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Behavior and Brain Function

By: Bonnie Adler

Your child has had another rough day. The teacher called once again to say he got into a fight at school, and hit someone. He doesn't pay attention in class, and often interrupts. He's home now, and all he wants to do is play computer games. You know it's the ADD, but you can't get the medication right to make these symptoms go away. When you stop being so angry, you feel your heart is breaking.

Your parent has had a stroke and is experiencing a terrible speech pathology. He can no longer find the words he needs to make himself understood. You watch as he struggles valiantly to express himself, and you offer words up to him

in an effort to help.

You are fifty years old. One of the surprising little side effects, besides the aggravating fact of drooping eyelids and ever increasing aches and pains, is the disturbing realization that you can't remember anything anymore, or at the very least, you need way too much time to retrieve those little facts which feel buried in your brain.

What is going on?

Simply put, these behaviors are all examples of problems in brain function.

While much attention has been paid to diagnoses like ADD and Alzheimer's disease, solutions are far from perfect, and there is still a great deal of frustration and pain for those who suffer from such problems, as well as for their loved ones.

Dr. Mark Goldenberg is a Norwalk based chiropractic neurologist who works with children and adults who suffer from ADD, dyslexia, strokes, memory loss and a variety of other types of brain dysfunction. His treatment method is based on the elegantly simple concept that the brain can be exercised, no differently from the way we exercise our bodies, and that exercise has significant behavioral results both in the short term and over time. After seven years of practicing this methodology, many of Dr. Goldenberg's clients show both anecdotal and objective improvement in brain function and behavior.

Dr. Goldenberg treats many children with ADD, but also works with teens, adults and the aging. His office, located in an old-fashioned blue house on the corner of the Post Road and East Avenue, feels like a welcoming place. It is filled with lots of books, toys and colors, and Dr. Goldenberg himself has a warm and welcoming presence that serves to immediately relax and engender a feeling of trust.

First and foremost, he gets it, up close and personal. His interest in the symptomatology began when a member of his own family developed a learning disability and he began to consider possible treatments that would help. After years of research, Dr. Goldenberg opened Pathways to Learning, a practice devoted to helping clients achieve real behavioral results, often without medication.

The basis of his treatment regime is, simply put, a brain workout.

Should it be a surprise that if exercise is good for the body it is also good for the brain? Consider that there are actual physical places in the brain that control various behaviors. These places require coordinated information to do their job efficiently. Nerve cells are the highways that deliver and coordinate that information. If those nerve cells are weak they may not be doing their job properly, but it has been shown that nerve cells can be strengthened with specific exercises that improve brain function and result in positive behavior changes.

"Both sides of the brain need to function accurately to get a full view of life. As kids develop, the right and left hemispheres of the brain can be out of balance. When this happens, and both sides don't function efficiently, there is a fragmented view of the world. The left-brain is analytical, logical, detail oriented. It deals with reading, speech, language and sequential thinking.

The right brain is more holistic, involved with big picture thinking, cause and effect relationships, non-verbal cues that cannot be taught, read or memorized. ADD kids have some type of imbalance in this hemispheric aspect and they have a fragmented view of the world."

When tested, many kids can show good language and reading skills but tests do not reveal the poor eye contact, inappropriate body language, uncoordinated behaviors or balance problems that are all symptomatic of learning and attention deficits and brain imbalance.

"Parents ask, 'if my child tests so well and is so bright, how come he has no friends, doesn't get the big picture, can't get inferences?' It is because there are imbalances in the brain's right and left hemispheres."

To a certain extent, everyone has a brain imbalance, but there is a whole spectrum of normal. At the ends of the spectrum, the problems interfere with life, and something is wrong. Dr. Goldenberg says, "I look at people who are not living up to their potential. My goal is to improve the under activated part of their brain."

First Dr. Goldenberg does a diagnostic evaluation and administers standardized testing to see which hemisphere is not activated properly. He then sets about increasing the arousal of the weakened hemisphere.

This process is called equilibration, bringing the two hemispheres more in line with each other. The next step is to synchronize the brain, which helps a child understand how to prioritize the stimuli coming at him, such as realizing that the words he hears spoken by the teacher at the blackboard are more important than the whispering of a child seated near him in the classroom or the sounds of jack hammers from the construction occurring outside his classroom window.

"The body has a built-in mechanism to bring right and left brain information to the frontal lobe to be processed. Most ADD kids have problems in the frontal lobe, which is often called the executive part of the brain. They can focus and hold attention for some things, for example playing computer games for hours, but they get into trouble when there are too many stimuli, such as in a classroom.

ADD is more of a problem of inhibiting unwanted stimuli. There is a weakness in the brain that makes it difficult to decipher what stimuli are important and which are not."

Current research shows that the brain has the ability to change and grow, and with proper stimulation positive changes can occur. "We strengthen the neuronal connections in the brain, which are really just like a highway. The nerve is like a muscle. The more you use it, the more it can grow. Actually, we are not growing more nerves, but sprouting more connections in the brain strengthening its pathways."

Goldenberg shows a picture of several nerve cells, with their axon and dendrites. They look like trees. The tree with many branches has a lot of dendrites. The tree with just a few dendrites looks weak and ineffective in comparison. With exercise, that skinny, weak tree grows a fuller,

healthier, stronger head, and the neuronal pathways are strengthened.

More exercise is required for the synchronization of the messages going to the frontal lobe for processing so the messages get to the brain at the same time. This helps with focus, timing, and activity of the brain as a whole.

Increasing the arousal of the brain's hemispheres through the motor and sensory system is called Hemispheric Integration Therapy. Think of rubbing your tummy and patting your head at the same time. It's not easy, and neither are many of the exercises employed in the treatment. Each exercise is geared to strengthen three core functions of the brain, timing, rhythm and sequencing. For example, kids are asked to stand on a wobble board (that's a flat board with a ball beneath so they are forced to balance themselves) while in one hand they track a ball. For kids who are easily frustrated, this presents a real challenge. An important protocol Dr. Goldenberg employs is called the Interactive Metronome, which involves having the individual tap his hands and feet in synchrony with a target sound. This program takes the child through many different coordinated movements, increasing repetitions as he progresses. The exercises require concentration and mental flexibility with a visual and auditory feedback system. It takes 20 sessions, given at least twice a week. Each visit the repetitions are increased. Rewards for the hard work are real. Studies have shown that there is significant improvement on standardized testing in both math and reading.

The program is also effective for adults. The Interactive Metronome protocol is also used by athletes to strengthen coordination, help with dexterity and physical adeptness. Golf pros and football teams regularly use them. Memory loss, which tends to be a normal byproduct of the aging process, but is worse for some than for others, also can be helped by the Interactive Metronome protocol. Dr. Goldenberg said he himself did the protocol to improve his own memory retention. For those who feel that their memories are no longer what they used to be, the solution may be found in this type of mental exercise regime.

Goldenberg finds his work tremendously rewarding. "The newest part of our brain, called the prefrontal cortex, takes up 36 per cent of our whole brain. It is here where most of the problems arise. These protocols help increase the functioning of this area in a more efficient way."

For the kids he helps, Dr. Goldenberg says, "All their lives, people criticize them. They start feeling better about themselves. It's hard work, but they can do it. For me, that's the best part."

Advertisement



The advertisement features a black Suzuki Grand Vitara SUV against a light blue background. The word "SUZUKI" is written in large, light blue letters at the top. Below it, the text reads "THE ALL-NEW 2006 SUZUKI GRAND VITARA". A small text box on the right says "PREMIUM SHOWN, \$20,099 MSRP". At the bottom, a large text box says "TEST DRIVE THE 2006 GRAND VITARA AND RECEIVE A FREE \$25 GIFT CARD". The Suzuki logo is in the bottom left corner, and the text "Way of Life!" is below it. To the right of the logo, it says "LIMITED TIME OFFER", "CLICK HERE", and "suzukiauto.com".



The advertisement has a dark blue background. At the top, it says "Click through a car lot the size of Connecticut...". Below that, the website name "CTCARSANDTRUCKS.com" is written in large, white, bold letters. On the right side, there is a partial image of a blue car's front end.

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