Adding Neurotherapy to Your Practice
Clinician’s Guide to the ClinicalQ, Neurofeedback, and Braindriving
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Springer
Overview

The purpose of this book is to encourage clinicians from all licensed healthcare disciplines to consider adding basic neurotherapeutic assessment and treatment to their practices. The data are compelling, indicating that even very basic neurotherapy can markedly enhance the efficacy of most all therapeutic methods and metaphors. This book is structured to help licensed professionals learn the basic methods and principles to enable a disciplined introduction of these most efficacious therapies into their patient care modalities. The book is also focused on helping licensed professionals from falling victim to the one-size-fits-all franchise and franchise-like operations.

Neurotherapy is a data-driven methodology that is straightforward, logical, and validated by compelling research from many quarters. The procedures are based on the fact of brain plasticity, a concept that physicians and psychologists did not fully comprehend even a few short years ago. What we were taught about the brain’s potential for recovery in medical and graduate schools, when I took my training, is simply wrong. Hence, many of our treatment concepts are rooted in the belief that the brain has limited capacity for functional change.

The paradigm shift implicated in the concept of neurotherapy is firmly grounded in the recent research on the plasticity of the brain. The rationale is direct and empirical: measure the functional anomalies in the brain so that one knows what symptoms the client/patient is likely to manifest. Then, treat those symptoms by normalizing the anomalous brain activity.

The procedures described in this book are quite specific and limited. Neurotherapy is a broad field with applications to many disorders. The more specialized applications are not addressed in detail, other than identifying circumstances in which one may want to refer the patient to a clinician specializing in neurotherapy.

This guide is based on a single-channel clinical grade EEG. Additional channels may be useful but are not necessary for the ClinicalQ or for the treatment that follows from the ClinicalQ analysis. Some EEG feedback systems do a very bad job of measuring the higher-frequency brain waves and others have very cumbersome software.

To proceed with introducing neurotherapy into your practice, as I am advocating in this book, you will need some basic, clinical grade equipment and the necessary
basic training on the use of the equipment. My strong recommendation is that you purchase your equipment from a supplier or manufacturer that offers the basic hands-on training. Many manufacturers and suppliers have developed “turn-key” systems for the procedures presented in this book. You can contact the Biofeedback Certification International Alliance (BCIA) for a list of manufacturers and suppliers and those that offer approved hands-on training. Distance training over the net is available, but many prefer hands-on training specifically with the equipment you intend to use. Start small and work up, not the other way around. Be sure to query the supplier on the weaknesses of the system relative to the ClinicalQ requirements that are described in this book. Specifically, verify that the system measures brain wave frequencies, reliably, up to 40 Hz.

This book is divided into several sections. After a general introduction to neurotherapy in Chap. 1, Chap. 2 describes the ClinicalQ in detail. In this chapter, the conditions associated with the various brain wave patterns are presented, as well as the statistical data on the research validating the procedure. A detailed description of the diagnostic application of the ClinicalQ is emphasized in this chapter as well. Chapter 3 focuses on some of the conditions where traditional medicine and psychology have not done well following a “try this” approach to treating the labeled condition as opposed to the putative cause(s) of the client’s complaints. Chapter 4 reviews the basics of neurofeedback, the “backbone” of neurotherapy. Chapter 5 focuses on methods for potentiating brain wave changes. This chapter includes the research data on identifying unconditioned stimuli for braindriving procedures, discussed in Chap. 6, as well as for procedures used for home treatment. Chapter 6 focuses on the more therapeutically aggressive braindriving techniques that use classical conditioning methods for changing brain wave activity. Chapter 7 gives a very abbreviated review of biofeedback for the peripheral systems such as thermal, muscle, and heart rate biofeedback that are very important adjunctive treatments with neurotherapy. The Appendices include the details for using the ClinicalQ in practice and evaluative questionnaires that can be used for clients. In this section as well is a review of some of the highly positively synergic interactions between pharmaceutical and neurotherapeutic approaches to treatment.
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Chapter 1
Introduction

The purpose of this book is to encourage clinicians to introduce neurotherapy into their practice. Neurotherapy blends synergically with every therapeutic metaphor. Whatever your discipline, neurotherapy will markedly enhance your efficacy. As will be discussed in detail later on in this book, clinicians such as psychologists and psychiatrists, for example, will find neurotherapy markedly efficacious for treating all levels of the detrimental sequellae of exposure to severe emotional stressors.

Physicians will find that they have alternative methods for dealing with conditions such as anxiety and depression as well as facilitating greater specificity of pharmacological treatments. In the latter situation, for example, the ClinicalQ can identify the forms of ADHD that respond well to stimulants such as methylphenidate and those that do not respond well or are exacerbated by such medications. Of course, they can also incorporate neurotherapy to treat the ADHD adjunctively with medication in many instances.

This Clinician’s Guide introduces clinicians to basic neurotherapy. The procedures are applicable to a broad range of patients/clients seeking treatment for a very wide array of conditions. These are basic procedures designed to augment the clinician’s skill set in whatever therapeutic metaphor practiced within the jurisdictional guidelines for the professional discipline. This guide does not include more specialized areas such as full brain QEEG, z-score therapies, sLORETA, and the like. Hence, conditions such as traumatic brain injury, epilepsy, and Parkinson’s require more specialized neurotherapy, although these basic procedures may be helpful in such conditions for treating adjunctive conditions such as sleep disorder, depression, and anxiety.

This guide is the sister volume to my book Biofeedback for the Brain (2010). The latter book is for the general public and this guide provides the technical details for clinicians. This book presents evidence from our database for the efficacy of the diagnostic procedure referred to as the “ClinicalQ.” The ClinicalQ uses a limited number of EEG brain sites but provides a wealth of information about the conditions and symptoms presented by clients and patients. This procedure is not
“diagnostic” in the usual understanding of that term. Rather, the ClinicalQ identifies brain functioning anomalies associated with the client’s symptoms and behaviors that direct the practitioner to exact brain locations and brain wave ranges that need to be treated. It is not a labeling procedure. There is ample evidence to indicate that using the QEEG to guide treatment markedly increases the efficacy of treatment in contrast to simply relying on behavioral diagnosis (Gunkelman 2006).

Definitely NOT Business as Usual

I do not ask clients why they have come to see me. I tell them why they are seeking treatment. The level of precision of the ClinicalQ is such that, with experience, one can describe the client’s condition based exclusively on the brain wave data. Clients are usually stunned by the accuracy of the description of their condition. The therapeutic value of this method is substantial. The methods have been refined over the last 20 years to the point that clients usually do not elaborate on my description of their condition.

Imagine a client who has been to many clinicians. She has told her story many times and obviously has not had much success in getting relief from her condition; otherwise, she would not be sitting in my office. She is often angry, disillusioned, depressed, and feeling hopeless. Before she can start telling her tale of woe, I say, “Do you know what I do?” I explain that I look at how the brain is functioning. I am looking for areas of inefficiency in brain activities that are, in turn, directly related to symptoms. Once identified, I correct the brain inefficiency that in turn reduces symptom intensity. I then explain that I will be looking at a few spots on the brain. She will not feel anything; it is measurement only. After I collect the brain wave data, I will do some calculations and go over the results in detail to be sure that what the brain is telling me is consistent with her personal experience. This procedure can help to commit the client to treatment. Clients are impressed by the accuracy of the diagnostic procedures and gain optimism regarding the potential efficacy of the treatment.

Many “one-size-fits-all” practitioners, many of whom are not licensed to practice any healthcare profession, treat with relaxation-focused feedback protocols. Clients may have some benefit in the short term, in terms of feeling more relaxed, but seldom achieve relief from the causes of their difficulties. As Hammond (2006b, p. 32) has pointed out, “A ‘one-size-fits-all’ approach that is not tailored to the individual will undoubtedly pose a greater risk of either producing an adverse reaction or of simply being ineffective.” Hammond goes on to stress that anyone doing neurotherapy should be a bona fide licensed healthcare provider in the relevant jurisdiction. Hence, this book is written specifically for the licensed practitioner who wishes to add this technology to those available within her or his healthcare professional discipline.

One of my goals is to bring this effective set of therapeutic tools into the primary healthcare context so that clinicians have a broader array of options to treat
many of the disorders seen on a day-to-day basis. I will describe, in precise detail, how one uses the ClinicalQ for client assessment and will show the data that validates the interpretative process. I will then proceed to describe, in detail, exactly how one does the various forms of neurotherapy to correct the conditions identified with the ClinicalQ. Neurotherapy offers the possibility to correct the problem at the source so the orientation in the treatment of some disorders like depression, for example, shifts from coping and symptom control to correcting the cause of the problem.

The term “neurotherapy” refers to a number of treatment methods that alter brain functioning. In this book we will examine many different methods for correcting brain wave anomalies. The core treatment method within this array is neurofeedback or brain wave biofeedback. All clinicians, by now, have at least a passing understanding of brain wave biofeedback. The procedure has been in use for over four decades with compelling evidence for the efficacious treatment of many disorders including epilepsy, ADHD, and depression. As we shall see, neurotherapy can be an effective alternative for the treatment of a very large array of disorders.

Neurofeedback is an operant conditioning procedure. When the brain is responding as desired, the client receives a rewarding stimulus. This can be a tone indicating positive changes in brain wave activity. The reward can also be icons moving on a computer screen so that an ADHD child, for example, is playing a video-like game with his brain. We can also create treatment preparations in which the child can keep an electric train moving with her brain. The “reward” in other words is a stimulus indicating success.

More aggressive treatment protocols include “braindriving” which is a treatment incorporating the classical conditioning processes. The classical conditioning of brain wave amplitude was demonstrated in the 1940s at McGill University in Canada by Herbert Jasper and Charles Shagass (1941). The basic preparation is to present an unconditioned stimulus contingent on brain wave activity such as amplitude. Thus, for example, when Alpha amplitude exceeds a training threshold, a flashing light is presented to the client’s eyes that ceases as soon as the Alpha amplitude drops below the training threshold. Flashing light is an unconditioned stimulus for Alpha amplitude suppression. Flash a light in someone’s eyes and Alpha amplitude drops. By making this process contingent on the Alpha EEG amplitude, lower amplitude can be conditioned. Much of this book will be focused on identifying the classical conditioning paradigm and the unconditioned stimuli that can be used for different brain waves at various locations.

Although clinicians may have some understanding of brain wave biofeedback, that understanding, I have found, is frequently limited. A common belief is that brain wave biofeedback is a good, but costly, method to help patients relax. More efficient than meditation, it nonetheless has a limited benefit of a temporary change in brain wave activity, similar to drowsiness that helps clients find a relaxing state. Inherent in this conception is that brain wave biofeedback does not affect permanent change in brain wave functioning. Thus, clinicians with this misconception of brain wave biofeedback are likely to dismiss neurotherapy as simply another form of relaxation.
Neurotherapy treats conditions that have been considered untreatable. These methods can provide more effective ways for treating many of the depression and anxiety disorders than conventional psychology and medicine have offered to date. But neurotherapy does not replace these traditional methods; rather, it offers opportunities for synergy among the treatment methods.

Neurotherapeutic treatment starts with an assessment of brain wave activity. We have an understanding of what that brain wave activity should look like under normal circumstances. Departures from those normative values are indicative of some level of inefficiency in brain functioning. These inefficiencies in brain functioning in turn are associated with symptoms. By interpreting these departures from normative values, the clinician can identify the symptoms that brought the patient to seek treatment. It is very different from the usual procedure of the client describing the problems to the clinician. After verifying that the symptoms suggested by the brain wave anomalies are those for which the client seeks treatment, the clinician proceeds to outline, to the patient, the exact nature of the treatments designed to normalize the brain wave activity that in turn leads to symptom improvement.

An initial decision that must be taken at the outset is whether or not the patient needs to have a full head electroencephalography (all 19 sites, called a FullQ, or full map) or if the limited ClinicalQ will be adequate. Conditions of traumatic brain injury, including head trauma and stroke, certainly would require the FullQ. Similarly, conditions such as seizure disorders and psychoses likewise should be assessed with the FullQ. Conditions more commonly seen, including the anxiety disorders, the various forms of depression, attention problems in children, panic disorders, irritable and inflammatory bowel disorders, sleep quality issues, addictions, fibromyalgia, chronic fatigue, and the sequellae of emotional trauma, all would be appropriate to assess with the ClinicalQ.

**Brain Wave Biofeedback**

Brain wave biofeedback, also called neurofeedback, is based on a simple premise that clients can alter a brain wave activity if they receive immediate feedback on brain wave state changes. We have known since the mid-1960s that rodents can be taught to change their heart rate and blood pressure (Dicara and Miller 1969). And from around that same time, we have known that cats can be taught to change their brain wave activity (Sterman 2000). Evidence that such changes are stable over time, an indicator of brain plasticity (LeDoux 2002), was reported some years later (Lubar 1991).

If clients can be taught to change their brain wave activity, and such changes are stable over time, then symptoms associated with an abnormal brain wave activity should be treatable by normalizing brain waves. The clinical procedures are remarkably logical and straightforward: measure the brain wave activity; find the anomalies; ask the patient if the symptoms associated with the identified anomalies are present; and if the client admits to the symptoms, then help the client learn to correct