

# Neurofeedback and Counseling as Integrative Treatment

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## Abstract

This paper describes neurofeedback as a tool that is suitable for use along with counselling approaches. The benefits of integrating neurofeedback with counselling are discussed. Neurofeedback training offers opportunities for rehabilitation through directly retraining brain activity. For clients with severe symptoms and resistance to many other treatments, neurofeedback has provided a new beginning and has offered hope. In this paper, four cases of patients with presenting problems including insomnia, anxiety, obsessive compulsive disorder (OCD) and depression using this integrated treatment approach are presented. All participants in this case series experienced significant benefits.

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## 1. Introduction

Counselling is often an important part of treatment in helping patients with mental disorders. It has also been shown that counselling can be even more effective when combined with alternative forms of treatment such as neurofeedback (Goodwin and Montgomery 2006). Neurofeedback relies on principles of neuroplasticity and enables the patient to alter his/her brain wave activity through training for the purpose of improving health, wellbeing and performance. Neurofeedback may be thought of as a three-step process. First becoming aware of a brainwaves response, then learning to control the response, and finally transferring control of the response to everyday life.

It is our view that Neurofeedback offers the mental health professionals a powerful complementary tool that may be integrated with counseling to treat a variety of mental disorders. Furthermore, neurofeedback has the potential to provide researchers a unique opportunity to investigate clinical interventions with biological evidence of their efficacy.

Research is highly supportive of counselling approaches which include therapeutic characteristics of listening, empathic understanding, building relationship of trust, gaining insight, and building on strengths and wellness. The findings also support the notion that awareness of environment, culture and self shapes the individual. The bridge between biological and psychological processes is erasing the old distinction between mind and body, between mind and brain — the mind is the brain.

It is our thesis that the integration of counselling and neurofeedback treatments will enhance the treatment process given to patients resulting in speedy recovery and improved mental health and wellbeing.

## 2. Role of Neurofeedback In Helping People With Mental Disorders

Research shows that neurofeedback training can be helpful in cases such as anxiety (Kerson, Sherman & Kozlowski, 2009; Scheinost et al., 2013; depression (Hammond, 2013; Wang et al., 2016; Cheon, Koo & Choi, 2016); eating disorder (Bartholdy et al., 2013; Schmidt & Martin, 2016); insomnia (Hammer et al., 2011; Buckelew, Degood & Taylor, 2013; Arns et al., 2014); obsessive compulsive disorder (Sürmeli & Ertem, 2011); post traumatic stress (Gapen et al., 2016) and schizophrenia (Bolea, 2010; Sürmeli et al., 2012).

A common complaint among the adult and ageing population is insomnia, generally defined as the subjective sense that sleep is difficult to initiate or maintain, or that sleep itself is non-refreshing. Neurofeedback has been shown to positively impact sleep. With neurofeedback, most people can train their brain to improve sleep and this improvement can be surprisingly quick for patients who have attempted many other forms of intervention and struggled with sleep for years (Cortoo, 2010; Hammer, 2011).

OCD is characterised by recurrent and persistent thoughts, impulses, images (obsessions) and repetitive behaviours (compulsions) or mental acts that the person is driven to in order to attempt to control the obsessions. Neurofeedback can help the brain regulate itself better, and reduce the symptoms of brain dysregulation that occur with OCD (AboutNeurofeedback 2012).

Research evidences suggests a neurophysiological basis for depression, particularly in people with a family history of depression (Hammond, 2013). Research indicates that the left frontal area of the brain is associated with positive emotions and approach motivation, which is a desire to be involved with other people. The right frontal area of the brain is more associated with depression and fear, accompanied by motivation to withdraw from and avoid other people. Neurofeedback treatments for depression appears very promising not only in bringing relief from depression, but in modifying the underlying biological predisposition for becoming depressed (Hammond 2013).

## 3. Role of Counselling In Helping People With Mental Disorders

This paper focuses on four mental disorders - namely, Anxiety, Insomnia, Obsessive Compulsion Disorder (OCD) and Depression. In addition to neurotherapy a number of different counselling approaches were utilised in the treatment of subjects included in this series.

There are many models, approaches and techniques in counselling. Some of the most commonly used counselling approaches for patients with mental disorders are Cognitive Behavioural Therapy (CBT/CEBT), Behavioural Therapy, Psychoanalysis and Reality Therapy.

Patients who are treated using CBT can expect their therapist to be problem-focused, and goal directed when addressing and challenging problems.

Behavioural therapy focuses on human behaviour and looks to eradicate unwanted or maladaptive behaviour. Typically, this type of therapy is used for those with mental disorders that involve unwanted behaviour. Examples of this can include Anxiety, Insomnia, Obsessive Compulsion Disorder (OCD) and Depression. Practitioners of behavioural therapy believe that behaviour is learned and can therefore be un-learned via therapy. As well as the behaviour itself, the therapists will look at the thoughts and feelings that lead to the behaviour or occur as a result of the behaviour to understand it at a deeper level (Hayes 2004). Behavioural therapy is an action-based therapy that looks to foster positive behaviour change (Cherney 2013).

Psychoanalysis is another approach based upon the theory that our present is shaped by our past (Channel 2008). Past experiences that are hurtful can remain in the unconscious and subconscious mind, influencing present mood as well as behaviour. This can lead to problems with self-esteem, personality, relationships and work. Psychoanalysis helps a patient take control of these influences by tracing them back to their origins and understanding how they have developed over time. This awareness offers the patient the opportunity to deal constructively with the way these influences have affected their present life.

Reality Theory maintains that all human behaviour is internally motivated. Behavioural choices represent the best attempt at any one moment to meet one or more of the basic needs which are built into the generic structure (Burke 2012). This theory holds that all human beings have the same five basic needs and they are the drivers of all human behaviour. The theory suggests that all human beings have the same behaviour system and that behaviour is driven by a person's attempt to meet their basic needs. (Glasser 1998). With this approach, patients are guided to make choices and control their own behaviour, not someone else's - human behaviour is seen as determined by what goes on inside of the person due to external forces. Reality therapy focuses on the future by helping individuals to take ownership of and responsibility for their actions, which allow them to direct their own lives (Burke 2012).

#### 4. Case Presentation

Four patients with presenting problems including Insomnia, Anxiety, OCD and Depression are presented in this paper. These patients were diagnosed by the psychologist and given integrative treatment using neurofeedback and counselling. Their age ranges from 40 to 70 years old. Below is a summary of treatment and outcomes.

In all cases neurofeedback protocols have been determined by clinical experience of the author and also a number of other neurotherapists based on the principle of "what works". While rewarding activity in the Delta range might be seen as controversial by some, we have had successful outcomes using the protocols outlined in these case studies.

These protocols used are described below along with the goal that the training hopes to achieve.

#### Neurofeedback Protocols

##### Case 1: Patient diagnosed with anxiety

###### Patient A Detail:

<b>Gender</b>	Female
<b>Age</b>	42
<b>Diagnosis</b>	Generalised Anxiety Disorder (GAD)

Patient A was diagnosed with GAD. She had symptoms of anxiety such as constant worrying, sense of fear, restlessness, and negative thinking about events/things around her resulting in her responding emotionally over small matters. She appeared calm on the outside, but she said her brain never stopped thinking. She also had problem falling asleep, muscle tension, and shortness of breath. She had extensive fast brainwave activity in the right frontal lobe of the brain, which would seem to corresponded to her complaint of being unable to shut her mind off from her worries and thus, I also hypothesise that it is linked to her sleeping problems.

The patient did not want to be put on medication so the integrative treatment was recommended. Neurofeedback aimed to decrease the level of arousal, and thus, training aimed to activate middle or low frequency brain wave activity instead of high frequency activity (Jacobs 2013). After about 6 sessions of neurofeedback, the patient said that she was able to fall asleep easily and slept for 6-8 hours without waking up, managed her worries and fear, and had less muscle tension.

The protocols used for the patient and their associated goals were T6 Beta:Improve social behaviour; F7 – F8 Delta:Reduce running thoughts; P4 Delta:Improve sleep; and T3 – T4 Delta: Improve calmness.

The patient also underwent counselling sessions using CBT and Behaviour Therapy fortnightly for the months of June and July, and once a month in the months of August and September.

#### Neurofeedback Sessions:

Month	Session	Treatment Protocol
June	Session 1 – Session 5	T6 Beta, F7 – F8 Delta, P4 Delta, T3 – T4 Delta
July	Session 6 – Session 10	
August	Session 11 – Session 12	
September	Session 13 – Session 16	
<i>Total sessions</i>	16	
<i>*** P4 &amp; T3 – T4 Delta treatment is alternated based on the symptoms she was displaying at the time.</i>		

#### Findings:

Presenting Problem	Outcome
<ul style="list-style-type: none"> <li>Constant worrying</li> <li>Negative thinking</li> <li>Emotional when she was dealing with people at home and at her workplace</li> <li>Running thoughts resulting in her inability to fall asleep</li> </ul>	<ul style="list-style-type: none"> <li>Was able to challenge her irrational thinking</li> <li>Was able to manage her worries</li> <li>Able to manage her emotion while dealing with people</li> <li>Able to control outburst of emotion</li> <li>Can fall asleep and stay asleep for 6-8 hours</li> </ul>

##### Case 2: Patient with insomnia

###### Patient B Detail:

<b>Gender</b>	Female
<b>Age</b>	48
<b>Diagnosis</b>	Insomnia

Patient B had difficulty falling asleep or staying asleep. She complained that she felt tired after waking up. She experienced fatigue and could not focus or concentrate on her work. She lacked motivation and experienced mood swings.

The patient had difficulty initiating sleep and staying asleep. There is some evidence that theta training is suitable for patients who have difficulty initiating sleep while delta training benefits patients who have problems maintaining sleep (Diaz, Sloot et al. 2012).

The protocols and associated goals used for the patient was T3 – T4 Delta: Improve calmness; P4 Delta : Improve sleep; F2 Beta : Improve motivation; and F3 Beta: Improve Mood.

The patient underwent counselling weekly for the month of July and fortnightly for the month of August. The psychologist used Behaviour Therapy and CBT in the counselling sessions.

**Neurofeedback Sessions:**

Month	Session	Treatment Protocol
July	Session 1 – Session 7	T3 – T4 Delta, P4 Delta, F2 Beta, F3 Beta
August	Session 8-16	
<i>Total sessions</i>	16	
<b>*** F2 Beta is alternated with F3 Beta starting from Session 6-16.</b>		

**Findings:**

Presenting Problem	Outcome
<ul style="list-style-type: none"> <li>Tired after waking up</li> <li>Fatigue all day</li> <li>Could not focus nor concentrate</li> <li>Mood disturbances</li> </ul>	<ul style="list-style-type: none"> <li>Using the techniques trained in the counselling session, she is able to fall into sleep and sleep through the night without waking up</li> <li>Felt rested in the morning</li> <li>Able to focus and go about her daily activities</li> <li>Cheerful</li> </ul>

**Case 3: Patient with Obsessive Compulsive Disorder**

**Patient C Detail:**

<b>Gender</b>	Male
<b>Age</b>	72
<b>Diagnosis</b>	Obsessive Compulsive Disorder (OCD)

Patient C held a high position in a corporate company and had always realised that he had some symptoms of OCD, but was never diagnosed nor had he sought help. When he retired, he realised that his problems affected his homelife and this led to further stress.

The patient expressed obsessive thoughts and displayed compulsive behaviour.

Frontal lobe overarousal has been associated with repetitive thoughts, worries and urges (Jacobs 2013). Delta training at frontal lobe sites aims to lower beta and hi-beta activity in order to reduce anxiety and obsessive thoughts.

The treatment protocols and associated goals were F3 Beta:Reduce depression; T4 Delta: Emotional calming; and T3 – Fz Delta: Reduce obsessiveness.

The patient was rational and had insight. He was determined to change. He attended weekly counselling for two months and completed all the assignments given by the psychologist. Techniques from CBT and Reality Therapy were used.

**Neurofeedback Sessions:**

Month	Session	Treatment Protocol
November	Session 1 – Session 5	F3 Beta, T4 Delta, T3 – Fz Delta
December	Session 6 – Session 11	
<i>Total sessions</i>	11	

**Findings:**

Presenting Problem	Outcome
<ul style="list-style-type: none"> <li>Fear of contamination or dirt</li> <li>Having things orderly and the way he wants it to be</li> <li>Unwanted repetitive thoughts</li> <li>Aggressive or horrific thoughts about harming himself or others</li> </ul>	<ul style="list-style-type: none"> <li>Reduced fear of contamination or dirt</li> <li>Able to walk away if things are not orderly and as he wants it to be</li> <li>Noted unwanted repetitive thoughts and able to challenge the irrational thoughts</li> <li>Able to pause and review aggressive or horrific thoughts about harming himself or others</li> </ul>

**Case 4: Patient diagnosed with depression**

**Patient D Detail:**

<b>Gender</b>	Female
<b>Age</b>	41
<b>Diagnosis</b>	Depression

Patient D was diagnosed with early on-set of depression. She was feeling low in spirit, and sometimes felt that life was no longer worth living. She complained of persistent feelings of sadness and loss of interest. This was accompanied with feelings of hopelessness, worthlessness, helplessness and restlessness, along with suicidal ideation and a suicide attempt.

In neurofeedback therapy with patients who have depression, brain training typically focuses more on the patient's frontal and temporal lobes. Hammond (2005) concluded that neurofeedback not only moderates depression but also mitigates anxiety and rumination.

During neurofeedback, the treatment protocol and associated goals were F7 – F8 Delta : Reduce running thoughts; C4 Delta : Calm unconscious mind; F2 Beta : Improve motivation; F3 Beta: Reduce depression; and T3 – T4 Delta : Improve calmness.

Patient D came for counselling every fortnight. Using psychoanalysis techniques, she was able to identify the events and people who made her sad. She explored her past experiences with the goal that understanding these experiences would help her to manage her anger and the thoughts of ending her life.

### Neurofeedback Sessions:

Month	Session	Treatment Protocol
August	Session 1 – Session 2	F3 Beta, T4 Delta, T3 – F2 Delta
September	Session 3 – Session 9	
October	Session 10 – Session 16	
<i>Total sessions</i>	16	

### Findings:

Presenting Problem	Outcome
<ul style="list-style-type: none"> <li>• Less motivated to do tasks</li> <li>• Running thoughts</li> <li>• Annoyed by past and present family issues</li> <li>• Sad feelings with suicidal thoughts</li> </ul>	<ul style="list-style-type: none"> <li>• Able to occupy herself with beneficial activities</li> <li>• Able to control her running thoughts</li> <li>• Resolved inner conflict and became calmer when she delt with family members. Does not get annoyed easily</li> <li>• No more suicidal thoughts</li> </ul>

## 5. Implications and Recommendations

This case series is limited to just four cases, each with very different presentations. The interventions are personalised and thus vary between cases. This represents an exploratory study of outcomes where neurofeedback is integrated with various counselling approaches as an intervention for different mental health disorders.

Future research might focus in more detail on one particular mental health disorder and investigate different protocols for treatment. Follow up studies should ideally include objective measures to assess outcomes and use standardised treatment protocols and procedures.

## 6. Conclusions

This exploratory case series provides some support for an integrative treatment model incorporating neurofeedback along with psychotherapy/counseling approaches. There are many questions and issues outstanding, but this case series indicates some promising directions for clinical interventions and for future research.

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