

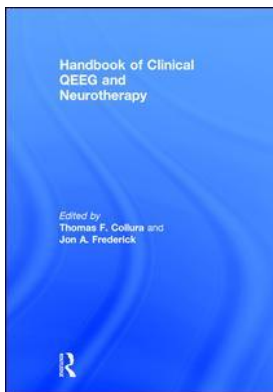
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3

VARIABLES RELATED TO NEUROTHERAPY SUCCESS/FAILURE

James R. Evans, Mary Blair Dellinger, Ann Guyer, and Jane Price

Abstract

In all forms of therapy there are many variables which can affect treatment progress, either positively or negatively, but which are extraneous to the specific procedures employed by the therapist. This soon becomes obvious to the experienced neurotherapist. However, many inexperienced or narrowly trained persons may not be aware of the large number of possible influences. Such lack of awareness can be very detrimental to both clients and practitioners. Here, the authors, each of whom is an experienced neurotherapist, cite examples of extraneous variables which may intervene during training to impede or halt training progress (whether or not targeted EEG changes occur), or which, in contrast, may unexpectedly facilitate symptom reduction despite no apparent EEG regulation. Examples are divided into those traditionally considered primarily psychological, socio-cultural or biological in nature. Suggestions are offered for actions a neurotherapist could consider taking to help a client, e.g., referral for individual counseling or psychotherapy, family therapy, vision training, medical procedures. The importance is stressed of neurotherapists being able to recognize, and appreciate the relevance of, extraneous variables impacting training, and being willing and able to make referrals to various other professionals as needed.

Introduction

Neurotherapy does not occur in a vacuum; many factors influence results. The authors of this chapter have had experience with neurotherapy ranging from one to over twenty years, and all agree on the truth and significance of this statement. Of course, it is true for any type therapy, and is a well known fact and concern for any experienced and effective therapist. However, new or narrowly trained therapists may not be aware of, or understand, the many variables with potential to affect training outcome. For example, many neurofeedback practitioners accept as clients persons with a wide range of symptoms or diagnoses, often involving mental health, yet have little or no training regarding the psychological, socio-cultural and biological factors involved in mental illness. The main purpose of this chapter is to point out and briefly describe examples of variables with potential to impact therapeutic progress. Although recognizing that treatment-specific variables such as quality of equipment, therapist skill, and training protocols used also are important for success, emphasis will be upon non-specific (extraneous) variables.

The chapter is organized into three sections. The first section concerns extraneous variables to be considered in cases where targeted symptoms are not decreasing in severity or number as had been expected, new undesirable symptoms have developed, and/or the client prematurely ceases treatment. This may be despite desired changes in EEG measures. The second section considers variables which may be involved when targeted symptoms are alleviated despite no expected changes (normalization; regulation) in the EEG. In the final section the authors summarize chapter content, with emphasis on the need for a multidisciplinary approach in the field of neurotherapy.

Neurotherapy Progress Is Slow, Does Not Occur, or Ceases

Psychological Variables

- (a) It is not at all unusual for a client to have multiple diagnoses, including some with major psychological components. Depression, post-traumatic stress disorder, and generalized anxiety disorder are common examples. Clients seen for attention deficit/hyperactivity disorder may be especially likely to present with multiple diagnoses which need to be recognized and addressed if training is to proceed in an optimal fashion.
- (b) Successful neurotherapy, of course, leads to change, e.g., positive developments such as decreased anxiety and better ability to focus. Some clients, however, become very uncomfortable with their changes, and some may even label them negative side effects. Some years ago, a client of one of the authors expressed this in his statement: "I'm feeling anxious about no longer being anxious!" Happily, after a short counseling session, that client agreed to resume neurotherapy, and eventually was pleased with results. Recall of earlier traumatic experiences also can occur during the course of neurotherapy and be a source of distress. It may prove helpful to mention to clients in advance of treatment that having some new, usually temporary, but perhaps alarming, experiences is not uncommon, and usually are indications of therapy progress. This might be included in an initial informed consent. Of course, if a client's fear or distress is great, and continues to interfere with progress, referral for professional counseling/psychotherapy or other treatment is called for.
- (c) The authors have encountered clients who, with or without conscious awareness, appeared to want to "keep" their symptoms. This often falls under the concept of "secondary gain." An example would be a person receiving disability payments for a condition or injury which would continue so long as related symptoms continue. Such persons may have been instructed by an insurance company or a social services agency to try neurotherapy as a treatment for their symptoms. Other examples of secondary gain are cases where one's symptoms are keeping them in the role of "the sick one" in a family, which, while likely very costly to self-esteem, nevertheless has its benefits in freedom from responsibility and/or extra attention from parents, spouse, or other caregivers. The authors have observed examples of this in adults as well as children. In most cases the client was pressured by family members to seek neurotherapy and agreed to do so. Although they may on the surface appear to be cooperating, and targeted EEG changes may occur, the "rewards" of maintaining symptoms hinder training progress.
- (d) A psychological phenomena, related to terms such as "you can lead a horse to water, but can't make it drink," rather frequently is seen with teen-age neurotherapy clients. This is especially common if they are angry with one or both parents and/or have been coerced into coming for treatment, e.g., be "off restriction" as long as they come for the sessions. Again, targeted EEG changes may occur, but behavioral symptoms persist. This, of course, is not limited to parent-child conflict, and has been observed in cases of marital conflict, court-imposed treatment, and other situations where a client *perceives* external pressure to change. Relevant to this, the senior author recalls how readily he was able during a psychology class to "shape" a rat's behavior using operant conditioning procedures, but when applying such procedures to high school students

in his class it was not so easy. It seems there was an intervening variable referred to variously by terms such as consciousness, ego, self-determination. Unlike the rat, students apparently acted on thoughts such as “he’s trying to manipulate me,” or “I like me the way I am,” and behavioral change did not come easy (for teacher or students!). The authors occasionally have had clients ask specifically: “Will this change my personality?”

- (e) Readers who accept and understand the significance of unconscious motivation and dynamics can appreciate still other psychological variables which the authors believe are involved in some cases of slow or non-existent neurotherapy progress. This is suspected, for example, in cases where clients seem bent on “self-sabotage.” They usually strongly deny such motivation, yet their histories contain multiple instances of developments such as losing good jobs, dropping out of college with only one semester (or class) to go, failing, despite multiple warnings, to make mandatory reports to parole officers and thus being returned to prison. Mental health practitioners can speculate on causation in such cases (e.g., guilt and a need for punishment; need to maintain a “loser” self-concept), and may recommend psychodynamic type psychotherapy. Whatever the true dynamics may be, the neurotherapist often notes slow or variable progress, sometimes with partial or total remission of symptoms which later return with equal or greater severity than originally.
- (f) Another situation where unconscious motivation may hinder neurotherapy has been observed at times with clients diagnosed with obsessive-compulsive disorder (OCD). Although OCD presently is seen primarily as having a neurophysiological basis, and best treated with cognitive behavior therapy using exposure and response prevention (e.g., Foa, Yedkin, & Lichner, 2012), it has been the senior author’s experience that unconscious dynamics can be involved. For example, a compulsive behavior may serve to “correct for” a strongly anxiety-provoking obsessive thought of unconscious origin. In such cases more common psychodynamic approaches generally prove futile. And, to the degree that unconscious motivation is involved in perpetuating symptoms, neurotherapy progress also is likely to slow or be non-existent. Of course, in cases where some aspects of OCD have a basis in neurophysiology, such aspects may prove responsive to neurotherapy (perhaps especially if used in conjunction with exposure and response prevention).
- (g) Finally, significant unconscious dynamics can occur in regard to client–therapist relationships, and hinder progress. In the fields of counseling and psychotherapy client–therapist “fit” has long been recognized as critical to success. Sometimes a lack of “fit” is obvious to one or both parties, e.g., when a therapist shows little patience with a hyperactive child or rebellious teen-age client. At other times, though, there is a lack of awareness of why the “fit” just does not feel right—as captured in the rhyme “I do not like thee Ms. Fell; why I cannot tell, but I do not like thee Ms. Fell.” (A possible variation on this could be “I like thee too much Ms. Fell . . . ,” as in transference.) Related to these examples are cases where clients become overly dependent on, or enamored with neurotherapy (or with the neurotherapist), and insist on continuing treatment even though symptoms have been alleviated and further progress is not occurring. This of course, raises ethical questions about when and how a therapist should terminate training.

Socio-Cultural Variables

- (a) Early practitioners of neurotherapy recognized the potential effects, both inhibitory and facilitative, of family dynamics. For example, Judith Lubar, a social worker by training, realized that a child with ADHD-type symptoms was less likely to respond to training if the home environment was *chaotic*. She sometimes refused to take such children as clients until home environmental change occurred through family therapy (Lubar & Lubar, 1999).
- (b) When a client’s symptoms respond favorably to training, parents (siblings, spouse, peers) may be uncomfortable with the “new” child, and fail to reinforce or actively discourage the behavioral

- changes. Examples include parent(s) who need a “sick” child to gain sympathy from associates or divert attention from their own marital relationship problems, the domineering husband whose formerly depressed wife became more assertive and less dependent upon him, and the friends of the formerly impulsive “class clown” they now perceive as boring.
- (c) Occasionally the parents (or spouse, etc.) of a client whose symptoms are diminishing, and which were the major originally stated reason for referral, will express disappointment (or report no perceived progress), and may add additional “symptoms” to the list of those they wish to be targeted for change. This often seems to reflect an attitude of “we want a perfect child” (or their version of an ideal child). In some such cases parents actually may have perceived some progress, and realized the potential for much more. Wanting the best for their child in today’s highly competitive society, they then added to the “desirable” traits what they would like to see developed. Considering the successes some neurotherapy practitioners have had in developing one’s “peak performance,” such motivation may be laudable. However, the client may not perceive it that way, and begin to resent coming for therapy. In such cases progress may cease, or original symptoms return.
 - (d) Major environmental events perceived by the client as traumatic and/or disruptive can interfere significantly with neurotherapy progress. Some of the more commonly encountered ones include death or serious illness or injury in the client’s family, separation or divorce, family moves, transfer to a new school, bullying, and break-up with a boyfriend or girlfriend. Occasionally therapists encounter cases where a client experiences sexual abuse, rape, onset of physical or emotional abuse (as by a new step-parent or spouse) during the course of therapy. In such cases progress may cease or regression occur, and it may become necessary to suspend neurotherapy until the trauma is sufficiently resolved, whether through grief counseling, psychotherapy, environmental change, or other means.
 - (e) Occasionally a neurofeedback client is making good progress but becomes concerned about what it is costing whoever is paying for the sessions. The authors have suspected this in child and teen-age clients who may begin feeling guilty about what it is costing their parents. Perhaps they overheard parents arguing about or otherwise expressing concern about the cost. They then may make a decision to resume symptoms, hoping that this would lead parents to believe the sessions are not being effective and cease training. And in some cases it may be that the cost of treatment actually is contributing to marital problems and family discord which, in turn, inhibits therapy progress. Of course, financial concerns affecting progress are not restricted to children. Adults paying out-of-pocket for therapy may begin to experience financial pressures, and feel a need to cease training. Some will openly admit to this, but others may prefer to deny progress and cease training rather than admit to financial difficulties.
 - (f) Those of us working in the field of neurotherapy are well aware of its limited acceptance by mainstream medicine, education, and other fields. This cultural situation has the potential to “sabotage” a client’s neurotherapy progress. One of the authors reported once having had a young client who was making good progress. When, during an office visit to their family physician, the child’s parents showed him the “brain map” based on QEEG findings, he glanced at it, tore it to pieces, and put it in a trash can, saying, “That is what that is worth.” In this case the parents disagreed with his view, and successfully continued their child’s training sessions. Others, however, might have been motivated to discontinue the sessions. Hopefully, such an extreme reaction of the part of a health care professional is rare and becoming increasingly infrequent. Overall, it is our recent experience that this is true. It remains common, however, to hear from clients that they were neither strongly discouraged *nor* encouraged to seek neurotherapy training by the health care professional(s) or educator(s) consulted. Since the opinions of family physicians and teachers generally are well respected, any lack of endorsement of neurotherapy on their part could readily become a source of motivation for a parent (or adult client) to prematurely cease training. This may be especially likely if symptom reduction is not obvious within a few sessions.

A related situation is where a dissatisfied former neurotherapy client actively denounces the treatment as a “waste of time and money,” perhaps on internet posts read by a present client. Or a client may read one or more of the now common advertisements which claim that brain change and symptom reduction can be attained quicker and at lower cost by any one of a myriad of other techniques such as yoga, mindfulness meditation, magnetic bracelets, etc., etc. Again, if this happens and the client is disappointed that anticipated symptoms reduction has not yet occurred, he or she may abruptly cease training.

Biological Variables

- (a) One of the most commonly reported variables involved in poor progress during neurotherapy is medication effects. Large numbers of clients are under a physician’s care and using prescribed psychotropic medications. It is very common to find that during neurotherapy a medication and/or dosage which once may (or may not) have been effective in reducing a client’s symptoms becomes an impediment to progress. In such cases medication adjustment is needed for optimal progress to occur. Unless the neurotherapist is a physician or other professional with prescription privileges, this requires the cooperation of the prescribing physician, and this sometimes is difficult to obtain. When the authors have a prospective neurotherapy client who is taking medication we explain this to them (or their parents), and recommend that they discuss it with the prescribing physician in the hope that she or he will understand and be willing to entertain medication adjustment if needed.

A variation on this situation occurs when a client (usually an adult) makes a unilateral decision to cease taking or to self-adjust dosage of prescribed medications. Not only can this be dangerous, but, especially when done in an “off and on again” manner, can make it extremely difficult or impossible for the clinician to discriminate medication effects from those of the neurotherapy training. And, of course, it is not only prescription drugs which can impede progress. Sometimes a client is using illegal substances or excessive alcohol without the therapist’s awareness, or resumes such use during the course of therapy. This makes it difficult or impossible to determine sources of changes in symptoms and EEG measures, and accurately adjust training protocols.

- (b) Neurotherapists sometimes are surprised to discover that in a large number of cases where inattention and low academic achievement motivation are prominent symptoms, there also are visual, auditory, and/or other sensory disorders. While these often may have correlates in dysregulated cortical brain electrical activity, and thus be at least partially responsive to appropriate neurotherapy, some may have a more peripheral physical source such as defective muscles controlling eye movement, or middle ear dysfunction, which need to be addressed. For instance, Granet, Gomi, Ventura, and Miller-Scholte (2005) report “an apparent three-fold greater incidence of ADHD among patients with convergence insufficiency when compared with the incidence of ADHD in the general US population.” And Nash (2014) notes the many successes he has had combining neurotherapy with vision training, especially in cases of clients presenting with ADHD-type symptoms. The possibility needs to be considered that sensory problems are important contributors to, or even main causes of, the symptoms being addressed by neurotherapy. When any are suspected based on diagnostic interviews, reviews of medical history, behavioral observations, test results, or failure to make expected progress during neurotherapy, referral to appropriate health care professionals is necessary. The authors often have discovered the value of referral for vision assessment and training (usually done under supervision of a developmental optometrist), audiological assessment of hearing acuity and central auditory processing disorder (CAPD), or assessment/training of proprioception or tactile sensitivity abnormality (usually done under supervision of a specially trained occupational therapist).

- (c) Much emphasis recently has been placed by various media on poor nutrition, and lack of sufficient sleep of many persons—both adults and children. Blame often is placed on the “hectic” life pace of many children (extensive homework, extra-curricular activities, etc.) and adults (workplace pressures, single mothers’ duties, etc.), along with the ready availability of “fast foods” lacking in nutritional value, and sleep needs competing with social media for nighttime hours. Whatever the socio-cultural causes, large numbers of health professionals are of the opinion that the biological consequences of poor nutrition and sleep habits are major contributing factors to many of the symptoms for which persons seek neurotherapy, e.g., difficulty focusing attention, anxiety, limited motivation, depression-related feelings.

The senior author worked for several years with a neurotherapist who requested that all clients concurrently take a dietary supplement consisting of various vitamins, minerals, amino acids and antioxidants. Her belief was that this supplement interacted positively with neurofeedback, and was a major factor in her many therapeutic successes. The authors do not advocate this for all clients, but when neurotherapy progress is slower than expected, we consider diet worth discussing with a nutrition specialist or other qualified health professional.

It has been the experience of many clinicians that improved sleep is a common benefit of neurotherapy, whatever the symptoms for which a client sought help (e.g., Hammer, Colbert, Brown, & Ilioi, 2011). This has led to some speculation that in such cases symptom reduction actually may have been due to the improvement in sleep rather than directly due to modification of targeted EEG dysregulation. However, when persistent sleep disorders are present, and little or no progress is being made with neurotherapy, lack of appropriate sleep becomes a variable which needs to be addressed.

- (d) Clients with epilepsy can present unique challenges for neurotherapists. It is a biological variable which, if not recognized and controlled, may inhibit training progress. There is increasing evidence that appropriate neurotherapy can be beneficial with various seizure disorders (Frey & Koberda, 2015). This is not surprising since abnormal brain electrical activity is a defining feature of epilepsy. However, epilepsy is considered a medical disorder, can have life-threatening consequences, and its treatment ethically (and legally in many places) has to be by, or under the direct supervision of, a physician (usually a neurologist).

There is wide variation among seizure disorders in terms of cause and severity. Some of the less obvious types are especially likely to be encountered by neurotherapists. For example, the momentary lapses in consciousness which characterize what once were referred to as “petit mal” seizures (and now usually referred to as absence seizures) often are mistaken as symptoms of ADHD. Unless the neurotherapist is alerted to such lapses by observation or case history reports, he or she may proceed with training for ADHD which is less effective (or even dangerous) than if referral to a neurologist had been made and supplemental or alternative therapy provided.

- (e) There are, of course, many medical conditions (pre-existing or developing during therapy) with potential to interfere with neurotherapy progress. Training of any sort can be more difficult when one is not feeling well. However, there are some chronic disorders known to have symptoms which are among those often seen in persons seeking neurotherapy. For example, a dysfunctional thyroid gland can be a basis for hyperactivity (hyper-thyroidism), and impede neurotherapy training for clients possibly mis-labeled as having ADHD. And symptoms such as sluggishness and low motivation due primarily to hypo-thyroidism could interfere with neurotherapy progress.

Often when a client is referred by a pediatrician or other medical practitioner the majority of biological variables have been assessed, and treated. Nevertheless, when slow or unexpectedly variable therapy progress is observed, medical referral may lead to an accurate biological explanation and effective treatment.

Targeted EEG Metrics Do Not Change, but Symptoms Diminish or Resolve

A key underlying assumption with neurotherapy is that it is training (regulating, normalizing, etc.) the brain as evidenced by desired changes in aspects of brain electrical activity (EEG), which, in turn, leads to resolution of undesired symptoms. Whether the “brain wave” changes themselves directly cause the behavior changes may be debated, but a basic assumption is that there will be some correlation between EEG change and behavior change. It has been the authors’ experience that over the course of therapy such correlation usually develops, although not always immediately. There have been cases where the correlation was delayed and noted only after twenty (or even many more) sessions, as well as instances of almost immediate symptom change, but no observed change in targeted EEG measures. The dynamics behind the delayed type cases may (or may not) be similar to those regularly noted with some pharmacological treatments, e.g., neurotransmitter changes occurring rapidly with use of anti-depressant medication, but symptom changes not observed for several weeks. However, in this section we address primarily the latter situation, i.e., symptom change occurring well before EEG change (or even with no EEG change ever). In the following paragraphs we speculate on causes of such instances.

Psychological Variables

- (a) A favorite argument of critics of neurotherapy always has been that positive results are due to client expectation of success and the placebo effect. They regularly cite studies indicating that the majority of published neurotherapy research did not involve placebo controls (and/or lacked random assignment of subjects, and poor control of other possibly confounding variables). Many neurotherapists discount such criticism, noting that, given the many variables which can impact client progress, successful clinical outcomes require a personalized approach, and often do not occur when there is emphasis on unrealistic attempts at tight control of all variables. Nevertheless, placebo effects consistently are found in regard to all types of therapy, including medical treatment, and most will admit that neurotherapy is no exception. A more appropriate question may be, “*How much* do placebo effects contribute to the many positive results?”

The authors often have heard other neurotherapists and clients make comments such as, “I wonder if that critic actually ever experienced a few sessions of neurotherapy. If he or she had done so, they could have experienced the changes first hand, and realized there is something more going on than placebo.” However, there are instances where expectation and placebo appear to be accounting for most, if not all, positive effects. One such situation is when a client’s symptoms appear to resolve very early in treatment (at times even a few minutes into the initial session), only to return after a few subsequent sessions, at times with even greater than original severity. Some have referred to this as the “honeymoon effect.”

Some neurotherapists not only recognize that placebo phenomena can positively impact results, but even encourage it in their practices by such behaviors as showing, and discussing the merits of, their “high tech” equipment, using impressive, “scientific sounding” vocabulary (e.g., “cortical networks”; “neural plasticity”), or wearing white lab coats and furnishing offices to emulate those of physicians. Marketing specialists and website designers, in attempts to attract customers, perhaps unwittingly also contribute to placebo effects by use of attractive websites, using terms such as “clinically proven,” listing multiple suffixes after providers names (Ph.D. ABC, etc., etc.), or making references to allegedly supportive research at prestigious universities. Prospective clients may not consider that the clinic in which neurotherapy supposedly was proven was not named; or that the initials after names do not necessarily mean the person is a licensed professional with training and experience in neurotherapy and closely related fields, but may have “earned” some of those initials from

participation in a short internet or conference workshop; or that the scientific neuroscience research cited may have no, or only very indirect, relevance to the practice of this particular clinic or clinician. What is important for the present discussion is that such advertising can be expected to result in high expectations and related placebo effects for many clients, not only initially, but over the entire course of therapy. And this may occur with or without associated changes in targeted EEG measure. A recent review of placebo phenomena is provided by Benedetti (2014).

- (b) Neurotherapy usually occurs over several months during which a client at least periodically is the center of attention from parents, teachers, or a spouse. It is possible that this increases motivation for positive behavior change, perhaps with accompanying desire to “please” the attention-giver. Related to this, clinicians may speculate that a sense of being loved or cared for develops, which leads to greater motivation to make needed behavior changes independently of targeted EEG changes.
- (c) It is possible that realizing one is able to modify her or his own brain electrical activity may facilitate a sense of self-empowerment and improved self-concept which then may generalize to a sense of self-control over other behaviors, including control of the symptoms for which the client was receiving training.
- (d) Skeptics of neurotherapy could claim that resolution of symptoms without evidence of EEG change are due simply to a client wishing to “escape” from the time and/or financial obligations of therapy, and proceeding to use will power to consciously inhibit the symptoms for which they sought, or were brought in for, neurotherapy. While this occasionally may be true (especially for some teen-age clients), it has been the authors’ experience that most clients report enjoying the sessions, and do not wish to quit.
- (e) Especially with clients being seen for ADHD symptoms, it could be speculated that progress primarily is due to the requirement across training sessions of sitting quietly and attending for increasingly longer periods of time while receiving feedback (reward), i.e., it becomes a learned behavior which then may generalize to school and home situations.

Socio-Cultural Variables

- (a) Situations where a client makes unexpectedly strong progress prior to targeted EEG changes could be due to significant environmental change such as removal from a psychologically and emotionally “toxic” living situation (home, marriage, etc.).

Biological Variables

- (a) There are many possibilities for unexpected progress in this category. The authors have worked with clients who initially were so hyperactive, inattentive, or anxious that it seemed unlikely they would be able to focus long enough to profit from this type of training. In many such cases parents did not want to have their child take medication and, therefore, had requested neurotherapy. In some of those situations we have suggested that parents ask their pediatrician if he or she would be willing to prescribe medication on a *temporary* basis to help gain sufficient control of behavior to enable proceeding with training. At times, when they and the physician agreed to do so, we have seen dramatic progress, with the physician later deleting medication as the child continued to progress.
- (b) Other possibilities in this category include: (1) dietary changes or improved sleep patterns facilitating unexpected bursts in progress; (2) spontaneous or medication-related recovery from a disease causally related to the symptoms for which the client sought neurotherapy, e.g., a thyroid abnormality is corrected.

Summary and Implications

In this chapter we have cited and briefly discussed multiple extraneous variables with potential to interfere with or facilitate neurotherapy progress. Readers who have experience as neurotherapists will readily relate to most, and undoubtedly think of more which could have been included. A major purpose of preparing the chapter was to give newcomers to the field an awareness of the complex and broad bio-psycho-social context in which neurotherapy takes place. However, whatever their training background or experience, it is hoped that readers will recognize the need for broad training of neurotherapists, as well as for cooperative interaction with health care providers from multiple disciplines.

Some may feel that this chapter has exaggerated the need for consideration of the complexity of the therapist–client–environment interaction. They may cite client success experiences where no EEG measures were taken, minimal or no background information was gathered, and their “one-size-fits-all” single channel neurofeedback approach was all that was used. The authors are aware of such occurrences, not only with neurotherapy, but also with hypnosis, a single counseling session, ingestion of a single placebo “sugar pill,” and every “alternative medicine” approach in existence. We also realize that some clients are “ideal” candidates for neurotherapy, perhaps being truly motivated to get rid of rather clear-cut symptoms; coming from a harmonious, supportive, and well adjusted family; and being free from histories of emotionally or physically traumatic injury. In those cases a very high success rate following relatively few sessions by a minimally trained therapist using almost any one of various types of neurotherapy could be expected; perhaps placebo, perhaps not. In our experience, however, the majority of clients need (and deserve) a broadly trained therapist, willing and able to consult with other professionals as needed, and providing specific personalized training protocols based on results of a thorough diagnostic interview, neuropsychological test results as needed, and a QEEG assessment involving a well developed database.

There are no vacuums when it comes to therapy!

References

- Benedetti, F. (2014). *Placebo effects: Understanding the mechanisms in health and disease*. New York: Oxford University Press.
- Foa, E. B., Yadin, E., & Lichner, T. K. (2012). *Exposure and response (ritual) prevention for obsessive-compulsive disorder: Therapist guide* (2nd ed.). New York: Oxford University Press.
- Frey, L. C., & Koberda, J. L. (2015). LORETA Z-score neurofeedback in patients with medically refractory epilepsy. *Journal of Neurology and Neurobiology*, 1, 1–4.
- Granet, D. B., Gomi, C. F., Ventura, R., & Miller-Scholte, A. (2005). The relationship between convergence insufficiency and ADHD. *Strabismus*, 13(4), 163–168.
- Hammer, B. U., Colbert, A. P., Brown, K. A., & Ilioi, E. C. (2011). Neurofeedback for insomnia: A pilot study of Z-score SMR and individualized protocols. *Applied Psychophysiology and Biofeedback*, 36(4), 251–264.
- Lubar, J. F., & Lubar, J. O. (1999). Neurofeedback assessment and treatment for attention deficit/hyperactivity disorders. In J. R. Evans & A. Abarbanel (Eds.), *Introduction to quantitative EEG and neurofeedback* (pp. 103–143). San Diego: Academic Press.
- Nash, J. K. (2014). Vision therapy as a complementary procedure during neurotherapy. In D. S. Cantor & J. R. Evans (Eds.), *Clinical neurotherapy: Application of techniques for treatment* (pp. 383–396). San Diego: Academic Press.