

Aspergers Syndrome, a new prospective

By Mark Goldenberg, D.C., DABCN

In 1994 a Viennese physician named Hans Asperger published a paper in which he described several of his young male patients who exhibited normal intelligence and language development but also demonstrated challenges in social and communication skills.

Today Aspergers Syndrome (AS) is recognized by professional and parents alike.

A common thread in children with AS are challenges in social skills, difficulties with transitions, and obsessive routines.

One of the most glaring characteristics is an inability to read or understand non-verbal cues such as body language, facial expression, prosody or inflections in voice. These together are known as non-verbal communications and are controlled by the right hemisphere (half) of the brain. Some say that as much as 50-80% of conversation is understood through non-verbal communication. This makes it extremely difficult for children who are challenged in this area to “fit-in” which can and do lead to secondary self esteem issues.

PART OF THE SAME PROBLEM

Most if not all learning difficulties are inter-related or co-morbid. For example children with AS will also show signs of attention deficits, and obsessive compulsive traits. I therefore consider them to be along the same continuum or spectrum and basically the same condition, it's just that some of the symptoms are more severe than others and there is a fine line between one syndrome and the next.

According to Linda Lotspeich (Lotspeich and Ciaranello, 1993; personal communication, 2001), Director of the Stanford Pervasive Developmental Disorders Clinic, is that the rules in the DSM-IV do not work. “The diagnostic criteria are subjective, like marked impairment in the use of nonverbal behaviors such as eye-to-eye gaze, facial expression, body posture, and gestures to regulate social interaction.” “How much eye-to-eye gaze do you have to have to be normal?” asks Lotspeich. “How do you define what marked is?” “What is happening is that a group of symptoms is being called a disorder and if we add or subtract a few symptoms or make a few more severe, then it is called a different condition or syndrome” (Neurobehavioral Disorders of Childhood, Mellilo and Leishman 2004).

THE CEREBELLUM

Another common finding in AS and other learning and attention deficits is what's known as Developmental Coordination Delay or clumsiness which is revealed as balance and coordination problems, fine and gross motor difficulties, eye tracking problems and proximal (spinal, shoulder, thigh and buttocks) muscle weakness. These motor findings are controlled by a part of the brain known as the cerebellum.

The cerebellum or "little brain" is found behind the neo-cortex or "thinking brain". In the past the cerebellum was thought to only control and fine tune motor activity, however current research (Schmaaman) reveals that the cerebellum fine tunes all cognitive functions including, attention, language, speech, decision making, reasoning etc., So that any therapy must be geared towards strengthening the cerebellum.

EXECUTIVE FUNCTION

Obsessive thoughts, stereotyped behavior, trouble transitioning, attentional challenges, lack of affect etc. are due to a weakness of the neurons in the front part or frontal lobe of the brain, more specifically, the prefrontal cortex. The pre-frontal cortex is that part of our brain that is the most developed compared to any other animal. It is this part of the brain that controls what are known as executive functions. The name is appropriately given because an executives job is to decide when, why, where, how, what, and for how long?

When should a specific act or thought or set of instructions be executed?

Why should the act be executed? To achieve a goal, to make one feel good, or because our parents or teacher told us to execute it.

Where should the act take place? In what context or environment. This requires retrieving past experiences and comparing them to the present situation.

What needs to be done requires remembering the initial directions and keeping them available or "on line" so that they can be recalled and used. This is analogous to a windows program where we can easily manipulate different windows when we need them. This form of memory is known as working memory and is deficient in many learning and attention challenges.

How should the act be performed also requires learned procedural memory through the cerebellum.

So we now understand that any under activation of the frontal lobe of the brain can result in certain presentations. What's important is not what we call the syndrome but realizing where the weakness lays and strengthen it.

LACK OF INHIBITION

Most of the problems encountered with executive dysfunction are due to a lack of proper inhibition in the frontal lobe.

Obsessive thoughts are thoughts that occupy our mind beyond what is required to be productive. The reason they go beyond is due to the brains inability to stop or inhibit them.

Stereo typed or perseverative behaviors are those motor acts that are unable to be stopped by the individual due to the frontal lobes inability to inhibit the activity.

Even trouble transitioning is an inability to stop what we are doing and move on to something else. This can be so severe that simply turning off the TV set while a child is watching can set off a rage reaction. Even ADD/ADHD is an inability to inhibit unwanted stimuli so that the individual does not know what to attend to and therefore attends to all stimuli which gives the presentation of hyperactivity and frustration.

BRAIN ASYMMETRY

Brain asymmetry refers to the dominance or control over certain functions by a specific half of the brain for example:

Language, reading, math, sequencing and writing are controlled or dominated by the left hemisphere

Social behavior, spatial awareness, attention, vigilance, reading non-verbal cues (eye contact, body language, inflections in voice or prosody) and novel experiences are dominated by the right hemisphere.

It has been shown through imaging techniques those individuals with AS, PDD, ADD/ADHD and other processing problems in fact have areas of the right hemisphere and left cerebellum that are less neurologically active or colder than corresponding areas of the left hemisphere. It is not that there is brain damage as much as there is under activation of existing neurons. So that if we could stimulate those neurons to grow and be stronger much like we do with a weak muscle, the communication between these areas would become stronger.

Luckily through a process known as neuronal plasticity neurons can be strengthened. Just as a weak muscle can be made stronger by resisting gravity, nerves can be made stronger through proper stimulation.

Improving Synchronicity and Processing speed

It has been my experience working with children with autistic spectrum presentations that a combination therapy to improve planning, sequencing, and timing together with therapy to improve balance, coordination, and proximal muscle strength works to form and strengthen existing neuronal connections to improve frontal lobe and cerebellar function. There is a protocol which has shown to be extremely effective in increasing processing speeds, brain synchrony, and forming and strengthening learning pathways in the brain. It is known as Cortical Synchronization Therapy (CST).

One of protocols used is known as the Interactive Metronome which objectively measures an individual's timing, rhythm, coordination, and capacity to plan actions. Based on certain measurements, 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.

These measurements have 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 thirteen coordinated movements increasing repetitions as the child progresses.

A 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.

CST also includes protocols that will stimulate specific areas of the child's brain therefore improving the brains function, on a long-term basis. CST addresses a number of different areas using particular physical activities. These activities 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.

Doctor Goldenberg is a board certified Chiropractic Neurologist and director of Pathways to Learning Center at 1 Westport Avenue, Norwalk CT 06851. Phone: 203-847-3000
Email: doctormark@prodigy.net