Brain Integration Technique

For the Assessment and Correction of Specific Learning Difficulties.

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In the last few decades scientific research has continued to develop insights to understand the complex functions and capabilities of the human brain that amaze and astound us, while reminding us of just how little in fact we know. Concurrently, Kinesiology, or muscle testing, has developed at a similar rate since it was first developed by a Boston orthopaedic surgeon, R.W. Lovett, in 1932. The Learning Enhancement Center's research and clinical experience since 1988 has evolved to an understanding of brain function that just recently has been supported by scientific research[1]. The techniques the Learning Enhancement Center developed are now available in a protocol called BIT, the Brain Integration Technique. This approach can be very effectively applied to specific learning difficulties in children and adults with consistent success, where previously medication was the most common intervention with very limited success[2].

BIT helps all kinds of learning difficulties for children as well as for adults such as: attention deficit disorder (ADD) both with and without hyperactivity, sensory integration, dyslexia, poor co-ordination, closed head traumas, brain injuries, autism and nervous breakdowns. It enhances learning abilities and improves reading, reading comprehension, spelling and co-ordination.

HISTORY OF BIT: THE EVOLUTION OF A NEW KINESIOLOGICAL PARADIGM.

During the late 1980s, Muscle testing, as it was then practised, allowed access to brain structures only in a very general way. The early BIT could detect that there were stresses related to specific learning processes but did not understand how to go beyond this first step to tap into the hierarchical processing of the brain to determine which specific brain functions might have gone off-line. What had become clear was that the brain processed in a modular fashion, with single functions antecedent to many other functions. If one of these antecedent functions was compromised, all the processes dependent on this function would also show deficits. A way had to be found to get into these processing modules.

Just as these problems were arising, synchronicity stepped in with a solution. In 1989 Richard Utt, at his International Institute of Applied Physiology, developed new techniques of Brain Physiology Formatting that added to the existing model of Muscle testing by focusing on the physiology of the brain itself. He did this by applying understandings from the 5000 year old Chinese acupressure system to his working understanding of brain function [3].

With Utt's Brain Physiology Formatting there was now a map of the primary neurological processing modules and a basic format with which to access them. Now there was a way in and from there on it was a matter of asking the right questions of the right structures. Then, for instance, you could ask the brain if there was any stress in the posterior hypothalamic nuclei. If a stress was present as indicated by muscle response, you could then proceed to determine if there was stress in the part of the posterior hypothalamic function that controlled dilation of the pupils in relation to the fight or flight response.

Once the stress had been identified, the factors causing that stress could be pinpointed. Knowing what those stresses were, we could then apply kinesiological and acupressure techniques to resolve them. As soon as the stress, or stresses that have caused the block or shutdown of functions are resolved, these processes so vital to learning come back on-line.

Better results were obtained with this improved technique and 90 per cent of the center's clients started showing positive changes yet perplexingly, there still remained a recalcitrant group that eluded the methods. Was it something that was not yet understood? To find out, these children were sent for assessment by a neurologist who specialised in epilepsy and learning problems. Using Magnetic Resonance Imaging (MRI) and other assessment techniques, it was revealed that in all but one of the cases the underlying cause was organic brain damage[4]. Their problem was more than a glitch in the software. The hardware itself had been damaged.

Frequency of Specific Learning Difficulties

Frequently, children diagnosed as learning disabled are also inattentive and deficient in linguistic skills, most often in reading[5]. Estimates of the prevalence of learning disorders for broad age ranges[6,7] is problematic because a learning disability is an emergent problem that is often not evident until later years in schooling. Using the criteria of defining learning disorders as being two years behind on standardised tests, less than 1% of 6-year-olds are disabled, 2% of 7-year-olds and so on until at age 19, 25% would be classified as learning disabled. These children fall progressively behind as they mature and the complexity of work increases[8]. In an address given by the Australian Federal Schools Minister, Dr David Kemp, in October 1996, Kemp stated that a study of 28,000 students in four surveys in Australia found 30% of year 9 students lacked basic literacy skills. This high incidence of learning disorders in school children indicates a need for effective treatment.

Causes of Specific Learning Difficulties

Currently the possible causes of learning disorders are believed to be primarily the result of five major factors; 1) structural damage, 2) brain dysfunction, 3) abnormal cerebral lateralisation, 4) maturational lag and 5) environment deprivation. While none of these theories is unequivocally supported by current data, all of these factors may contribute to learning disabilities[9].

Brain damage would appear to account for a small percentage of children with learning disabilities as many of the neurological symptoms associated with brain damage in adults are not typically observed in these children[10]. Rather than direct brain damage, there is evidence that abnormal physiological or biochemical processes may be responsible for malfunction in some part of the cerebral cortex[11,12]. The brain dysfunction hypothesis suggests that the dysfunction may be a consequence of defective arousal mechanisms resulting in some form of inadequate cerebral activation[13].

This is supported by studies of children with learning disorders that show they have difficulty on continuous performance tests requiring attention and low distractibility; had slower reaction times to stimuli, and increased errors due to impulsivity on tests of visual searching[14]. Douglas proposed that the deficits on these tasks resulted from inadequate cerebral activation. Learning disorders of some types at least, do improve with drugs like amphetamines that cause cerebral activation via increasing subcortical arousal. In fact this is the basis of treating hyperactive children with Ritalin[15] though it is not an approach that treats the cause of the problem nor is there evidence that it improves academic performance[16].

An alternative model of learning disorders is based on recent neurophysiological findings that suggest it is the timing and synchronisation of neural activity in separate brain areas that creates high order cognitive functions. Any loss or malfunction of the timing mechanism may cause disintegration of neural activity and hence dysfunction in cognitive tasks[17]. If the brain does integrate separate processes into meaningful combinations that we call 'thought' or cognitive ability, then the main risk is mis-timing or loss of synchronisation between these processes which could result in learning difficulties. Antonio Damasio, a leading American neurologist states that "any malfunction of the timing mechanism would be likely to create spurious integration or *dis*integration" [18].

This model supports our approach (BIT) that the Learning Enhancement Center has been developing since 1988[19]. In the BIT Model, learning disorders are based on the disruption or loss of timing and synchronization between the neural activity in the diverse brain regions, both cortical and subcortical, that must be synchronized in order for successful integration to produce normal cognitive activity. Our clinical experience with thousands of cases indicates that learning difficulties arise from a lack of integration of functions that should occur simultaneously in separate brain regions.

Models of Learning Based on Gestalt and Logic.

For the past 20 years or so the Right Brain-Left Brain model of learning has popularised the notion of "right brain" designating the right cerebral cortex having Gestalt functions and "left brain" referring to the left cerebral cortex having Logic functions[20].

While Gestalt functions do appear to predominate in the right hemisphere and Logic functions appear to dominate in the left hemisphere, we argue that this model oversimplifies to an enormous degree the complexity of the many cortical subsystems - many of which are located in *both* cerebral hemispheres. Recent scanning techniques support this and reveal that women are less lateralized in brain function than men in many areas. Further, the prevailing theory totally ignores the subcortical processes that are, in fact, major centres of our mental processing. It is the subconscious that *does* most of the actual processing but it is the conscious areas of the cortex that *direct* what is processed.

It is a controversial view because we believe that a specific hemisphere does not entirely dominate either Gestalt of Logic processing. Rather, what they do is provide the lead, or the conscious intent that activate a number of other cortical and subcortical areas to perform the essential processing.

The actual processing units of the cerebral cortex are called Cortical Columns. Newer research has shown that these vertical columns bisect all six layers forming distinct processing units. Cortical Columns are not circular columns in the architectural sense, rather long three-dimensional slabs up to 0.5 mm wide and variable in length[21] (see Fig. 1). Each cortical column is concerned with a specific type of function, and as functions vary in complexity so the columns vary in size. And sometimes several columns may be involved in performing a single more complex function. Along the sensory cortex, each column is concerned with sensory input from a particular region of the body[22].

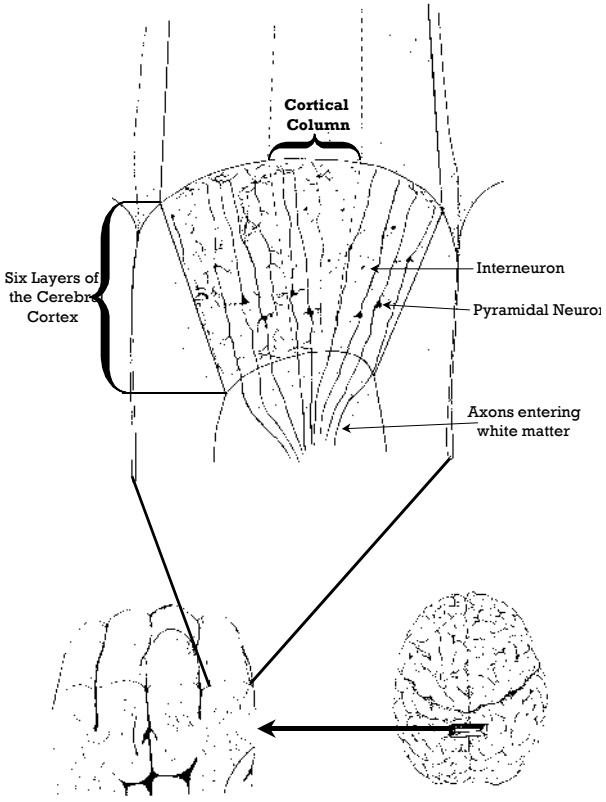

Figure 1. Cortical Columns. *Vertical slabs of cortex consisting of all six distinct cell layers, called cortical columns, are the functional units of the cerebral cortex. Some of the cells like the large pyramidal cells have dendrites that extend through almost all layers and axons that exit the grey matter to become part of the white matter tracts carrying*

information to other parts of the brain and body. There are also innumerable interneurons connecting the cells within each cell layer and between the layers.

Since the cortical columns are the processing modules that relate to specific types of cortical functions, they are the centres for the Gestalt and Logic *lead* functions. These lead functions provide a point of entry into an inter-linked set of cortical and subcortical modules, which includes the corpus callosum, and performs our mental functions.

When you read words on a page, cortical columns that perform various Gestalt lead functions involved with the decoding of symbols will be activated by the visual stimulus of those words. This will in turn activate other cortical columns, housing Logic lead functions involved in understanding the meaning of words and their grammatical relationships.

An analogy of this process is what happens when you decide to turn on a light. This is a conscious mental decision. As soon as you flick the switch, a whole cascade of other events occur. Electrons begin to flow invisibly through wires, junction boxes, the light fixture itself and into the bulb. All of this occurs outside your conscious awareness. All you are aware of is that the light has come on. This is an electrical model, but it is very similar to what happens in the brain. In the brain, you make a conscious request to do something - whether mental or physical - and this conscious input from a particular cortical lead function creates a subconscious flow that results in the processing of that request. The end result is conscious awareness of the outcome.

The essential point of the theory is that the conscious cortical lead functions in each hemisphere merely provide the entry point. And the cortex can only provide a lead if the point of entry is intact or accessible.

Brain integration is the dynamic synchronisation of the timing of neural and mental events. Any loss of synchronisation represents a loss of integration. Loss of integration in turn, results in loss of some specific mental capacity[23,24].

Ideally, the brain is set up so that all areas of Gestalt and Logic processing are accessible and all the integration routes that connect them are totally clear. With this perfect set-up, all types of learning will be easy. Any blocks will make the process less efficient and more stressful with long term effects on self-esteem and confidence for future learning experiences.

BIT: It's Role in Correcting Specific Learning Difficulties.

From this model, our clinical experience shows that if any specific subconscious function is "blocked" for any reason, then the mental processes dependent upon that function are compromised or often can not be performed at all.

Learning problems result then, either from "blocked" access to one or more subconscious functions, or from a "block" preventing integration of the functions accessed. In more severe learning difficulties there may be both "blocks" to specific functions and "blocked" routes of integration, which makes it doubly difficult for people to overcome learning problems of this nature.

Muscle Testing not only provides a means of identifying where these "blocks" in function occur, as noted above, but more importantly, *provides a means of identifying the nature of the disturbance* causing the "block" in function. Muscle testing provides an interface between neurological function and the more subtle energies of the energetic, emotional and mental bodies[25].

BIT provides a coherent protocol for the correction of most specific learning difficulties (SLDs). This protocol was established over several years based on the hierarchical processing in the brain. Perhaps to conserve space and yet provide for a variety of functions, the brain functions are *not* organised in a hierarchical fashion with a linear flow of neural impulses, but rather the neural flow is parallel and multiplex, including transfer of information that does not even flow along nerves. In this multiplex, parallel processing many of the central basal subconscious brain functions are used in many different types of processing, as a central processing unit capable of multi-tasking. Thus, this central processing unit of subconscious brain functions when not being used in one type of function may be used in another, or may even carry out several types of functions in parallel.

When the functions of reading or spelling, or any learning task, can not be performed properly, it is usually not in the cortical lead functions that the problems lie. The person most likely understood the command to read or spell and via their cortical lead function asked the brain to perform this function. Rather, the problem is usually "blocks" in or to their subconscious processing centres that are required to perform the requested task. Since most learning problems result from a lack of access to specific subconscious functions, clearing the blocks to these functions will rectify the learning problems. However, there is a specific order in which the basal subconscious functions must be "cleared" to produce consistent results, and these are related to the hierarchy of sensory information processing in the brain. The BIT protocol follows this hierarchy, locating and treating the exact subconscious function that is blocked and thus providing consistent long term results in the treatment of SLDs.

Brain integration can also be very fragile, in the sense that it is largely determined by one's stress levels. Even the most well integrated person, given enough stress of a specific type, will lose integration and become temporarily dysfunctional. One of the major differences between people is the type of stress and the extent of stress required to cause loss of brain integration.

BIT in Application.

In a given session the electro-magnetic activity in the brain is assessed using muscle testing and acupressure. The correction technique could involve any one of a number of kinesiological techniques to re-establish electro-magnetic integrity within the brain. Thus brain functioning is improved.

A way of exemplifying the power and effectiveness of the BIT program is to look at some of the cases to which it has been applied. The following few cases

illustrate the typical responses we see with people treated with the BIT protocol.

Sharon's Story.

When we first saw Sharon she was 15 and presented as being very Gestalt dominant, which is by far the most common outcome of corpus callosum shutdown. In our assessment protocols, Sharon demonstrated very poor access to Logic function. She was attractive, charming and very witty, which is the way many Gestalt dominant people compensate for their high level of Logic dysfunctions. Everyone likes a charmer and will usually help them because they are so delightful to have around. Sharon was progressing through school with her classmates but was consistently failing in maths.

In year 10, she could not add up numbers greater than 10. She did not know how to carry a digit and couldn't add, subtract, or do fractions. At 15 she could not abstract arithmetical concepts that a primary school student could manage easily, yet was so personable and popular that she had been promoted through the grades with her peers.

After about 10 hours of treatment, to complete the whole BIT protocol, we addressed her presenting problem, which was her difficulty with maths.

We showed her the process of adding and carrying numbers, a technique she had probably been shown hundreds of times before. She suddenly said: "Oh, that's how you do it!" With her new access to Logic available, she could instantly grasp the concepts. We gave her harder problems, and she easily generalised what we were teaching her, and could now deal with elementary arithmetic.

Our job is not to tutor students, so having opened up her functions, we sent her to a maths tutor for remedial work. In the five weeks of her summer holidays she was able to come up to the maths levels of her classmates. She went from basic numeracy all the way to algebra. Her tutor told us that in 25 years of tutoring students she had never before seen anyone make such rapid progress. Sharon's reading and comprehension also improved, as did her spelling. Her self-esteem rose alongside her performance. *This is an example of how devastating SLDs can be on one's self-esteem.*

Maxine's Story.

Maxine is an adult who had been a gifted learner until a car accident a few years ago. She had a "low-impact, closed head injury" and consequently could not even put a shopping list together. She is now at college completing a degree.

Trevor's Story.

Trevor came when he was 14 years old with strong gestalt dominance. His inability to read had led him to decide to drop out of school. After the treatment reading became easy and enjoyable, he completed high school and went on to study photography. His work was so outstanding that he has received the only Certificate of Merit awarded by his faculty for his innovative work in professional film developing. He has a job advising photographers on their equipment and designing new equipment for them and his employer has offered to pay for him to further his studies into electronics.

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