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JUMP UP READING ONE TO THREE GRADE LEVELS

As a result of our evolutionary history, our brains have two visual pathways. One, the key to survival, is fast and detects movement– this pathway is called the “magnocellular or magno pathway” (because the associated neurons are large). The other is used to discriminate details, textures, and colors; it is important for fine-grained recognition (berries in trees, patterns in faces, and so on) – this pathway is called the “parvocellular or parvo pathway”, because the associated neurons are small.

Reading is a relatively recent cognitive innovation. Although for many of us reading feels almost effortless, we must remember that it is a very complex activity. It is not something that is innate. It is something that must be learned and practiced. Most often we think of “learning to read” in terms of learning to recognize letters, words, sounds, and the rules of punctuation. That is part of what must be learned. But, that is just a small part of what reading is all about. There is another far more low-level or basic type of learning that must happen for us to become proficient readers. Before we can even learn to recognize letters and words, our brain must learn how to “see” those words and letters clearly. And that requires us to use both of these visual pathways in our brain. Reading is a composite skill that employs both of these pathways. It requires us to move our eyes (which is pretty easy) AND to interpret the information that is coming in as we do so. This information:

1. Is very fast (arrives rapidly),
2. Requires very detailed discrimination ("cat" vs "eat", "bye" vs "dye")

But it’s even more complicated than just using the two pathways. In addition to needing both pathways, efficient reading requires that these two pathways work in perfect harmony. Your brain must be capable of processing rapidly changing patterns (this requires the magno or dorsal pathway) which require detailed discrimination (this requires the parvo or ventral pathway). This information is all coming in at the same time and it must be discriminated and interpreted both for comprehension, higher level language-based processing, and to guide subsequent eye movements.

How are Magno Problems Related to Reading?

Recent evidence from neuroscience suggests that many reading difficulties arise not from a problem with “reading” per se, but instead from a basic problem in “seeing”. Specifically, it appears that many poor readers have problems with the magno (fast) visual pathway. Although the specific cause of this deficiency remains unknown, neurobiological investigations show that children and adults with reading problems have incompletely developed magno neurons. Since these neurons are key to seeing fast moving things (like the letters as we read), we believe that their incomplete development hurts our ability to process fast detailed information. This manifests itself as a difficulty in isolating and identifying critical visual elements, such as letters and words, from the sea of visual features flowing over our retinas. Poor reading is the end result. Fortunately, neurobiological research has discovered that it is possible to actually “tune” the magno pathway and improve reading skills.

This tuning, called **Direction–Discrimination Training**, is accomplished by training people to see the direction that faint patterns move on varied backgrounds. This tunes the brain's neural timing, enabling the magno pathway to improve the intake of visual information. In turn, this allows the pattern-sensitive cells (the parvo pathway) to isolate and process letters and words. Tuning the brain’s pathways unlocks a child's ability to read.

Direction-discrimination training is the basis for PATH therapy, **patented in the US and worldwide**. Half hour sessions of PATH to Reading two times a week for 3 months improve most reading skills 1-3 grade levels, increasing reading fluency two to ten fold! PATH to Reading permanently improves reading effectiveness (including fluency, comprehension, spelling, and pronunciation). Adults with reading difficulties benefit as well. The more PATH to Reading is used, the more reading skills improve. PATH to Reading is a research-based program that provides a comprehensive, rapid, and effective strategy for remediating reading problems. It has been used successfully in controlled-validation studies on over 900 students in 9 different public elementary schools over the past several years. These studies, which demonstrate its effectiveness, have been published in refereed scientific journals.

Major Benefits Of PATH to Reading:

- 1) Rapidly and effectively improves most types of reading deficits, including problems in fluency, comprehension, word identification, pronunciation and spelling.
- 2) The more PATH Therapy is used, the more reading skills improve.
- 3) Benefits are often apparent to the student after only a few sessions.
- 4) These reading improvements, in turn, improve student's self-esteem, the desire to read, the ability to write more easily, the ability to understand and follow instructions, the ability to attend, and the ability to learn. As a result, behavior often improves as well.
- 5) Reading is easier, more enjoyable, and requires much less effort.
- 6) Remediates rather than compensates.
- 7) Minimum frequency and duration (twice a week for 10 - 20 minutes) for 12 weeks to produce significant improvements in most reading skills.
- 8) Improvements are permanent.
- 9) It is much more rapid, 10 times faster, than other reading therapies.
- 10) It improves sequential processing, and is the first training method that improves both phonological (requires accurate temporal sequencing) and orthographical (requires accurate spatial sequencing) reading deficits.
- 11) Direction discrimination training abates dyslexia, especially when administered when the brain is most flexible (ages 6-7 years). Interestingly, this is the same time period when children are typically taught to read.
- 12) PATH to Reading has no medical risks.

Dr. Teri Lawton, author of over 60 scientific papers and holder of several patents, has spent more than three decades studying the neurobiology of the visual system. Based on her scientific work, Dr. Lawton decided to bring the knowledge she has gained out of the research lab and into the real world. After curing her first subjects (her own children) of their reading difficulties, she decided to make her training system available to a wider audience. In 1997 she founded Perception Dynamics Institute (PDI) to help those who are slow readers by using the neurobiological techniques that form the basis of PATH therapy.

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