Cell field and 'The Brain That Changes Itself' Dr Norman Doidge

The Cell field Intervention was conceived more than ten years ago, with the objective of addressing reading disorders through neural change. This is re flected in Cell field's patent headings: 'System for the enhancement of neurophysiological processes'. Cell field outcomes transpired to be too large and in too short a time to be credible. Explanations of 'how' and 'why' this is credible required discussions on brain research. On topics such as this, people turn to academia for guidance. They find some academics dismissing what happens in the brain as being irrelevant to reading remediation. Some others are divided by the neuroscience and causes of reading disorders. Others are still brain plasticity sceptics. This did not make it easy for Cell field to gain acceptance.

> Recent bestselling book 'The Brain that Changed itself' by Norman Doidge MD, cut through the mixed signals coming through to embattled parents, presenting hope through fact and understanding. Those who attended Cell field presentations and remembered the phrase 'neurons that fire together, wire together' can now better appreciate the depth, breadth and consequences of that phrase from this book. Perhaps they will now remember from this book that 'Neurons out of sync fail to link'.
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> Both these phrases encapsulate the reason for Cell field and the rationale of its whole approach.
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> The article that follows summarises the 'Why' and 'How' of Cell field. It contains a great deal of what has been written by Norman Doidge in this seminal book.
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> The widespread need to convert printed text back into language occurred late in human evolution. Our brains have not had the time to develop the natural learning ef ficiencies we have with other skills. Reading is not natural. We have to 'rewire' ourselves step by step, so that we develop a 'high speed broadband' connection between our eyes and meaning. Some of us need help to get there.

Memorising how each word looks and sounds can result in rapid early progress. Remembering requires clarity in how a word looks and sounds. Often there is insufficient clarity in one or the other, or both. Either way, a child ends up using all of their brainpower trying to remember words, rather than concentrating on what sentences mean. This usually ends in reading failure.

Brain imaging research shows that the rapid link into meaning, needs reading functions to be grouped closely together near the language centres, on the left side of the brain. Only this configuration can provide the high interconnectivity and processing speed needed. Brain imaging shows the reading impaired do not have such left brain neural grouping.

Cellfield creates this group configuration by means of a neuroscientific, brain plasticity based computer intervention. The multiple functions necessary for reading are provided as simultaneous tasks. This synchronises the firing of neurones between functions, which interconnect.

Target words from a four word choice, are presented with acoustic 'stretch', so that children with auditory processing problems have enough time to hear the target words with clarity. The degree of stretch is reduced in steps down to zero, allowing children to hear the words with clarity for the first time at normal speeds.

Visual processing problems are addressed by motion graphics, which move across the screen at all times. A complex combination of contrasting edges, changing motion, velocity, dimensions activates the 'seeing' part of the brain, wherever the child looks on screen.

By the halfway point of the intervention, the motion graphics become opaque, assuming the additional role of being moving masks. Hence the underlying tasks can only be performed by what is seen between the moving gaps.

The predominantly language tasks by themselves require maximum concentration and attention with working memory, and a group of reading skills. When the moving graphics become opaque, everything becomes much harder. This is consistent with achieving neural change by making the Cellfield Intervention as difficult as is achievable. This is why Cellfield needs expert supervision and a scoring system that keeps in motivational step with the increasing difficulty.

The intervention design, which includes some computer game elements, provides enough novelty and reward to engage children who are over habituated by excessive and inappropriate 'skill & drill' tuition.

Normal children improve their reading age by one month for every month of schooling. Normal progress therefore has a gain ratio of 1. A tuition program that is able to improve reading by two months for every month of schooling, can claim a gain ratio of 2. Considering that the child started the tuition program at a gain ratio much less than 1, a gain ratio of 2 is regarded as being very good.

Cellfield achieves average gain ratios of 26 months (over 2 years) in work attack, 18 in Passage Comprehension and 17 in Word Comprehension.*

** Gains calculated 26/07/2016 on Student test result data as entered by authorised Cellfield Licensees.*