Causes of dyslexia
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Abstract
In today's very visual world children rarely read stories. Instead they watch them on the television or playing on the computer. A consequence of this is that they have less and not so diverse opportunities for movements and sensory experiences, and as a result the natural development of sensory-motor integration and sequential information processing fail to develop as they may have done in the past. Thus, those who have a natural tendency towards dyslexia due to difficulties with sensory-motor integration, are even more likely to struggle with specific learning difficulties today than in the past.

In this section, we are going to present the main internal and external causes of dyslexia. Familiarity with these causes and their effect on each other can help understand the strengths and weaknesses of dyslexics, and provide opportunities for ensuing full support.

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Introduction

Dyslexia is a specific learning difficulty, which causes problems primarily in the development of literacy skills. The causes invariably consist of a number of factors and includes some kind of acquired or hereditary neurological deviation from what may be considered normal.

During development, the interaction of external and internal factors gives rise to various forms of the syndrome at different levels and in different areas, while environmental factors play a considerable role in the consequences. Increased awareness and understanding has led to an increase in the numbers identified, though many still struggle through life without appropriate support, with or without the diagnosis.

To understand what is dyslexia, one has to understand its underlying factors and their interaction. Most developmental characteristics evolve owing to the interplay of several factors. As discussed in Chapter 1, these factors may be grouped into four classes.

- Biological
- Cognitive
- Behavioural
- Environmental

This system also provides a good basis for charting the causal background of dyslexia. The symptoms will be presented within the system of their development, and their effects will be analysed from the aspect of activity, expanding upon the earlier discussion of these issues.

Biological factors

Dyslexia is the late or abnormal development of literacy skills caused by a neurological difference, and for the most part shows itself as a different way of functioning. The brains of dyslexics are wired differently to those of non-dyslexics and appear less ordered. Compared to the average person, information processing is organized differently in dyslexic individuals, and brain scans have shown us that different areas of the brain are activated.

Research suggests that there is a high level of hereditary susceptibility to dyslexia, with several chromosomes identified as playing a role in the (abnormal) development of information processing. For instance, disorder of phonological processing in the area of language and the specific disorders of auditory processing in the area of perceptual processes are said to develop as a consequence of genetic variation.

Depending on how the neurological difference developed, one can talk about acquired or developmental dyslexia. Although the distinction is clearly defined here,
frequently it is not possible to know the underlying cause of the dyslexia and hence the distinction is usually not made in children who have not learned to read and write. The one time the distinction is made is with adult who were able to read and write, but then lose that ability due to an injury. This is always referred to as acquired dyslexia.

In the case of acquired dyslexia in children, the difference is due to a minor brain trauma sustained before or during childbirth. It can be the effect of an accident or an illness, but the injury is mild enough to cause a specific difficulty rather than a more general disfunction. The positive effect of the progress of medical science also plays a role. Physicians can now save children born early and with low weight, as well as surviving more traumatic illnesses and accidents, than before. All these have an impact upon brain development, and increase the risk of dyslexia.

**Differences in brain dominance**

The left hemisphere may be seen as specializing in verbal and numerical information processed sequentially in a linear and ordered manner. It is the active, verbal, logical, rational and analytic part of the brain, capable of cataloguing and analyzing information.

It is most adept at language, maths, logic operations and processing of serial sequences of information. It has a bias for detailed and speed-optimized activities that are required for voluntary muscle control and the processing of fine visual details.

The right hemisphere should be considered the intuitive, creative, primarily non-verbal part of our brain and it deals in three-dimensional forms and images. It sees the forest rather than the trees and is capable of understanding complex configurations and structures. The right hemisphere is stronger at pattern recognition, face recognition, spatial relationships, nonverbal ideation, syllabization and intonation of language and the parallel processing of diverse information. It has a visceral motor bias and deals with large time domains.

Everyone uses both hemispheres, since both kinds of information manipulation is equally necessary for efficient functioning. There are of course tasks which require a more prominent functioning of one or the other hemisphere. People are not alike regarding to what extent one or the other type if thinking is favoured by their brain.
BRAIN-DOMINANCE QUESTIONNAIRE
(based on Brain Dominance Questionnaire. English Teaching Forum, 1994.; revised by Mariani, 1996.)

This questionnaire will give you an indication of your tendency to be a left or right hemisphere dominant or a bilateral (using both about equally).

Instructions:
Select the answer that most closely represents your attitude or behaviour. When you have finished, refer to the scoring instructions.

1. I prefer to learn
   a. from a general overview of things, and by looking at the whole picture
   b. details and specific facts
   c. both ways about equally

2. I prefer the jobs
   a. in which I work on many things at once
   b. which consist of one task at a time, and I can complete it before beginning the next one
   c. I like both kinds of jobs equally

3. I prefer to solve problems with
   a. my "gut feelings"
   b. logic
   c. both logic and "gut feelings"

4. I like my work to be
   a. open with opportunities for change as I go along
   b. planned so that I know exactly what to do
   c. both planned and open to change

5. I like to learn a movement in sports or a dance step better by
   a. watching and then trying to do it
   b. hearing a verbal explanation and repeating the action or step mentally
   c. watching and then imitating and talking about it

6. I remember faces easily
   a. Yes
   b. No
   c. Sometimes

7. If I have to decide if an issue is right or correct
   a. I instinctively feel it is right or correct
   b. I decide on the basis of information
   c. I tend to use a combination of both
8. I prefer
a. essay tests
b. multiple-choice tests
c. I like both kinds of tests equally

9. If I had to assemble a bicycle, I would most likely
a. glance at the diagram and begin with whatever tools were there, sensing how the parts fit
b. lay out all the parts, count them, gather the necessary tools, and follow the directions
c. recall past experiences in similar situations

10. At school, I preferred
a. geometry
b. algebra
c. I had no real preference of one over the other

11. It is more exciting to
a. invent something
b. improve something
c. both are exciting to me

12. I generally
a. have difficulty in pacing personal activities to time limits
b. use time to organise work and personal activities
c. am able to pace personal activities to time limits with ease

13. Daydreaming is
a. a usable tool for planning my future
b. a waste of time
c. amusing and relaxing

14. I can tell fairly accurately how much time has passed without looking at a clock
a. No
b. Yes
c. Sometimes

15. When reading or studying, I
a. prefer music
b. prefer total quiet
c. listen to background music only when reading for enjoyment, not while studying
SCORING INSTRUCTIONS

Add up your answers 'a' and 'b' individually. You can ignore all 'c'-s. The ratio of 'a'-s and 'b'-s shows how much your right (a) or your left (b) hemisphere is dominant.

SCORES
Depending on the number of either 'a'-s or 'b'-s:
15 to 13 = very strong dominant
12 to 9 = dominant
8 to 5 = moderate preference
4 to 1 = slight preference
0 = whole-brain dominance (bilateral)

The majority of people is characterized by a dominance of the left hemisphere, even though to different degrees. There are, however, many, whose thinking and other cognitive processes are built rather on their right hemisphere. This difference does not in itself mean a deficit; these individuals only differ in their preferred way of handling information.

Figure 1. The two ways of thinking connected to the two hemispheres

![Diagram of brain hemispheres]

Most dyslexics are characterized by a right, rather than left hemisphere dominance. This is a difference that can be shown already in embryos, and is not related entirely to handedness. The relation between body and brain dominances can be diverse, and determines cognitive performance in many respects. Right hemisphere dominance in itself does not cause dyslexia. If, on the other hand, accompanied with other factors enhancing liability, then probability of the development of a specific learning difficulty is greater than for individuals with a left hemisphere dominance.

The core of the problem is that during information uptake, the right hemisphere reaches a decision too early, without a thorough examination of details. For example, the letter 'p' for them is a straight line and a circle. If one does not pay due attention to their relation, then these could be joined to form several other letters, as well.
Case

Two dyslexic boys behaved very similarly in solving one of the subtests of an IQ test. The task was to put together the pieces of a cutout picture based on a sample. Since both of the boys were rather talkative, it is known how they worked on the problem. Placing the pieces of the picture of a car, something always came to the boy's mind. 'A bunny is riding a bike.' 'An elephant with glasses.' Or instead of the picture of a mushroom, the result is a pair of glasses. Before checking even whether the round shapes should go to the bottom, a picture is already shaped in his head. His brain was freely creating things.

One of the causes of the outstanding creativity of dyslexics is the pronounced functioning of the right hemisphere. They basically have the skill built in to see alternatives and in an alternative way. This is what participants of creativity trainings are practicing; but for dyslexics, this is the natural mode of functioning. They are able to see in many ways.

Figure 2. Dyslexic individuals wear different glasses.

Another example of the creative solution, working on the Block Design task of an intelligence test. The dyslexic boy formed glasses (A.) instead of the desired mushroom shape (B.)

Naturally, this creativity is more of a drawback in the school, and especially in reading. Creativity is not the most efficient approach toward reading a word. Two long words, for instance, can be easily mixed up, since segmentation, the analysis of details is low-level for them. This is why it is possible for them to read 'aeroplane' instead of 'grandfather' after thinking a little. Both words are long and at some places, some things stick out of them. Their brain does not deal with the relationship of the elements.

The greatest difficulty for them is posed by learning. The sequential build-up of the material is difficult for them to follow. They form small and peculiar wholes, which have as much to do with the material as the above glasses with the mushroom. They are made up from the same elements; only the elements are joined in an entirely different way.

Therefore, it is very helpful for the dyslexics to get an overview of their task or the material. Structure provides form and puts the pieces together for them.
Differences in brain dominance

The two sides of the brain, the left and the right hemispheres look similar, but they work very differently.

The left hemisphere is for processing information sequentially in a linear and ordered manner for verbal and numerical information. It is the verbal, logical, analytic part of the brain to catalog and analyze information step by step. It sees the details. Skills and abilities like literacy, math, logic operations and processing of serial sequences of information is connected to the left hemisphere.

The right hemisphere for totally different skills and abilities, because it has a totally different way of information processing. It is the intuitive, creative, non-verbal part of our brain and it deals in three-dimensional forms, images and music. The right hemisphere sees the whole. It is capable of understanding complex configurations and structures. It is working stronger at pattern and face recognition, spatial stimuli, nonverbal ideation, intonation of language and the parallel processing of diverse information.

Everyone uses both hemispheres, since both kinds of information manipulation is equally necessary for efficient functioning. There are of course tasks which require a more prominent functioning of one or the other hemisphere. People are not alike regarding to what extent one or the other type of thinking is favoured by their brain.
Handedness

To test handedness, it is worth performing several targeted observational tasks to find out which hand is dominant and to what extent.

Testing handedness:
- Hand used for writing
- Hand used for throwing
- Hand used to push down the latch
- Hand extended for objects
- Hand used to pull up the zip

A quick test can increase the certainty of the result of the observations:

**Knocking test:**

On any keyboard, have the child press the 'f' key as many times as they can with their left hand. The duration of the test is thirty seconds. Then repeat the test with the right hand pressing the key 'j'. The character count will show with which hand they could knock faster. The test should be repeated three times and the results averaged.

Handedness fully develops by the age 4-5. At school age, it can be ascertained with a high degree of certainty, with which hand the child is more skilled. In doubtful cases, in the case of mixed handedness, it is expedient to train the child to be right-handed. On the other hand, even mild left-handedness is left-handedness, and the child should not be trained to use the opposite side hand.

Unfortunately, even today, some children are trained to shift handedness. Parents mostly want to have the child learn to use their right hand, but there is precedent for trying to make a child left-handed out of extravagance. A sign of the shifting is when the hand used for writing differs from the hand of the other observed uses.
The dominance of the leg
The dominance of the leg has little bearing on dyslexia. This is rather just a curiosity and can of course be important in sports. To ascertain leg dominance, the following tests can be made:

- leg used to step forward
- leg first lifted when jumping over a groove
- leg used for kicking

The dominance of the eye
The dominance of the eye is important regarding dyslexia. If visual information has to travel longer than necessary, the probability of errors is increased. Reading and writing is a sequential task connected to the left hemisphere. It is from the right eye that information can arrive the quickest into the relevant regions of the brain. Therefore, left eye dominance can contribute to the development of dyslexia. It does not in itself cause dyslexia, but as an element of disorderliness, it increases its probability.

Eye dominance is usually tested with a peeking task. The child has to look into a tube. Everyone leans to the tube with their dominant eye. Thereby, one can even observe people's eye dominance standing beside a telescope in a lookout.

There is another method, as well, which can also show how eye dominance plays a role in perception:
Eye dominance test

1. Stretch out your arm forward so that your hand is level with your eye.
2. Lift your index finger up vertically.
3. Find a distant vertical straight line (the door post, the edge of the cupboard etc.) and align your index finger with it.
4. Now close one of your eyes.
5. Open your eye and close your other eye.
6. Repeat closing and opening your eyes a couple of times.

When one of your eyes is closed, your finger seemingly jumps sideways. This is your dominant eye, since you used this to align your finger when both of your eyes were open. Closing your other eye does not produce such a sideways jump.

The dominance of the ear

Although to a far lesser extent than that of the eye, the dominance of the ear also has a bearing on dyslexia. The processing of auditive information can be weaker, too, in the case of mixed dominance. Ear dominance is usually tested by listening. The subject is shown an object emanating a quiet sound and is asked to listen to it at close range to hear what the sound is. Today, it is fairly easy to observe which ear one usually uses when talking on the phone.

Body dominances have play a role to a different extent in the causal background of dyslexia. The more mixed dominance there is, for instance, mixed or mild handedness, left eye and ear dominance, the more probability the development of some kind of specific learning difficulty has.
Cognitive processes

Cognitive processes are shaped by biological characteristics. The development and the mode of functioning of attention, perception, memory, thinking and language is different from that of the majority in the case of dyslexics. Developing, improving these is the most efficient during childhood. If development is assisted by suitable classes and activities, then the developmental peculiarities will cause much less problems by adulthood. Strengthening cognitive processes is efficient in adulthood, as well, but at the same time, compensating for these divergencies is also important.

Attention

It is often typical of dyslexics that their attention is easily diverted. They pay attention to everything, not just to the problem at hand. Therefore, they gather a lot of information, observe a lot of things, but usually not the ones they need to concentrate on at the moment. Dyslexia can be accompanied by an attention deficit, which gives rise to more serious problems.

Dyslexics do not necessarily have attention deficit disorder, even though they are usually more inattentive than the average. In the case of attention deficit, mistakes in spellings are random, for example. The spelling mistakes of dyslexics usually consist of letter and syllable reversals, writing expressions in one or more words and segmentation in general.

The test below is suitable for identifying attention deficits: (The test is an adaptation of Amen, 1995 Attention Deficit Disorder Symptoms Checklist. The modifications are based on clinical experience.)

Rate using the following scale and place the appropriate number next to the item.

0 = never
1 = rarely
2 = occasionally
3 = frequently
4 = very frequently

1. Easily distracted while learning, reading or listening to others
2. Inattentive, unless very interested in something (sometimes even hyperfocused)
3. Listening improves by making other activities like drawing, tinkering, walking
4. Lack of concentration to details
5. Poor ability to follow the conversation
6. Loosing things
7. Skipping lines while reading, trouble staying on the path
8. Difficulty for following long serie of instructions
9. Tendency to be easily bored

To get the result add the scores.
above 15 – poor attention
above 25 – attention difficulties
above 30 – severe attention difficulties

Balance exercises, swinging, spinning, yoga and stimulation of the balance system in general can be an efficient method of developing attention.
Perception

Coordination of the channels of perception – sight, hearing, touch – with each other and with motion happens during early childhood. The child needs plenty of experience for precision motion, precision information uptake and secure orientation to develop.

The motion development of dyslexic children usually lacks a crawling phase, and therefore the organization of nervous system is not customary, either. Sensory-motor integration, that is, the coordination of perception and motion is not sufficient. Owing to this, body scheme- and spatial orientation disorders, as well as weakness in precision motion and auditory perception may develop.

The body scheme forms the basis of orientation. Understanding directions and relations is based on understanding one's own body. The greatest problem is posed by the difficulty of distinguishing left from right. This results in an uncertainty in judging spatial directions even in adulthood. This means that although the individual knows which is the left side is and which the right one, this knowledge does not come spontaneously. They have to relate this to something. For instance, it helps a lot if they imagine themselves to be writing or look at the arm on which they wear the watch, which is the left one, or the hand on which they wear a ring, which is the right one etc.

Distinguishing sounds is another common difficulty. In the early stages of linguistic development, when speech sounds are differentiated, frequent and severe inflammation of the middle ear can lead to sound differentiating problems. If other factors are present, as well, which can adversely affect linguistic development and thereby the acquisition of literacy skills, then dyslexia will probably develop.

Owing to this disorder, the individual does not understand fluent speech clearly, even though their hearing is acute enough. This is a case of perception problem, rather than a speech understanding- or comprehension disorder. Weakness of sound discrimination can also render learning foreign languages difficult, since identifying sounds and forming the appropriate accent requires sufficient sound discrimination.

The disorder of visual processing is a common symptom, as well. This appears to be contradicted by the fact that most dyslexics have fairly good spatial-visual skills; moreover, this is their chief modality.

Dyslexia is a rather heterogeneous concept. Acquisition of literacy skills requires the integration of a number of skills and subskills. The disorder can affect several areas and different symptoms can appear.

Dyslexics see in a different way. They can grasp visual wholes well, but are worse at details and spatial relationships. Therefore, they process information differently, they think and they learn differently. This has several advantages and drawbacks, as well.

Sports and arts can help improve the sensory-motor system. They do not have to become sportsmen or artists, they can simply use these activities, which (not by coincidence) form the basis of human culture, as a support for the integration of motion and perception.
Memory

Dyslexia is often accompanied by the weakness of short term memory. This, however, does not involve a general deficit in memory processes. It is primarily remembering the order of successive elements that causes the difficulty.

Sequential and simultaneous memory is related to the different work method of the two modes of processing and the two hemispheres. The dyslexic finds it difficult to remember successive elements and sequences. At the same time, they easily remember everything that can be grasped as a whole. They tend to remember visual rather than verbal material. They can remember faces more easily than names. They can remember figures and pictures better than words and texts.

These characteristics are worth taking into consideration in learning, as well as in work.
Thinking

Dyslexics also have a special way of thinking. They are worse at handling relations than the average. Logical-analytical thinking is not the terrain of dyslexics. Their thinking is characterized by overview, intuitive approaches, and understanding based on realization.

They arrive at correspondances not in a step-by-step logical way, but by having an overview and feeling the important points, and correspondances simply join up in their heads. For this reason, they are usually unable to explain how they arrived at the result. They just see the solution.

There is nothing mystical in this. It is the typical whole-creating functioning of the right hemisphere that renders this kind of problem solving possible. While the left hemisphere proceeds on a logical way putting all the details together like a mosaic, the right hemisphere shows the solution like a picture. Dyslexics work with wholes like this.

It is often a problem in maths lessons that the dyslexic student is unable to explain how they arrived at the solution. They may even sound arrogant when they merely say 'I know it's right'. In reality, they are just unable to express what everyone is unable to express, like how one sees of a picture what is in it. One just simply sees.

The proportion of right hemisphere dominance is doubled in the high intelligence zone. The reason for this is probably that having an overview makes thinking very efficient. One does not have to struggle through a long logical process, but can find a quick solution to the problem using holistic processing. On the other hand, working out and applying the solution already requires systematic thinking processes. It is therefore important for the two hemispheres to function with equal efficiency.

Owing to the peculiarities of their thinking, dyslexics are resourceful and quickly find solutions to problems, but they are bad at working them out. They seem lazy and superficial, when in reality, it is only for them that the step by step analysis of a process is a cumbersome and often impossible task.

For this reason, it is mainly the administrative part of their work that is poor. They cannot make plans, project descriptions and assessments or analyse things from other aspects. They are constantly at odds with time. Planned, organized work is not typical of dyslexics, but it is vital for them to master this at least to a basic level.

Skills and behavior

The manner of the cognitive processes affects skills development, and thereby, the behaviour. Speech, learning and other school skills – writing, reading and counting – define later performance. Backlog in these areas can put the individual at a disadvantage all their lives.

Dyslexics are often not able to meet school requirements even despite their average or above average intellectual skills, and have several difficulties later in their work and in leading their lives.

This does not have to be so. Using appropriate methods, not only can cognitive processes be influenced, but the development of different skills can also be made sufficient, and tools can be found to compensate for the weaknesses of given areas.
Speech

Most dyslexics do not have speech problems. They do have, however, two major difficulties:

1. One of them is word finding. They recall words that are used less with more difficulty. Due to homogenic inhibition, they easily mix up similar words. Even though homogenic inhibition is a rule working for everyone (similar elements interfere with each other), dyslexics are more affected, since the analysis of details is rather rough in their system of information processing. Their vocabulary is not poor, but the words and concepts are part of a system that is not clear cut and well accessible enough. They are more prone to mix up foreign expressions that are similar in both their senses and their pronunciation and spelling, like the adjectives robust and rustic. The image: a coarse, not so elaborate and refined, peasant-like appearance, and the two words are mixed in this image.

2. Another difficulty is that dyslexics are unable to follow longer unbroken explanations, instructions and lectures. This causes further difficulties in both learning and at work. Many think that the dyslexic individual fails to understand the instruction, the lecture etc. because of indolence, forgetfulness, heedlessness or poor intellectual abilities. This, however, is not so. Their is no problem with their intellect and they do try to pay attention. The problem is related to the weakness of sequential processing. As in reading, where dyslexics are able to process the well-structured and well arranged material with certainty, similarly, they can grasp well structured speech units the best.
**Reading**

Even dyslexics learn to read. Moreover, if taught using methods that take their characteristics into consideration, they can become positively good readers. By adulthood, it is usually not reading out words that causes the problems, but even dyslexics who are good readers can be characterized by:

- reading more slowly than the average,
- skipping lines,
- reading another word, often a synonym or an otherwise similar word,
- reading longer parts and forgetting what they have read,
- making more mistakes when having to read out loud.

The most typical and most severely hindering problem is text comprehension difficulties. Even if one can read fluently, it is in vain if they cannot in the meantime form ideas from the linguistic material. They cannot create a whole from the information. It is mainly deficits in sequential information processing and, thereby, weaknesses in forming idea and in forming images from words that play a role in their disorder.

Written material that is easy to see through, structured and supplied with illustrations is more easy to process. This format is helpful for everyone, but it is the most beneficial for dyslexics.

**Writing**

Dyslexia can be accompanied by dysgraphia, but does not necessarily cause writing disorder in form. The writing of dyslexics is usually ugly, disorganized and difficult to read, but acceptable. When struggling with more severe forms of writing problems, it is definitely beneficial for the individual to use a word processor, but technical tools are helpful for everyone in writing.

One of the most common residual symptoms of dyslexia in adulthood is poor spelling. This problem arises owing to phonological processing problems and weaknesses in dealing with relations and details. Even very erudite and well-read dyslexics have spelling problems. Some examples from the past: Anatole France failed twice at school leaving examination because of his poor spelling. William Butler Yeats was an excellent poet, but his editors suffered a lot from the spelling mistakes in his poems.
Counting

Many dyslexics can count very well, having been able to develop methods that are appropriate for their abilities and not being otherwise affected by a counting disorder. However, many are worse at counting because of their poor seriality and malfunctioning of handling relations and details. They face difficulties especially in the area of basic operations. It is multiplication and division that present a problem the most often.

This is a kind of problem, too, which does not inhibit outstanding achievement. Several renowned natural scientist, and even mathematician have faced this kind of problem. Benoit Mandelbrot is a researcher of IBM and developer of fractal geometry did not know his multiplication tables. Benjamin Franklin was a good reader, but had difficulties with counting. Werner von Braun, the father of the rocket, failed in algebra.

Environment

Dyslexia develops from a neurologically based specificity. It depends on the environmental factors, to what extent and in which areas this divergence will appear as a disorder. External circumstances will decide whether it will be an illness or an efficient mode of dealing with things. If people did not have to write, read and count, dyslexia would not exists. Therefore, like many other syndromes, dyslexia, too, is culture-dependent.

The number of dyslexics is increased partly because in many respects, natural improvement is lacking.

Already as infants, children receive less bodily stimuli, since dressing up and changing the baby has become simpler. There is, therefore, less lifting, twisting and other neurological stimulation. Children are crawling less. Their physical activity is decreased. They receive stimuli and experience visually. They sit all day before the television, VCR, electronic games and the computer, even children of kindergarten age.

Verbal development is also less supported. The parents and grandparents tend to turn on the television and the VCR for the children instead of reading an evening tale. (Often also because the parents themselves already find it difficult to read.) As a result, both the child's vocabulary, and primarily the ability to process successive linguistic elements and to form an idea fail to develop to an appropriate extent. It takes more time even for children with no dyslexic tendencies to be mature enough for acquiring school skills.

These early influences determine the child's later achievement. If the school cannot adapt to their specific structure of abilities, then the child will experience constant failures in learning. They will be distressed when they see a letter. This will further cause a secondary damage to their relationship with reading, and can moreover make the child a poor reader for their whole life. For teenagers, and even for many adults, as well, alleviating the anxiety can itself lead to an extraordinary improvement in reading performance.
Being different causes disorder in general. The individual is a stranger in their environment, and does not fit traditional solutions. This, however, is no value judgement. Being different is always an opportunity. An opportunity for achievements that differ from the average, an opportunity to discover new ways, to make a change. Those who are different are usually the minority. The one things that should not be done is to disregard the obvious differences and try to adjust them to the majority, because this does not fit in with the essence of being different.

It is more important for dyslexics than anybody else to know their abilities, skills, thinking and learning styles, because others are less able to be prepared for the uncommon.

Rising tide lifts all the ships – so the saying goes. Special cases can advantageously affect others. The symptoms characterizing dyslexia can be regarded typical. Most of the environmental change that is beneficial for dyslexics is beneficial for the majority, as well, since more efficient learning methods, greater organization, shorter instructions, transparent tasks are helpful for everyone. When the characteristics of the dyslexic minority are heeded, than the majority who do not share this difference can also receive more attention. Everyone is idiosyncratic and different from other people in many ways, and it is true for everyone that they are able to bring more out of themselves when they are able to engage in activities that suit their skills, interests and ambition.

Case

Sometimes dyslexia can have strange causes, but there are invariable more factors that play a role, and it also has some kind of neurological background.

A mother trained her son to use his right hand despite being left-handed, because her mother-in-law, whom she disliked, once stated that the boy resembled her, since he was left-handed like her. The mother, even though she knew it was unlucky, had her son shift to right-handedness, so that her mother-in-law will be wrong. The boy could write fairly well with his right hand, although he did most of the things with his left hand.

The highly intelligent boy had a mild tendency for dyslexia, but was rather visual and a holistic thinker. He was enrolled for a tough, bilingual school, where children were taught Hungarian and German reading and writing simultaneously at first grade. What is more, the German letters were taught using a different writing than the Hungarian ones.

The boy tried to meet expectations, but by third grade, it turned out that he could not keep up. He dropped behind in both German and Hungarian reading and writing. He was qualified as dyslexic and the parents were asked to take him out of the school, because he would only suffer there from more failures. The ambitious parents, however, persisted with the school and hired a tutor. The teacher, who was experienced in the subject of dyslexia, assisted the child with the appropriate methods, and the boy did show a lot of improvement, but could not catch up with his peers. The school environment and parental expectations remained unchanged. The student, who has already become dyslexic, could not cope with the situation and soon became depressed.
Summary

The symptoms responsible for dyslexia can be of different origin and appear in different areas. Basic differences in subskills, which develop as a result of the peculiarities of the sensory-motor and information processing systems, can give rise to various kinds of symptom. These symptoms are characteristic of dyslexics, and becoming familiar with them will enable one to understand how their activities can be made effective.

Visuality, holistic thinking, creativity, intuition and resourcefulness are typical of dyslexics. Poor memory, mixing up details, frequent mistakes in devising lists and sequences, poor logical-analytical thinking, literacy and counting errors are all responsible for failures, even though they are part of the same structure of abilities, but they constitute the shadow side of it.

Exploiting the sunny side as much as possible increases the energy of the system. No solar collectors are placed on the shady side, either. Similarly, it is the advantages of the peculiarities of dyslexics that have to be emphasized so that they can take maximal advantage of their opportunities.