

## **INSIDE THE ADD MIND**

**By**

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Picture yourself walking into the lobby of a hotel to wait for a friend. Music is playing in the background, a movie is being shown on a monitor, and there are some people talking. There is a table with some magazines and today's newspaper. Let's throw in a bird cage in the corner with a cockatiel chirping. The air conditioning is on and it is quite cold. Bell boys are wheeling luggage carts back and forth.

At first, you would probably scan the room, and then proceed to sit down, you would then make a conscious decision to pick up the newspaper and read. Your friend comes down in a few minutes and you proceed with your evening. Very non-eventful right?

Well let's analyze what just happened.

The music in the background was picked up by your brain as being a low priority and therefore, although you hear it, any other attention is subconsciously inhibited.

The video which you saw was also briefly noticed and because it was not of interest to you, your brain automatically inhibited any further action.

The bird in the corner chirping might be a minor annoyance but again the stimulus is registered as a non priority and inhibited or prevented from you taking any action.

As a matter of fact, I'm sitting on the New Haven Line right now with the sound of the air conditioning blowing and the temperature approaching 100 degrees. I am still able to write this article because I am unconsciously inhibiting these stimuli as being insignificant to my primary goal of writing this article.

The temperature, and the bell boys, is stimuli that your brain is deciding to ignore, and therefore these stimuli do not even reach your conscious thought.

You do however; have a desire to pick up some reading material until your friend comes. This is significant and will cause hundreds of thousands of neurons in your brain to fire in many different areas of the brain. The thoughts of your past memories of reading will be activated and the emotion you felt along with that past experience will be activated. Memory centers, motor centers, sensory centers, autonomic centers, visual centers etc. will be activated due to your goal or desire to walk to that table, pick up the magazine which has an article on lap tops, and start reading. Nothing else at this point in time is significant to you except for reading this magazine; this is why your brain inhibits all that is going on.

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Mind you, if there was another stimulus that was more of a priority, let's say the sound of someone screaming for help, your brain due to past learning would bring out from memory a similar circumstance where that scream or something like it meant danger. You would then, automatically, without thinking, drop the magazine and try to help.

If all of this sounds silly, it isn't. This happens all day long, every second of every minute of every hour of every day etc. etc. etc. We take the working of our brain for granted because it is such a finely tuned mechanism. More powerful than all the most advanced computers in the world put together.

### **Brain dysfunction**

Let's go back to our hotel lobby example. Could you imagine if your brain's ability to inhibit unwanted stimuli was not functioning correctly? Having to take the time to think about every stimulus in that room and make a conscious decision which one to give priority to?

What if they all seemed as though they were of equal priority? Then you would listen intensely to the music; go over to the bird cage, run to the luggage cart to see what that was about, run to the video and watch. You would be uncomfortable with the temperature and that might interfere with your decisions to do all of the other things. This would make you feel frustrated maybe even angry, your heart might start pumping faster, and you might start sweating.

You have just looked through a small window of what many children and adults experience whose brain is not functioning at optimum level. People such as this do not experience all the presentations that I mentioned. The signs that they manifest depend on what areas of the brain are not functioning correctly. Notice that I have not mentioned ADD, ADHD, OCD, PDD, Autism, Dyslexia, Tourette's, NLD, etc.ect.ect. These are all labels given to a constellation of symptoms that occur frequently enough that they can be classified.

When I talk about children with brain dysfunction it is important to realize that I am not talking about brain damage. As a matter of fact, these children are often times extremely bright and are actually at levels of high normal in many different areas of cognition and have very high IQ's.

It does not matter what you call it. All of these syndromes have one thing in common. The brain is not functioning, communicating, or processing correctly, or more importantly the brain is not synchronous.

### **The cause**

The question now becomes;

Why isn't the brain functioning correctly?, Where in the brain is the malfunction?, Is it an anatomical problem such that if we take an MRI we would see an abnormality?, Is it a chemical problem such that if we take a chemical test it will reveal a decrease of some chemical,

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a neurotransmitter perhaps?. The answer to these questions for the great majority of these syndromes are that it is not an anatomical abnormality, it is not a chemical problem per say.

Is poor parenting the cause? Usually not, although the home environment does have a great deal to do with the way the child will progress and improve.

Is genetics the cause? Genetics obviously plays a role but not totally. Is environment the cause? Environment does play a critical role as well.

Let's get back to our first question. Why isn't the brain functioning properly? Studies and current research have shown that many of the brains of children and adults with these challenges have a decreased activity or hypo-functioning of certain brain regions.

This has been shown through PET (positron emission tomography) scans, fMRI (functional MRI), SPECT (single photon emission computerized tomography). These scans pick up the metabolic rate of cells in various areas of the brain, and look at the brain as a whole and compare different regions from side to side.(1)

These scans have shown that kids with ADD/ADHD, Bipolar disease, and other types of processing problems, exhibit areas of the brain that seem to be colder or less metabolically active. The cells in these areas are not as active as they are supposed to be. Not because of any type of specific damage per say, but just because the cells are functioning at a lower level. In the case of ADHD the problem is usually in the right frontal lobe.

Recent functional MRI scans have shown that children who fit the classification of ADD/ADHD, Bipolar disease, Autism and many other learning disabilities and processing problems have decreased activity in the right frontal lobe of the brain and the cerebellum. (1)

### **Synchronicity**

A great many children with ADD/ADHD and other disorders, have processing problems in the areas of motor planning and sequencing. The front part of the brain is responsible for taking all the environmental stimulation from different areas of the brain and putting it together so that it can be acted upon. Therefore, the different sensory areas must send the information to the front of the brain so that it arrives there at the same time. If it does not, then the thought or action will be asynchronous. If synchronicity can be improved, this will improve focus, timing, and synchronicity of the brain as a whole.

### **Improving Synchronicity and Processing speed**

There is a protocol which has shown to be extremely effective in increasing processing speeds and brain synchrony. It is known as the Interactive Metronome.

The Interactive Metronome objectively measures an individual's timing, rhythm, coordination, and capacity to plan actions. Based on this measurement, timing deficiencies and challenges in planning actions such as those commonly found in people with ADHD, and other learning and processing problems can be identified.

This measurement has been shown to correlate to academic performance and the ability to pay attention. The initial Interactive Metronome session gives us a wealth of information concerning a child or adults ability to synchronize sensory and motor activity.

The process involves having the individual tap his/her hands and feet in synchrony with a target sound. The program takes the child through app. thirteen different coordinated movements increasing repetitions as the child progresses.

A recent study published in the March /April 2001 issue of The American Journal of Occupational Therapy found that by following the protocols of the Interactive Metronome, significant increases in attention, coordination, control of aggression, motor control, language and reading processing were found.

With the use of this protocol and other physical activities, patients have demonstrated a 2 grade level increase in reading fluency and a 1.7 grade level increase in math fluency.

Any therapy geared towards dealing with these types of problems should also include exercises that will stimulate specific areas of the child's brain therefore improving the brains function, hopefully on a long-term basis. The exercises should address a number of different areas. The exercises that we use include breathing, eye exercises, strength, endurance, balance, coordination, fine motor activity, gross motor activity, auditory stimulation and visual stimulation. Emphasis is placed on making sure that the proper signals from the spinal muscles and joints are being transmitted since it is here that the largest percentage of stimulation to the cerebellum occurs.

Obviously, these are complex issues. New research is being done as we speak on how the brain functions. The information in this article is based in part on the most current thoughts on brain function.

This article has been written to give hope to any parent with a child who is challenged. To understand that your child too, can increase their brain function through certain types of activities, and that genetics need not be the only dictate of a child's potential, that there might be another approach to these problems other than medication.

*Every child has unlimited potential, every child is an angel and can fly!*

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