

Reference: Gyarmathy É. (2007) Diszlexia. Specifikus tanítási zavar. (Dyslexia. Specific Teaching Difficulties) Lélekben Otthon Kiadó, Budapest.

ÉVA GYARMATHY, PH.D.
Senior researcher

Research Institute for Psychology of the Hungarian Academy of Sciences
e-mail: gyarme@mtapi.hu

Environment and Dyslexia

Causes and solutions in the environment

There were and still there are highly achieving dyslexics: Gustave Flaubert, Albert Einstein, William Butler Yeats, Anatole France, Leonardo Da Vinci, Pablo Picasso, Agatha Christie, etc. It looks now rather the rule than the exception that a highly intelligent person with dyslexia can turn to be a high level creator.

The question is, how to get the best out of those who may have reading and writing difficulties?

Dyslexia theories

Out of the different types of specific learning difficulties (SLDs) dyslexia received the greatest attention. Most of the studies on SLD deal with dyslexia.

There is a tremendous number of theories dealing with this special syndrome. We can distinguish five main lines of research in these theories.

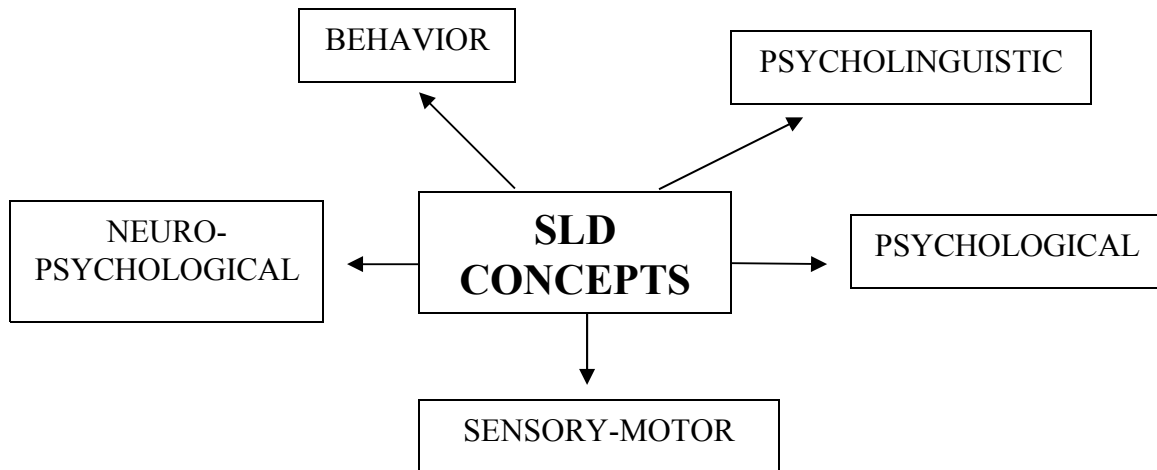
Neuropsychologists have drawn attention to the fact that early minor traumas of the brain do not lead to local deficits, but cause unusual processing. Children are characterized rather by the deficits in processing, control and activational abilities, than by deficiencies in whole functions or difficulties in isolated, well-defined functions. This is called MCD (minimal cerebral dysfunction).

Other theories attribute the disfunctions to genetically defined biochemical deviations. Familiar accumulation was proved to play a role in the appearance of SLD in the 1990'ies and genes responsible for the deficits were found.

Already at the beginning of the eighties, based on his foetus studies, Geschwind (1979) assumed that the temporal area of the brain develops differently in children with SLD. The brain structure of these children does not facilitate the verbal processes sufficiently, more concretely, they are not inclined to acquire reading, writing, etc. verbal abilities.

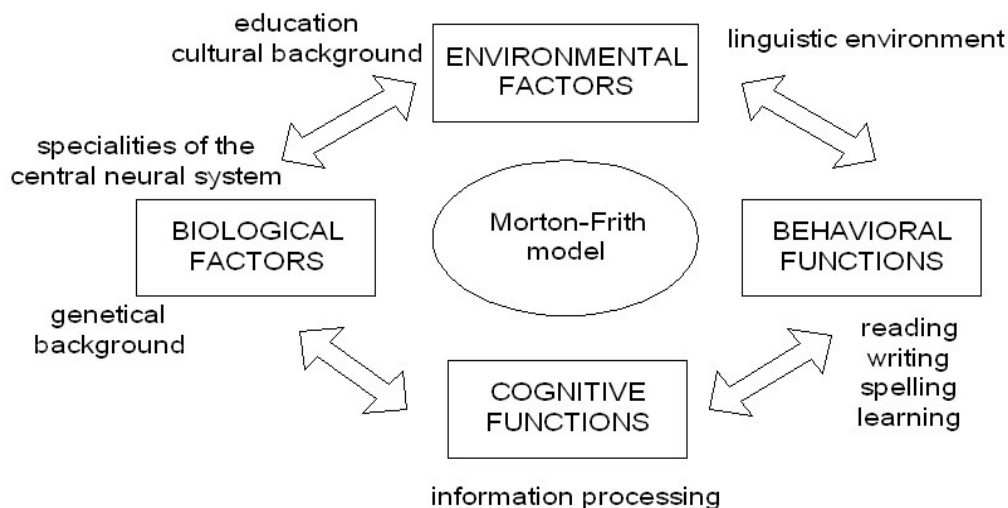
Psychoneurological theories consider the insufficient integration of the sensory-motor functions the cause of the learning problems.

There are approaches dealing with the *psychological* aspects of SLD describing SLD as a special learning problem, while *psycholinguistic* theories define it as a linguistic deficit. There are *behavior* models dealing with motivation to enhance learning achievement. The different approaches concentrate on different factors.



Neuropsychological and sensory-motor theories deal with the biological, physiological aspects of SLD.

Psychological theories make reference to learning, and psycholinguistic theories to the use and level of linguistic abilities. Behavioral theories consider SLD as a disturbance that can be treated through environmental factors.



The influence of these factors, such as neurological background, sensory-motor abilities, literacy skills and environmental influences, have a different weight in different ages. Therefore, the emphasis of treatment changes with age.

There are three areas of the treatment corresponding to these factors that should be considered in the practice. All three are important throughout the treatment. However, the emphasis will differ: At nursery age the leading area of the developmental work is sensory-motor abilities. In the school years it is literacy skills that are in the focus. From secondary school age on, the learning and teaching styles and methods can be considered as the main aspect of the treatment.

In the first two-three years of the primary the practising of reading and writing and other literacy based activities should be supplemented with games, which develop basic senso-motor abilities. Nevertheless though the rising of the basic functions should be the leading aim, from age 6-7 more and more the preparation for the reading and writing has to be the part of the development, and more paper-pencil tasks are necessary.

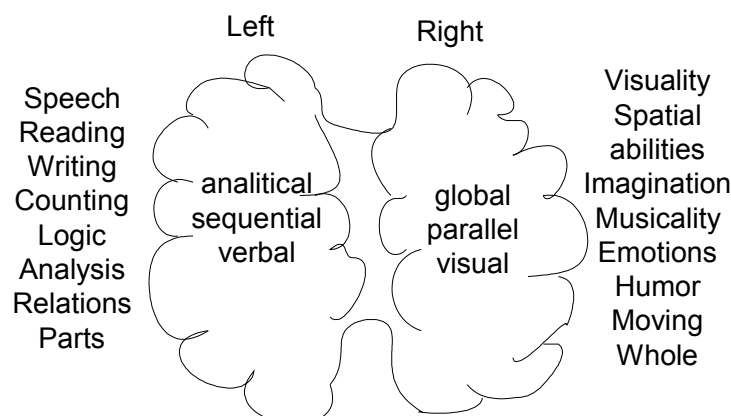
	Sensory-motor abilities	Literacy skills	Learning and teaching style and methods
Age 3-8			
Age 7-13			
Age 13-			

At age 8 the sensitive period of the senso-motor abilities is at about its end. The focus of the remediation should turn to the concret literacy skills, but still the senso-motor abilities can be developed. Thus the developmental games and exercises can be useful at this age, as well.

From age 12-13 mainly the right learning and teaching methods are helpful. Technics that use the whole-brain approach, giving visual as well as verbal materials, are appropriate for the effective learning.

Environmental effects

SLD is a neurologically based delay or deviant development in the literacy skills. It is independent of general intelligence. Usually, it is the overfunctioning of the right brain which causes the dysfunction.



Analytical and global thinking can be equally effective in a higher level of thinking. However, the school gives preference to analytic, step by step information processing. Those employing the holistic approach are disadvantaged, and called persons with SLD. However, specific learning difficulties mean a specific way of thinking rather than disability.

There are two types of dyslexia: acquired and developmental. The acquired dyslexia is rooted in mild neurological injuries, called MCD. The developmental dyslexia has a genetic basis. The proportion of those suffering from dyslexia is increasing due to environmental causes. Firstly, medicine has developed much, and more children can be saved at the cost of less severe syndromes, and they are able to live normal lives. Education should help their further development.

Secondly, the amount of naturally received stimuli vital for the sensory-motor development has decreased. Children no longer climb trees and play on the jungle gym so much, spending more time at home instead. The development of their body scheme and balance system slows down, due to receiving less stimulation. For instance, with the introduction of disposable diaper, Velcro etc., mothers do not have to spend as much time dressing up babies as they used to, and so, babies are touched and fumbled with less, receiving less physical stimulation.

Thirdly, the increasingly visual environment hinders natural sequential training. Formerly, children listened to tales, with which they got acquainted via their parents reading them aloud or from the radio, whereas today, children typically receive most input by watching the television, video cartoons and movies. Television and video cartoons provide ready-made pictures. Children do not need to create images of their own. With the environment of today not helping children compensate for it, the genetic base has greater impact on their school achievement.

Traditional western education gives preference to left hemisphere functions. Therefore, those who show a disposition to verbal-ism and can process information in a sequential way are at an advantage in the school, whereas those who are rather visual and parallel, global thinkers often feel uncomfortable in the current education. The most of the underachievers are visual and are global thinkers. These persons, however, can be very successful in the real life.

Solutions in the changed environment

Dyslexia is not a disease, and as such, it cannot be cured. Dyslexia can be considered a specific way of thinking. Dyslexic persons need modes of teaching that fit to their abilities, and they need appropriate learning methods, as well.

As dyslexia can cause some minor difficulties in everyday life, especially at work, these persons also need help to find ways to handle these specific issues. The aim is to change the relationship between the dyslexics and their environment.

Technics in the treatment of specific learning difficulties in the classroom

Individual educational plans can be developed for those suffering from SLD. There are techniques that can be helpful for them.

Here are some hints, how the teacher can help children with SLD in the school:

- Spelling rules, reminders, associations and other little tricks give aid for good spelling.
- It is inappropriate to underline the spelling mistakes. Teachers should always correct the spelling of children with SLD. They shouldn't see the incorrect version, because it leads to confusion.
- Children with SLD should write short copying of interesting text regularly. First little jokes, stories, later short news from the child's field of interest can be copied.
- Children with SLD need more time for learning by heart. Teachers should consider it.
- Tape recorder, computer, spell checkers and any other devices, that can help the child should be initiate.
- It is very hard to learn foreigner languages for these children, but they can acquire languages through communication, talking and other social activities. Videos and tapes are good aids.
- Dyscalculic children use different visual aids for the counting. Teachers should support it, rather than prohibit.
- Soroban can be a good device to learn counting.
- Children with SLD should be allowed to use their aiding devices also during the tests.
- Complex tasks are proper to teach systematic thinking.
- Mind Mapping should be taught for children with SLD. Mind Maps help a lot in the studying, essay writing, organizing thoughts.
- Visualization, to draw a concept, gives detailed understanding.
- Reading syllables and non-words helps the children to pay attention of the sequence of the letters and become aware of the linguistic rules.
- Using own books for reading enhances motivation for reading.
- Reading aloud for dyslexics is essential for them.
- Pair reading can help to go through difficult words, enhance inner lexicon.

Reading aloud

One of the most important elements of the prevention of SLD and prevention of getting secondary deficiency is the reading aloud.

Parents should sing and recite poems already in the infancy. The baby can perceive the music and rhythm of the language, and it helps to develop the verbal

skills. From the age two short tales, stories can supplement the songs and nursery rhymes. Beyond the developmental effect the reading can make pleasant the atmosphere of the bedtime, which might be tormented otherwise (dinner, making order, washing, making the bed, etc.). reading aloud can be an everyday program in the nursery and primary, too. Teacher can read tales and stories at the beginning of the day and/or after lunch. 'A tale for every day' should be the rule for the families and schools where little children are reared.

The reading aloud has many-sided effect. Not only the child's vocabulary will develop, but the child can learn the literary language, the phrases and idioms of the written language. The oral and written language are different, therefore, when the children start to learn to read, if they hadn't got enough experience beforehand they have to master a new language, as well.

Another developmental effect of the reading aloud is that the child has to follow the sequence of the events, it has to create own image about every element of the story without or with very few visual support. That way its successive information processing and the ability to form own images can develop. Those children to whom the parents read aloud regularly will be significantly better readers than those, who hardly have the possibility to listen to tales and stories.

There is a third effect of the reading aloud, which is at least as important as the former two effects. It is that the child will learn that reading can provide sensation. The TV, video and computer are very important, and with appropriate use very useful elements of the child's world, but they are rivals of the books. The child has to learn very early that reading gives a wonderful sensation and the literary sensation differs from the sensations that the pictureful devices provide. After the need for literary sensation developed, the child will be motivated to read. Otherwise the easier acquirable sensations will turn the child away from reading.

The reading aloud should be continued even after the child can read. The poor reading skills render the obtaining of the literary sensation, and it may loose interest in the reading. It is the best to continue the reading aloud till the child can read short novels alone, too. It means the regular reading aloud shouldn't be stopped before the child is 8-9 years old.

Cognitive training also for literacy skills

Right brain dominance has a lot advantages, like having a good overview, visual abilities, holistic approach. However the systematic thinking, analytic abilities and verbalisation can be poor. These areas are important part of the treatment.

Areas, like arts, acting, techniques, where persons with SLD can be effective are usable for the cognitive training. Projects, organisational tasks, teaching other children, acting, technical descriptions, categorization and analysis of art pieces, natural elements like stones and seeds are proper activities for the training of the cognitive abilities.

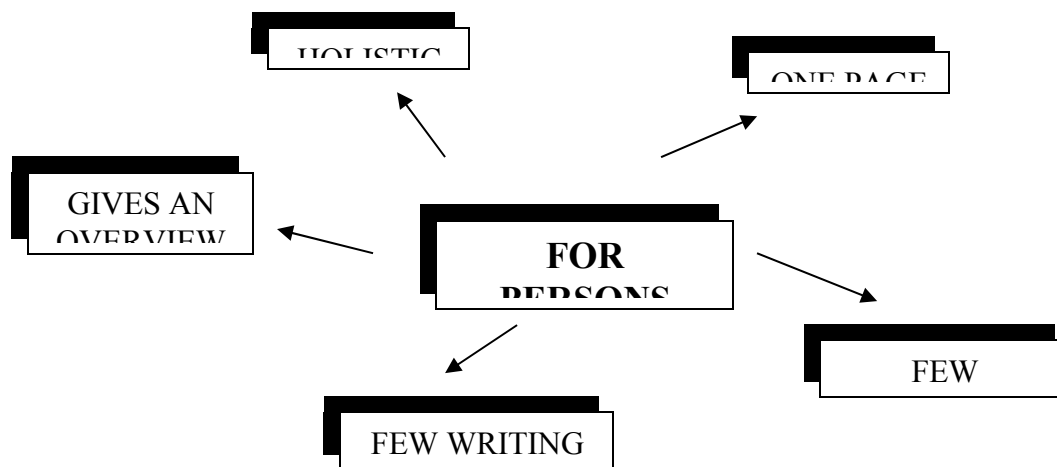
As persons with SLD has less affinity to details, they have to learn to concentrate on parts of the words, like letters and syllables. Instead of guessing from the picture of the word, they have to learn to analysis the words.

One of the most effective method of teaching literacy skills is Meixner method. It uses letter reading and differentiation, syllables and non-words. It helps to differentiate similar elements by analysis, enhances concentrating to details, increases inner lexicon.

Concept Map

Concept map, Mind Map is an aid to learn, memorize, organize, and has several other uses. They are advantageous for anybody, but especially for those who have deficiencies in the literacy skills.

Mind maps do not cure dyslexia or other deficits. They are just a way of processing material, organizing thoughts and ideas in a very effective way.



The traditional western education prefers the left hemisphere functions. Therefore those who show a disposition to verbal-ism and can process information in a sequential way are at an advantage in the school, whereas those who are rather visual and parallel, global thinkers often feel uncomfortable in the current education. The most of the underachievers are visual and are global thinkers. However, these persons can be very successful in the real life.

The whole brain approach means that we use tools that activate as many functions of the brain as possible. That way learning and all other cognitive functions will become far more effective than by using only one way of information processing. Mind maps are good partners to whole brain approach. You can create mind maps in pen or pencil. However, a computer program designed to create mind maps can be very helpful.

Reference: Gyarmathy É. (2007) Diszlexia. Specifikus tanítási zavar. (Dyslexia. Specific Teaching Difficulties) Lélekben Otthon Kiadó, Budapest.