



# **Increasing Intelligence**

**By**

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For more than a hundred years we have been led to believe that intelligence is a fixed neurological capacity: That we were born with an intelligence capacity, or score, and that we are to journey through life with this mark of capacity.

For many, however, having an IQ score became a stigma rather than an opportunity for success. While a person's IQ score has often translated into a mark of social standing and even job prospects but been a mark of disdain for children with special needs and/or learning difficulties.

With advanced knowledge of how the neuro-physiological system of the body works, the idea of a fix intellectual quadrant is now to be understood as simplistic, and indeed, wrong.

The issue is made more complicated however, because for some hundred years we have allowed a naïve medical model to dominate our appreciation and definition of intelligence. Advances in neurological science now show that intelligence, as arising out of neuro-efficiency, can be increased.

To journey back for a moment to the original deliberations on the subject, for the Greeks, and Western philosophy that developed from that period of the classics, intelligence was defined as the ability to carry out rational thought. Scholars were encouraged to understand the pursuit of intelligence as a virtue and specifically as a journey in the pursuit of excellence. If one would venture to describe a person as 'highly intelligent', it was inadvertently a description of the degree of efficiency of their 'rational' thoughts. Such a description was essentially based upon observing three qualities: the speed of deliberation, the extent of the deliberation, and the outcome of the deliberation. Einstein, for example, never discovered anything in a minute, but with years of intellectual application to a subject produced results of genius.

While the Greeks saw intelligence (nous) as a pursuit, and a virtue in its own right, a new breed of professionals called psychologists sought to study the workings of the 'soul' (psuchas/psyche), and believed intelligence to be an inherent biological capacity. In reality, intelligence is a combination of both capability and ability.

The venture to gain a more adequate understanding of intelligence starts with the appreciation that advances in medical technology allow us today to virtually see inside the brain and to study the process of neurological activity.

In addressing the issue specifically of learning capability, there is a correlation between neurological activity and neurological ability/disability. Through the use of EEG technology it has been demonstrate that children with sensory processing disorders show less sensory gating than children who were typically developing. Children with learning difficulties exhibited slower brain wave patterns than 'average' children. From a biological perspective, intelligence, at this point, is seen to be an expression for neuro-efficiency (degree of neurological activity). But to say some children have slower neurological activity, or slower neuro-efficiency, is only the beginning of the issue.

In the 1950's Jean Ayres worked with others in California to understand neurological-physiological activity and specifically understand the sensory system functions of the brain-

body. The conclusion of her work was that problems, or dysfunctions, in the sensory system can prevent or hinder proper neurological function, and as a result, neurological-physiological capability. Learning was understood as implicitly a neurological function and the capacity to learn is dependent upon neurological efficiency. Where the brain is not properly receiving sensory input, and/or not integrating the sensory information properly, learning is belated. That is, if the sensory system is not functioning as it should, or where sensory information is not appropriately integrated, there is said to be a learning disorder. The implication is that a learning disability is not the result of poor academic teaching and will not be alleviated by increased or intensive academic tuition.

The good news that came out their research was the belief that the sensory system of the brain-body could be improved, resulting in an increase in neuro-efficiency. The premise was that as the brain processes and integrates information through its sensors, it is able to plan and organise behaviour in order to make an adaptive response in the ongoing process of learning. Stimulating the neuro-processing of sensory information increases sensory integration and improve learning capacity.

Accordingly, the fundamental hypothesis for sensory integration theory is that because there is plasticity within the central nervous system (the brain is moldable) and because the brain consists of systems that are hierarchically organised, it is possible to stimulate the learning process and correct learning disorders.

While intelligence is a process of rational thought, neurological science has shown us two important things: One, that the neuro-efficiency of the brain will affect the ability, and even capability, of the brain to engage in rational thought, or intelligence. Second, that the brain is plastic, or mouldable, and intelligence is not a fixed capability and it is possible to increase neuro-efficiency and increase intelligence.

In an effort to test and prove that the brain is indeed 'plastic' and can improve in efficiency, The British Institute for Learning Development, UAE, has completed a two year study of the effectiveness of sensory integration to increase neuro-efficiency, and intelligence. With the study of 62 children over some 8 assessments and two years of therapy/coaching, the results show an increase of 4 grade levels on average for these children, while 1 ½ grade levels in ability was to be expected. The results showed an average 16% increase in the Visual Motor Integration (VMI) scores of the children's neurological capability in 1 year.

Whether a child is labeled a 'gifted learner' or a 'slow learner', it is possible to develop the learning process of the brain to make connections faster, work well with abstractions, and generally develop intellectual ability. Thus, there is a major role for teachers in all of this. With the development of children's neuro-efficiency through sensory integration therapy, teachers in understanding the neurological process of learning can direct the 'provision of information' toward stimulating interest and involvement. Teachers can challenge the brain in a 'learning environment' with the purpose of creating interest, but to also aim to create thinking. Slow learners, along with gifted learners alike, all like to think.

## Additions

The brain has to be understood as a functioning neurological system but also as an intellectual unit carrying out rational and purposeful deliberations. As information is received through the sensors of the body-brain, it arrives in the back of the brain at the brain stem. It is then disseminated across the brain through a process of 'integration' and then 'interpretation'. If there is inadequate 'integration' or 'interpretation' (perception/understanding/meaning), there is said to be a dysfunction.

Focusing specifically on the 'thinking' process; as sensory input provides information, the brain interprets the information and proceeds to create 'rational thought'. Rational Thought involved 'deliberation', 'analysis', 'creativity', and 'imagination'. Thinking is a complex activity. But the more we think about a subject the more parts of the brain become involved and complex neighbourhood networks of neuron axion fibres are built and joined. Complexity of thinking, or reasoning, develops as more thought is given to a subject and more ways of perceiving, relating, and considering the subject are involved.