NeuroOptimal vs. Classical Neurofeedback

I have been a neurofeedback practitioner using the NeurOptimal® system since 2005. Before 2005 I was the head of a research team in cognitive science. My companion, Pierre, was the scientific vice-president of a large company.

When I started practicing my clients reported very fast wonderful results. Pierre started a research to find scientific explanations accounting for these results. He has now reached his goal.

We have put my work and my experience together with the results of Pierre's research in a single book, which has just been published in French (Editions Dangles). 2 - The title of our book is "Le neurofeedback dynamique – Quand notre cerveau apprend à mieux se regular". In English: "Dynamical neurofeedback – When our brain learns how to better self-regulate".

For the title we used the word "dynamical" as the simplest way to distinguish the NeurOptimal® method from "classical" neurofeedback. "Classical" neurofeedback is based on the measurement of amplitude while "dynamical" neurofeedback is based on measurements of variations of amplitude.

This book does not require any previous neurological knowledge. It is completed by about 90 simple drawings to explain the results of recent discoveries and the basic mechanisms of the brain. It contains 320 pages and a large bibliography.

Comparing NeurOptimal with classical Neurofeedback systems - Safety is the most important point. I wrote in the book that in six years of practice I never had any client complaining of a permanent side effect. Among my clients this includes for instance children with severe epilepsy. Of course this is not 100% evidence but the fact is that this situation is very different from the possible side effects mentioned by John Demos in his book about classical neurofeedback.

In the scientific part of the book Pierre explains how the software detects the onset of an emergent turbulence, which is an unusual variation compared to the previous variations of this brain. This emergent turbulence is an indicator of a deficient local population of inhibitory neurons. The software uses this onset of turbulence to feed back to the brain a short interruption of the music the person is listening to. The brain uses this feedback for its own regulation.

Brains are kept in good shape by a large number of regulating mechanisms. These regulating mechanisms are based on the same principles. To make it short they change the strength of the synaptic connections between neurons. This change occurs when a "weak" signal and a "strong" signal converge together and simultaneously on the same neurons. This is called "Hebbian learning".

In the case of NeurOptimal® the strong signal is the interruption of the music and the weak signal comes from a population of deficient inhibitory neurons.

So it is the deficiency of a local population of neurons, and only this one, which is at the origin of the interruption of sound. The connections of this population get stronger and this allows for a correct regulation. Only this population is concerned. No other populations are modified since for them there is no temporal coincidence and thus no Hebbian learning. Thus there are no side effects.

This works totally at the most basic non conscious level of the brain. It can work with babies, with severely disabled children and with sleepy aged persons.

The safety of the NeurOptimal® system is not in the hands of a trainer who now, with the automatic version and a single protocol, is not setting ranges. The triggering of the feedback is done entirely by the software and the learning process is done entirely by the person's brain. The trainer plays no role in the actual training processes.

Our book provides an undisputed scientific explanation for the built-in safety of the method. It fully substantiates the large differences mentioned by the board of Zengar Institute between classical and dynamical neurofeedback methods.

In defining neurofeedback we must acknowledge there exist two different categories of neurofeedback based on technologies with different principles and having different outcomes.

Corinne Fournier