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Training the Brain with Neurofeedback: Going to the Core of the Problem

Dr. Brian J. MacLean

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Jason was focusing intently on the computer screen, directing the flight of a jet aircraft over a landscape. The objective of this game was to fly the jet at a predetermined altitude. Jason had significantly improved in his skill over the past ten sessions. What was unusual to the observer was that Jason was not using his hands or feet to control the jet. A small sensor sitting on the top of his head was measuring the various brain waves and directing the flight of the jet. Jason was flying the jet solely with the power of his brain waves!

In the initial assessment, Jason was found to have too much "slow-wave" activity in the front of the brain. This often results in problems in paying attention. Jason was learning to reduce these slow waves and increase the more attentive "fast-waves". Jason knows when he is successful in changing his brain waves to a more attentive pattern by tone signals, as well as by showing greater facility in flying the jet.

Jason has Attention Deficit Disorder. His parents brought him to the clinic to try the non-drug approach to treating this serious disorder. Like many children who have tried one of the psychostimulants like Ritalin, Jason had experienced some of the many possible negative side effects of these pharmaceuticals. His appetite had suffered, as well as his sleep patterns. He appeared to have lost part of who he is as a person - his emotions were flattened with the medication. His parents had also heard about the research associating Ritalin with possible heart muscle damage and atrophy (shrinking) of the cerebral cortex, that part of the brain responsible for our thinking abilities. The family was ready to try something different. Since the treatment began, Jason's Ritalin dosage has been reduced 90%, and his teachers are reporting better attentiveness in school. With further sessions, we can expect Jason to make further progress in becoming free from drug dependence.

Jenny is sitting quietly looking through a pair of glasses with tiny flickering lights surrounding the visual field. Jenny is watching a computer screen with a dancing array of colors, representing the spectrum of her brain waves. The tiny lights attached to the glasses are presenting a light pattern to Jenny which is an instantaneous reflection of her brain wave pattern. Jenny is excited to try this technology (technically known as a Neuro

Adaptive Tracking Filter), since it is the only one of its kind in Canada. This treatment method was tried with Jenny, since she appeared to have reached a plateau with traditional Neurofeedback. As hoped for, Jenny was responding well. Improvements in her ability to pay attention had resumed. Jenny has a Learning Disability as well as Attention Deficit Disorder. As her attention improved, Jenny was able to discontinue her Ritalin prescription. For the first time she feels that she is able to succeed in school. Jenny's older sister, Louise, also used Ritalin as a child with ADD. Later she became involved with street drugs. The parents of the girls were afraid that this could also be Jenny's future if she continued with her psychostimulant medication.

In North America, millions of children and adults suffer from Attention Deficit Disorder (ADD) and Attention Deficit Hyperactive Disorder (ADHD). Recent statistics indicate that it affects up to 9% of all school-age children. Many children who have a Learning Disability also have one of these attention disorders. Once considered to be difficult children, it is now recognized that these children have a neurobiological problem. Children suffering from these disorders usually display an array of complex dysfunctional behavioural characteristics. Impulsiveness, poor attention span, distractibility, and hyperactivity are typical of these children. Accompanying uncooperativeness, self-centeredness, low frustration tolerance and aggressiveness are often further complicating characteristics. These qualities basically render these children unavailable for learning. The symptoms of these disorders often persist into adulthood. The long term consequences of untreated or inappropriately treated ADD/ADHD often include both serious failures in one's work life and in interpersonal relationships.

Neurofeedback is an effective non-drug, psychological method of treating ADD/ADHD. As a key component of a comprehensive psychological treatment for these disorders, it is a powerful tool in assisting the child (or adult) to learn to regulate his/her own ability to pay attention. With the assistance of computerized technology the child learns greater brain flexibility, with the result of gaining greater facility in changing gears as he or she moves to different tasks. The child learns to produce more of those brain-waves associated with alert attentiveness and reduce those brain-waves related to inattention, impulsiveness and hyperactivity. Children who are taking psychostimulants like Ritalin are usually able to gradually reduce the dosage on the road to drug-free living.

It is important to recognize that the treatment of ADD/ADHD and associated Learning Disabilities is complex and requires a comprehensive psychological treatment approach. Although Neurofeedback is a key component of the treatment, an effective approach must also include behavioural management consultation with the child's parent and teachers. Because children with these disorders are often deficient in effective social skills, counselling and coaching in this area is often required.

Dr. Brian J. MacLean is a Registered Psychologist providing clinical services in Victoria. He has worked for many years as a Clinical Psychologist and as an Educational Psychologist in schools in Ontario, the United States, Sooke and Victoria. Dr. MacLean can be reached at Behavioral Medicine Associates 704-4437, or 514-7222 or e-mail drmaclean@behavioralmedicinebc.com