

"THE EXTRAORDINARY BRAIN! DYNAMIC ON THE TURN OF A DIME, OR NEUROPLASTICITY EXPLAINED"

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Research is discovering just how adaptable our brains are; this quality is called neuro-plasticity. Even the concept that certain areas in the brain only control certain functions is passé. What we are discovering is that our brain, (read also: Central Nervous System), is non-linear, dynamic, and profoundly adaptable moment to moment- adjusting to what *it* needs instinctively at any given moment.

Research shows that the human brain lives on the 'edge of chaos', on a critical point between randomness and order, says the Public Library of Science and World Science in their article "Brain Lives at "Edge of Chaos". ¹

Between chaos and order?

This research done at Cambridge University shows that such systems as our brain, analogous to other physical systems (example: earthquakes, forest fires, and heart rhythms) spontaneously *organize themselves* to operate at the borderline between order and chaos. The shared characteristics of all these systems is that they have huge information processing capacity. These system responses are rapid and complex even with small changes in feedback (think about what it takes to drive a car on a busy freeway during a snowstorm). Note: In human biology, our survival depends on constant

feedback, about 10% of it external and 90% internal.

Our brain adapts quickly to changing circumstances, the key to our survival. However, when we have experienced trauma or inordinate stress (especially over extended periods of time) sometimes unavoidable in this highly pressured society, it is impaired and our ability to solve life's constant problems adaptably is also impaired or blocked.

The power in now! Orienting to the present...

This approach to neurofeedback training called NeurOPTIMAL[®] Neurofeedback (formerly NeuroCARE[™]) is all about working with the non-linear nature of the brain, and not by imposing *our* concept of order upon it. Most other neurofeedback systems ask the client to 'do' something, to control some object, to make it 'do' something. These are linear approaches, trying to control a non-linear, instinctual, organic system.

We are in the age of *quantum physics* that explains and explores our non-linear reality, which is dynamical in nature, just like our brain is or our heart rhythm or an earthquake. Val Brown, Ph.D., the developer of NeurOPTIMAL, understands this dynamic very well. NeurOPTIMAL does not ask your brain to 'do' anything in a training session. Rather, it simply gives the brain information about how it is behaving and the brain *changes itself and becomes more resilient*.

Even today, after years of copious research, our brain is so sophisticated that most of what we personally 'think' about it is... probably practically irrelevant. The brain is an instinctual organ, tremendously advanced in its function of insuring our survival, both as a species and personally. By constantly receiving feedback about what is happening internally and externally, it is always insuring our safety, well-being, happiness, and health- our survival.

The Orienting Response...

Definition: The Orienting Response, also called *the orienting reflex*, is the instinctual reflex that causes an organism to respond *immediately* to a change in its environment. This phenomenon was first described by Russian physiologist Sechenov in the 1850s in his book Reflexes of the Brain, and the term was coined by Ivan Pavlov, who also referred to it as the "What is it?" reflex.

Let me give an example of the Orienting Response. Imagine being in your car, driving home from work. You are thinking about cooking dinner and spending the evening with a friend, the radio playing in the background and then suddenly, you hear the sound of a piercing siren. What happens? Your brain instantly drops whatever state it was producing without your being aware of it, and orients itself to the siren sound. This is the 'what is different about this moment phenomenon' called the Orienting Response.

This is an instinctual and adaptable, survival, default tactic that allows you to drop what you are thinking about and orient to what has changed in your environment. Without this instinctual behavior, we would be eaten in the wild or be hit by a car or not know that someone had broken into our house.

NeurOPTIMAL Neurofeedback...

What we are doing in this very effective form of neurofeedback training is monitoring when your brain loses contact with the present moment and begins to produce its own suffering, by going into the past or the future, neither of which exists. This is called a 'perturbation event'. This perturbation event has a particular characteristic of chaotic electro-chemical brainwave movement that the computer is designed to recognize (called fibrillation prior to a phase shift).

When this perturbation event starts, it is just *prior* to your consciously being aware of it. The computer is monitoring your brainwaves, which are the electro-chemical activity within your brain. Done comprehensively at more than 250 samples per second, it interrupts the music you have been listening to. This interruption triggers the Orienting Response and causes your brain to drop whatever it is doing in that moment. It *must* come back to the present moment to assess if there is an *actual* threat, or not. This is an instinctual function of our organism and it is a biological imperative- it must do it. Next time the phone rings or you hear a knock on your door, see what happens internally!

All is well...

By constantly bringing the brain back to the present moment on this instinctual level, the brain learns to stop producing these perturbation events which make us angry, edgy, depressed, fearful, anxious, lose focus, not sleep, become agitated, make it difficult to relate (fill in the blank with your own suffering event/s). So all you do is sit back and allow your brain to reorganize *itself* based on the scientific and objective feedback that it is receiving moment to moment.

What clients notice...

Clients (and their loved ones and friends) are quite amazed at what they begin to notice. Things that were 'major issues' begin to fall away. A young college student I worked with, who had depression, does not experience depression any longer he says. A five-year old client doesn't need to isolate when he has a confrontational interaction with a school-mate and he no longer obsesses about getting germs. A nine-year old client can sleep through the night now when he could not before and he is more focused in school, his teachers tell us. A fifty-three year old female client no longer has anxiety and stomach knots. So their instinctual brains are dealing with their stressful life events much better and even when they do experience stress, they process through it much quicker, they tell me.

Conclusion...

Research is showing conclusively that our brain is changeable, its very nature is *adaptable*; it learns from its own experience. If it can receive feedback as to how it is functioning, it will be able to reorganize how it behaves and produce more present and relaxed states of mind, which we know are the most healthy and productive. NeurOPTIMAL won't push your nervous system, because we don't make decisions about what we *think* you need like the other approaches to neurofeedback. Therefore, we rarely see side effects. We mostly hear how things are changing for the better and how seamless the changes are.

1 March 18, 2009 Courtesy Public Library of Science and World Science staff, http://www.world-science.net/othernews/090318_criticality

Please feel free to contact me with further questions; I am happy to be of service. And if you wish to read more, sign up for the newsletter. I will never sell or misuse your contact information.

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