenckiego PAN, Warszawa 2004, p. 85.

²⁰ *Ibidem*, p. 86.

²¹ *Ibidem*.

²² *Ibidem*, p. 85.

²³ *Visual and Auditory Basis of Reading*, Dyslexia Research Trust, <http://www.dyslexic.org.uk/va2.htm> [accessed on 27 May 2012].

Low literacy is termed ‘developmental dyslexia’ when reading is significantly behind that expected from the intelligence quotient (IQ) in the presence of other symptoms – incoordination, left–right confusions, poor sequencing – that characterize it as a neurological syndrome.²⁴

The researchers in neurobiology, Angela Fawcett and Roderick Nicolson have been analysing the role of the cerebellum and motor abilities of some children having dyslexia²⁵. They compare dyslexia to driving a car in a foreign country, in the opposite directions, so they require much effort in simple writing activities²⁶. It is worth mentioning that specific learning disabilities are situated next to the motor dysfunctions in the ICD-10 table.

The most contemporary readings describe dyslexia as a reading disorder being one of the results of neurological deficits like phonological deficit, magnocellular channel deficit, cerebellar function deficit, parietal lobe deficit or attention deficit²⁷.

Various areas of the human brain are responsible for many perception processes. Learning disabilities are terms used by the methodologists to describe the result of the neurological deficits which may develop with time and affect the education process.

The research on dyslexia and other learning disabilities is a subject to constant alterations and new theories. For instance, it has led to a conclusion that the occurrence of dyslexia is determined by human genome and sex²⁸. The thesis, however still remains controversial for some researchers who find proves that dyslexia obtains equally among the sexes²⁹. Nevertheless, there are some theories that females and males learn languages differently.

Anna Grabowska and Krystyna Rymarczyk, the employees of the Nencki Institute of Experimental Biology in Warsaw have been collecting and analysing conference materials about dyslexia and comparing the newest discoveries with the opinions of the authorities in the subject, for example John Stein, the author of the magnocellular theory of developmental dyslexia.

According to John Stein “5–10% of children, particularly boys, are found to be dyslexic”³⁰. Other authors call it a “social disease” and claiming that 20–30% of children have problems with reading³¹.

Stein’s numbers seem to be closer to those provided by NCSALL, although at the same one must remember that a lot of the population may be undiagnosed.

Extensive research is being conducted by the scientists in the field of teaching pupils with learning disabilities, in order to find the most effective teaching methods. As the best solution for the dyslexia problem is not yet known, this work shall begin with a timeless John Lubbock’s ascertainment:

²⁴ J. Stein, *The Magnocellular Theory of Developmental Dyslexia*, “Dyslexia”, 7(1), 2001, p. 12.

²⁵ A. Grabowska, K. Rymarczyk, op. cit., p. 43.

²⁶ Ibidem, p. 48.

²⁷ Ibidem, p. 3.

²⁸ Ibidem, p. 218.

²⁹ Ibidem.

³⁰ J. Stein, op. cit., p. 12.

³¹ R. Warszewski, op. cit., p. 122.

The important thing is not so much that every child should be taught, as that every child should be given the wish to learn.³²

John Lubbock, a member of the English parliament since 1870 and a vice-chancellor of the University of London since 1872. The above citation suggests that the best teaching method is not always the one that the tutor has perfected but rather the one that the students find most appealing. His words would sound familiar for the explorers of the learner-oriented teaching methods derived from Georgi Lozanov's Suggestopedia or from Caleb Gattegno's Silent Way.

Some of the dyslexic children may also have problems with focusing. The U.S. National Institutes of Health in the Department of Health and Human Services alarm that although dyslexia, being of neurological origin that impacts word recognition, spelling and decoding, resulting from deficits in phonological component, it may result in decrease in reading comprehension and vocabulary acquisition³³.

National Institutes of Health suggest that dyslexia may have influence on other perception functions like "understanding classroom instructions" thus being a concern for many teachers and parents³⁴.

But there is also more terrifying conclusion, namely that dyslexia may have impact on vocabulary and knowledge, that is, overall development. If not treated seriously, it usually leads to educational decline.

It is important to remember that the origins of developmental dyslexia are neurological, not motivational or emotional. However in some cases, dyslexia has more mechanical than neurological origins.

People having blurred vision or Irlen Syndrome may also function like dyslexic³⁵. This reminds the fact that dyslexia was first discovered by a ophthalmologist.

Specific spelling disorder associated with writing

Assigned ICD-10 code 81.0, as a specific spelling disorder associated with writing, dysorthographia is a learning disability which is a result of many underlying neurological symptoms³⁶.

Hence, dysorthographia, as well as dyslexia, shall not be mistaken for carelessness and lack of grammatical knowledge but it also relies on the neurological origin.

³² J. Lubbock, *The Pleasures of Life*, BiblioBazaar, Charleston 2006, p. 107.

³³ *What is Dyslexia?*, Bright Solutions for Dyslexia, LLC, <http://www.dys-add.com/define.html>, 2008 [accessed on 16 February 2012].

³⁴ Ibidem.

³⁵ S. Cook, *Learning Style and Dyslexia*, http://www.learningabledkids.com/learning_disability_LD/learning_style_dyslexia_multisensory_best.htm, 2005 [accessed on 3 March 2012].

³⁶ *ICD-10*, World Health Organization. <http://www.who.int/classifications/apps/icd/icd10online/>, 2006 [accessed on 1 June 2012].

Dysgraphia – specific writing disorder

The U.S. National Institutes of Health define dysgraphia, a specific writing disorder as a neurological disorder that is characterised by writing disabilities – that result in distorted calligraphy³⁷.

The symptoms of dysgraphia, or sometimes referred to as agraphia, which is mentioned in ICD-10 under R48.8, together with acalculia (or dyscalculia) cover improperly sized letters, misspelled words that may be accompanied by improper use of words³⁸.

Dyscalculia

Dyscalculia, or a “specific disorder of arithmetical skills” is, as the name itself suggests, the inability to operate on numbers and files.

Dyscalculia may seem a term of little relevance for learning foreign languages, however there may be a problem for lower-class elementary school pupils as they learn to count, add and subtract in English.

Dyscalculia is referred to in ICD-10, in codes F81.2 and R48.8³⁹.

Attention deficit hyperactivity disorder

ADHD is a disorder which may affect learning abilities and disabilities of the student. The World Health Organisation refers to ADHD as a “behavioural and emotional disorders with onset usually occurring in childhood and adolescence (F90-F98)”, included in “mental and behavioural disorders (F00-F99)⁴⁰”.

According to the National Institute of Neurological Disorders and Stroke in National Institutes of Health, which belongs to the United States Department of Health and Human Services, there is a correspondence between ADHD and LDs – and about 30% of children who have got LDs, also have got ADHD⁴¹.

ADHD was discovered by Alfred Hoffman in 1845. The United States National Institute of Mental Health characterizes the disorder by impulsiveness, hyperactivity and inattention⁴². “A child who acts quickly without thinking first, [...] a child who can’t sit still, walks, runs, or climbs around when others are seated, talks when others are talking,

³⁷ *Dysgraphia Information Page*, National Institute of Neurological Disorders and Stroke (NINDS, <http://www.ninds.nih.gov/disorders/dysgraphia/dysgraphia.htm>, 2001 [accessed on 20 February 2012].

³⁸ Ibidem.

³⁹ *ICD-10*, World Health Organization. <http://www.who.int/classifications/apps/icd/icd10online/>, 2006 [accessed on 1 June 2012].

⁴⁰ Ibidem.

⁴¹ *Learning Disorders*, Medline Plus, <http://www.nlm.nih.gov/medlineplus/learningdisorders.html>, 2007 [accessed on 10 June 2012].

⁴² *Attention Deficit Hyperactivity Disorder*, National Institute of Mental Health, <http://www.nimh.nih.gov/health/topics/attention-deficit-hyperactivity-disorder-adhd/index.shtml>, 2008 [accessed on 16 February 2012].

[...] a child who daydreams or seems to be in another world, is sidetracked by what is going on around him or her” may have ADHD⁴³.

ADHD may cause the child to be unable to focus on the given problem and eventually become unable to fully participate in lessons. That is why the teacher should give special attention to the child and develop his or her proper reactions. The need for motivating is obvious.

The opinion of scholars is unambiguous, A. Grabowska and K. Rymarczyk analysing A. Faocetti’s research have come to conclusion that visual and auditory attention deficits may influence reading skills⁴⁴.

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⁴³ Ibidem.

⁴⁴ A. Grabowska, K. Rymarczyk, op. cit., p. 116.

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