

AUTISM

Background

In an article in U.S. News and World Report (2000), it was stated that 1 in every 6 children in America suffer from problems such as autism, aggression, dyslexia, and ADHD. In California, reported cases of autism rose 210% from 1987 to 1998. In New York, the number of children purportedly with learning disabilities jumped 55% between 1983 and 1996. California and New York are not alone. Rates of both classic autism and Asperger's syndrome are reportedly rising all over the world. Autism was once considered a rare disorder, occurring in 1 out of every 10 000 births. Now it is more common perhaps 20 times more. Drug treatment is not the answer, neither is educational or psychological remediation approaches. Some parents do not want to use medication because they are rightly afraid of possible long term side effects. For others the medication does not work very well or at all. While the vast majority of parents feel that psychological therapy is useful, many report that behavioral interventions did not help their children as much as they hoped. They all feel there should be an alternative.

What is happening in the brain?

Most conditions in this spectrum of disorders are the result of a right hemisphericity (right side of the brain problem). Most developmental disability syndromes can be clearly related to dysfunction or delay in development of the right hemisphere. The right hemisphere is understimulated resulting in slower processing within that hemisphere, especially in the frontal lobe. This slower processing results, in turn, in decreased effectiveness of the right hemisphere's normal executive functions. This decrease in activity has been shown with modern functional imaging of the brain (ie. MRI), which has noted a decreased activity in the right frontal cortex with an asymmetric distribution of activity in the basal ganglia and cerebellum. This right hemisphericity may also explain why males are affected more than females (males are predominantly right brain dominant while females are left brain dominant). Almost all of the specific disorders described earlier are found with significantly greater frequency in males. The frequency ranges from approximately 6 to 1 in ADD to 50 to 1 in autism. Male brains are more susceptible to prenatal and postnatal influences; these influences, which primarily consist of maternal prenatal levels of estrogen, create this greater right cortical development than left characteristic of male brains. It has been further noted that dopamine (an important neurotransmitter in the brain) decreases have a greater negative effect on right frontal cortex function than left due to the asymmetrical distribution of dopamine receptors in the brain (ie there are more dopamine receptors in the right side of the brain than the left).

Environment is a fundamental problem.

Although genetic predispositions are likely to be present, the main factors in causation of developmental disabilities are thought to be environmental. The dramatic rise in the diagnosis of these problems is not consistent with a purely genetic cause. Currently socially acceptable childhood behaviors, primarily those which are sedentary, such as a high proportion of time spent by the child watching television or playing video games, is a primary factor for the dramatic increase in neurobehavioral problems of childhood. The window of time for the greatest development is between conception and the age of 6. Motor activities facilitate this brain development, particularly in males. A dramatic decrease in early motor activity will affect development of gross motor behavior, which is more specific to right hemisphere development. The primary social influences negatively affecting cognitive and motor functions in childhood consist of the increased use of television, VCR, computers, working parents, and parental fears (ie letting kids play outside) for their children. Other factors such as poor nutrition, increased caloric intake, environmental toxins, and early sensory deprivation are other important factors but are not as significant as sedentary behavior.

These problems are correctable.

As brain organization is plastic, many aspects of neurobehavioral disorders do not have to result in permanent impairment. Appropriate forms of environmental stimulation (such as those offered at our clinic) and behavioral modifications can significantly improve or completely correct the underlying problem. Since motor and cognitive dysfunction often co-exist, improving the function of one effects changes in the other. Cognitive and motor functions are actually part of the same function. They both evolved in parallel as a product of the evolution of sophisticated complex movement. Bipedalism (walking on two feet is unique to humans and is the most complex form of movement of any organism). The same underlying mechanisms in the brain that evolved to enable more complex coordinated movements were adapted and utilized to effect more sophisticated cognitive processes. Hemispheric specific treatment is the key to success. Motor activity, sensory stimulation, and cognitive functions directed toward the under-functioning hemisphere is the most important consideration in treatment. Achieving temporal coherence or a balance of activity between the two hemispheres is critical for allowing cognitive and bilateral motor binding to occur, which would reduce hemispheric neglect (ie when one side of the brain is stronger than the other side, the stronger side will further inhibit the functions of the weaker side). As the hemispheres achieve a normal coherence and synchronization, motor and cognitive performance will improve. Most developmental disabilities have as their most common symptom, motor incoordination or clumsiness, especially of posture and gait. This spectrum of disorders all involve disruption primarily of what is known as executive functions which are functions attributed to the frontal lobe. The frontal lobe (frontal aspect of the brain) receives a lot of sensory input from the cerebellum (another area that is affected in autistic children) and the cerebellum receives its input from the vestibular system (inner ear balance mechanism) and from muscle and joint receptors. By working with these kids and improving their balance and coordination and postural abnormalities we would be strengthening the cerebellum which would then strengthen the frontal lobe. There are also auditory and visual connections in the cerebellum and so specific application of music and lights are also utilized with treatment. This is an alternative to drug therapy which seeks to stimulate the frontal lobe, however there are no long term studies on the side effects or benefits of these drugs. The most important factor in children's changing brains is lack of physical activity.