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# Rewiring the Brain: *Brain – Based Therapy*

## **What is brain therapy?**

Brain therapy is an effort to integrate many of the strands of theory and research, from developmental psychology to attachment, temperament, memory, neuroscience, and to evidence-based practice. Brain-based therapy factors in the brain's capacities of neuroplasticity and neurogenesis, with psychotherapy, mindfulness, nutritional neuroscience and social intelligence.

You could define brain-based therapy as the integrated approach, the bio-psychosocial approach. It is not reductionist. I am someone that has been immersed in all sorts of things, from cross-cultural theory to hypnosis. I am not saying that everything should be reduced to brain function and forget about the rest of it. I would say that brain therapy is bi-directional.

### **Would you say it is a holistic approach to treatment?**

I have difficulty with the word holism in the sense that we used it a lot in the 1970s, but did not explain the interaction of all the aspects to human experience that I have just mentioned, which occur in a dynamic way. For this reason I explained during my presentation today the contribution of complexity theory.

Complexity theory is about the multiple levels of different variables all working together at the same time, such as culture, emotion, cognition, bio-physiology, endocrinology, neurophysiology, and social factors. In other words, all these different factors that have an impact in terms of how we feel and perceive the world around us.

So brain-based therapy is all these integrated bio-psychosocial elements that are holistic. We now have ways of understanding how the parts of the whole interrelate. This is different from that time in the past when we used to throw the word holism all over the place. We knew what it meant, but we didn't know how all the elements worked together.

### **You have been in the field of psychology for nearly 40 years, how did you start?**

I began working in the de-institutionalisation of mental-health patients. We were trying to create alternatives to hospital care and were concerned that people were being treated like patients and somehow developing an identity whereby they thought of themselves as incapable of doing productive things, like working.

That work had a formative influence on me. From the mid-seventies until 1990, I was running psychosocial rehabilitation programs and simultaneously I was also doing training in hypnosis. I was interested in hypnotic techniques and in the way people experience reality.

At that time hypnosis and cross-cultural perspectives seemed to be so pervasive in terms of the way we identify who we are, so I was very interested in all that- psychodynamic theory and at the same time I was running programs for severely mentally ill people.

It wasn't until the 1980s that I started getting into neuropsychology because I was looking for cross-cul-

tural constants. I was keen to understand the way the brain processes our thoughts and feelings and the way we can assess its capacity to do that despite our cultural background.

### **Having an understanding of human experience is crucial. Yet there is no education about the practical management of our thoughts, feelings and mind. Most education systems don't cater for that, yet it is so important in life.**

Unfortunately practical wisdom is not taught in our education systems. No, we are not instructed about how to think and manage our thoughts, fears and emotions. Apart from other branches of knowledge; in ancient Greece, Plato and Aristotle taught their disciples how to think and reason. These were deeply ingrained in the old Greek world. But we have lost them in modern culture.

It is such a shame we lost all that. Unfortunately in the US I have been rather concerned about the lack of people's ability to think clearly. I mentioned in the seminar what I would call America's meltdown and why. I was so concerned that when George Bush accused Al Gore of being a thinker nobody thought that was bizarre. That is why we get the Sarah Palins of this world. We have trash politics, which is all about being intimidated by thinkers. Then thinkers don't want to intimidate people like Sarah Palin.

I do believe that our education system should include philosophy in the curriculum, which would teach students how to think and ways to discipline the mind. It is an element that is missing in the US education system.

### **We have heard about cross-cultural psychology many times. How does culture influence psychology?**

Culture is part of the systems of thought that we use to define ourselves and those around us. It provides us with an understanding of the world we inhabit right now. For instance, now you and I are speaking in English but your ancestors come from Spain, you are from a Spanish background and I am an American Armenian.

Our cultural backgrounds had a big influence on

who we are, and now we are both adapting in this Anglo culture which is so different from the cultures we originated from.

When I interact with a person I want to get a sense of where the person comes from. I need to identify their cultural background because it serves to set the stage for how that person conceptualises reality, relationships and everything else.

You cannot understand an individual without the culture. It is your brain within your family which is within that culture that will define who you are and how you perceive the world around you, your relationships, etc. You are the product of that web of interactions. You cannot put your finger on one area and say that is the most important part. It is this multidirectional interaction which defines who we are.

### **In your presentation you often talk about attachment. Could you expand on that?**

Yes, attachment to the principal care givers. We normally adapt to the world, not only within cultural systems, but also within family systems. Our families set the tone for how we respond to other human beings. In relation to the social brain, it has been demonstrated that specific networks and neurons are hungry for attachment. We are like dry sponges soaking it up. We adapt to the world within those family systems.

You could call it attachment because we do become attached. We learn to have relationships by learning from those early relationships. That doesn't mean you can't learn differently later on. That is what therapy is - helping people with not so good attachment patterns to "earn security" and have a better capacity for intimacy later on.

Lack of secure attachment affects the brain negatively. If a person has little control over their affect they will probably have an overactive amygdala and less of an ability to have balanced activation of the two hemispheres. They might be a bit skewed to the right pre-frontal cortex, versus the left. The right pre-frontal cortex processes negative emotion and the person tends to experience more anxiety.

### **In the last few years much has been published on the new advances in neuroscience, neuroplasticity, mirror cells, neurogenesis and the social brain. There seems to be a new vocabulary.**

Yes we now know much more about the way the brain operates in terms of not only attachment but also in terms of the way it can be rewired. In therapy we help people rewire their brain for the better.

Trauma does rewire the brain, for the worse. When you are traumatised your brain gets rewired to look out for more trauma. That is rewiring the brain in a negative way. This means you are more susceptible to look for more trouble. Most people get anxious after they have been traumatised.

Psychologists at STARTTS work with refugees who come to Australia which is a wonderful place compared to war-torn countries like Afghanistan, for instance, where there are suicide bombers and continuous trouble.

Now, as refugees, if they have been traumatised, they arrive here in need of help to rewire their brains, as they are still hyper-vigilant and anxious all the time. So rewiring of the brain can now occur in a positive

direction. The therapeutic process incorporates all the elements that we talked about initially. Establishing a good alliance in a relationship gives people a sense of safety, a "safe emergency" by encouraging a person to expand their comfort zones.

The therapist also has to pay attention to the memory capacity and whether or not memory is disregulated, as it is in the case with Posttraumatic Stress Disorder; she

has to assess if systems have become disregulated from one another if the person has a whole continuum of trauma; so the initial assessment is critical, as is the understanding of the neuroscience.

### **Refugees are uprooted from their country and from their culture in a violent way. When they come to Australia they find themselves in no man's land and have to adapt to another culture. That poses different but additional problems. They have to recover from the past and face the present all at the same time.**

Yes it is challenging. The culture shock can be great. In many cases refugees have lived in villages made up of family members, whole communities, extended families, tribes, and suddenly, they are uprooted from that sense of community.

It takes a village to put together a sense of belonging and identity, and then you are plucked into this foreign culture. Suddenly they find themselves in a very dissimilar environment. It is a culture shock of the

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Dr Arden presents at the STARTTS Clinical Seminar. PHOTO: Richard Walker

worst kind. It can be devastating. So refugees have two adjustments to make.

The psychosocial work at STARTTS is very important. People traumatised tend to isolate themselves from others and when you feel alone social medicine is the best cure because without a sense of belonging it is impossible to function.

They feel like a fish out of water so whatever you can do to replicate a community for them in Australia will be crucial to their wellbeing. Regaining a sense of community is incredibly important.

The good news is that in our brains we have tremendous potential to change, to adapt and develop new habits and new feelings, and enjoy life again.

#### What is neuroplasticity and neurogenesis?

Neuroplasticity can be thought of as the process of rewiring the brain. It involves the development of new synaptic relationships between neurons, strengthening those relationships, as well as the development of more glial cells.

Briefly speaking, we have 100 billion neurons in the brain, there are up to 10,000 connections within the

neurons. Developing new synaptic relationships translates to learning. Therapy involves the process of rewiring to help clients to better regulate their emotions.

When someone has experienced trauma he has a hard time controlling his affects. Our job as therapists is to help them to deal with the uneven flow of emotions as they come up.

Neurogenesis is about building new neurons in specific areas of the brain such as the hippocampus and the pre-frontal cortex. This benefit is especially critical because some people who suffer from PTSD have suffered from hippocampal atrophy. The best way to generate neurogenesis is exercise. It is a great antidepressant. You get multiple benefits and the side effects are fantastic.

#### What happens to our brain when we age?

People lose cells after age 55 on the right hemisphere before the left hemisphere. Novelty which the right hemisphere masters seems to get lost before routinised behaviour, meaning details, routines. Routine seems to be more important. We lose cells in the dorsolateral pre-frontal cortex which is the executive control centre

and is involved in working memory.

Though as we age working memory can falter, those who are exercising their ability to remain focused in the present moment do better down the line. If this area of the brain is not exercised on a regular basis, one tends to forget things.

As we age, there is also a possibility of experiencing a more positive feeling because the right prefrontal cortex, which is the area of the brain where we lose cells, processes negative emotion and the left positive emotion. We know for example that people who are hyperactive on the right prefrontal cortex suffer from anxiety and have an under-active left prefrontal cortex.

#### What happens to the adolescent brain?

During adolescence the prefrontal cortex is busy going through this remodelling process. Up to 50 per cent of the synaptic connections are being reconstructed. The dorsal prefrontal cortex does not get totally myelinated until around age 25.

Adolescents know they are not you. They go to great pain to let their parents know they are not them. They tend to say "You know mum? You know nothing". They are trying to individuate and identify themselves as independent thinkers. Sometimes they do a bit too much of that.

After enduring much of such behaviour I said to both my sons when they turned 16: "It looks like there is nothing I can say that you are really going to agree with" and both my sons said "get over it. It will be over in a year".

#### How else can we enhance our wellbeing?

By orchestrating many health promoting factors all at once. There is not one thing that achieves that wellbeing. I often say that planting SEEDS will help achieve wellbeing and longevity. It is an acronym that stands for: social support, exercise, education, diet and sleep.

The SEEDS factors represent the foundation for a healthy life and a healthy brain. Social support is crucial, having good social relationships; I mean positive, reciprocal social relationships, not the ones that are lopsided.

#### "S" is for social support.

Social isolation, loneliness is bad for your brain. We know that even the caps at the end of the chromosomes called telomeres shrink with loneliness resulting in accelerated ageing. People who are lonely develop dementia symptoms earlier.

#### "E" is for exercise.

Exercise is as effective as psychotherapy indeed and as good as antidepressant medication and as good as psychotherapy and antidepressants together. Once a person knows about his body, about his brain, he can make use of that information and make his life better. I often educate people about their brain and say "if you want a quick and easy lift to your mood and a means to calm yourself go for a brisk walk".

I am not advocating for the end of medication but it is important we try other things before we get to medication. Many people who suffer from anxiety don't need medication and they can reduce anxiety by exercising. If you are not exercising 30 minutes a day you are missing something critical to your health, you are bogging down your system.

#### "E" is for education.

If you are not learning something new, you are looking out your rear view mirror, rumination about the past and you are thinking you are not excited about anything. Learning, including late in life, can build cognitive reserve, and result in developing fewer dementia symptoms later in life.

#### "D" is for diet.

If you are only eating simple carbohydrates, fatty foods, trans-fat acids, you are making your brain less capable of learning, of feeling positive, and you will be creating anxiety and depression symptoms.

If you don't have a well-functioning brain, if you are using drugs for example –marijuana, alcohol, or if you are consistently undernourished, then the brain is not going to be able to remember and control your emotions.

#### "S" is for sleep.

Healthy sleep practices are conducive to a healthy brain. Sleeping pills mess up the sleep architecture. We need to teach our clients how to get good sleep. Some tips include: a balanced diet and avoiding looking at the computer screen late at night, because you are looking at light and as a result your pineal gland will not secrete melatonin, you want it to secrete melatonin, the sleeping hormone. So our job is to help people get better sleep practices, so yes, how do you get healthy living? Plant SEEDS. ♾