



NEUROTHERAPY: A MULTILEVEL MATRIX OF INTERVENTION

ALPHA-THETA TRAINING FOR CHRONIC TRAUMA DISORDER

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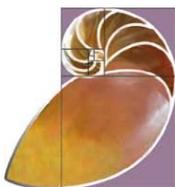
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I. INTRODUCTION

Twenty-five years ago EEG feedback was of major significance in the field of biofeedback. Elmer and Alyce Green at The Menninger Institute were experimenting with theta training and creativity, Thomas Budzynski with twilight learning, Lester Fehmi with open focus, Barry Sterman with epilepsy, Joel Lubar with attention deficit hyperactivity disorder (ADHD), and Joe Kamiya with alpha training. Others also were focusing on the training of the brain and central nervous system, but, because the technology was crude, promises of the value of brain wave training seemed to evaporate. EEG feedback became an almost forgotten stepchild.

With the publication of the research of Peniston and Kulkosky (1989), the "child" returned from exile and is growing and developing and expressing its original, almost forgotten, promise. Peniston's focus was a population of alcoholics, all of whom had been difficult alcoholics for more than 20 years and had been in rehabilitation unsuccessfully four to five times. Using his protocol of alpha-theta brain wave training combined with imagery of desired outcome, he was able to show reduction to elimination of craving for alcohol. To my knowledge this original research population is still showing better than 80% success rate some 9 years later.

Peniston and Kulkosky (1991) then expanded their research to a population of Vietnam veterans who were hospitalized for post-traumatic stress disorders and were having nightmares, flashbacks, and many other problems, dysfunctions, and diagnoses. By the end of the research protocol, the symptoms of this population also appeared to have resolved. They were no longer having nightmares and flashbacks. Whereas all subjects were on medications at the beginning of the study, only one was on medication by the end of the study and his dosage had been reduced by one-half. Perhaps the most remarkable outcomes of both of these studies were the major personality shifts that were recorded in their pre- and post-Minnesota Multiphasic Personality Inventory (MMPI-2) and Millon Clinical Multi-axial Inventory (Millon II) scores. Most of the pathology of these personalities had normalized (Peniston & Kulkosky, 1990).

A. THE PENISTON PROTOCOL

To summarize briefly the protocol originally used by Dr. Peniston in his research, the training began with several sessions of thermal biofeedback and autogenic training as an entrée into EEG feedback. In the original research the protocol involved fifteen 30-min sessions, typically performed twice a day, 5 days a week, on Veterans Administration Hospital in-patients. In the field today there are many versions of this original protocol, with the most common employing the original thermal and autogenic training followed by approximately 30 EEG feedback sessions, including an imagined scene of the rejection of the undesired behavior and imagery of desired outcome, which are introduced at the beginning of each EEG session and repeated in each session throughout the treatment. The electrode placement typically is O1, monopolar, referenced to linked ears and a forehead ground with feedback tones of the computer rewarding attainment of clinician-set thresholds of increasing alpha and theta brain wave amplitudes. Other placements might be CZ, PZ, or O2. Each clinician seems to have his or her own variations on the theme. Despite the differences in placement, results seem to be consistently positive in treatment of addictions and other symptomology.

In the initial stage of this protocol, a layman's explanation of the brain, the limbic area, the neurochemistry, and its process to effect change is believed to offer the patient both a conscious and an unconscious program to follow and, along with the clarification of goals, to create a clear intention for the desired outcome. The subsequent development of imagery of the desired outcome apparently enhances the result.

Handwarming with autogenic training and temperature biofeedback follow as the next step of this protocol. Handwarming has been used in the field of biofeedback for many years as an effective tool to correct hypertension and other symptoms of sympathetic overarousal. It is helpful in teaching one to relax and be calm in any situation. Handwarming involves the circulatory aspect of the sympathetic branch of the autonomic nervous system involved in the "fight or flight" response. In the fight or flight response, the body is alerted and blood flow is increased to the major organs. This can become a chronic stress response. To counter this state, as the peripheral circulation is increased with training, the body relaxes.

Handwarming also is a way of teaching the body to respond to cues from a tangible feedback to which the patient can easily relate and acts as a bridge to lower arousal states as a pretraining to eventual achievement of alpha and theta EEG frequencies. Autogenic training exercises (Green & Green, 1977) are used in combination with the temperature biofeedback training to achieve further relaxation of the body and a quiet, inward turned state of mind. In addition, rhythmic diaphragmatic breathing is taught to still body functions and focus attention.

During his or her initial sessions of thermal feedback and autogenic training exercises, the patient and his or her therapist develop a graphic, detailed visualization of the desired outcome, including a scene rejecting undesired behavior or a "clearing" of the condition to be altered. This final state visualization also involves the image of being already healed, which is believed to skirt the problems of potential harm that might result from imaging the healing process incorrectly, and is designed to reprogram the "unconscious" in a desired direction. "Programming the unconscious" with mental rehearsal of new images and intentions of desired change seems to effect healing and change both physiologically and psychologically (Green & Green, 1977; Achterberg, 1985; Simonton & Simonton, 1978). Imagery is one of the earliest forms of healing. There is archaeological evidence suggesting that the techniques of the shaman using imagination for healing are at least 20,000 years old, with vivid evidence of their antiquity in the cave paintings in the south of France. Asclepius, Aristotle, Galen, and Hippocrates, often regarded as the fathers of medicine, used imagery for diagnosis and therapy (Achterberg, 1985). At the present time Drs. Dean Ornish, Bernard Siegel, Norman Shealy, Carl Simonton, Larry Dossey, and others collectively (and courageously) are reinstating the role of the imagination in healing. Imagination is said to act on one's physical being. Images may communicate with tissues and organs, even cells, to effect change (Simonton & Simonton, 1978; Achterberg, 1985; Rossi, 1986; Siegel, 1986).

Many theories for the apparently remarkable success of alpha-theta brain wave training have been proposed by researchers and clinicians in the field of neurotherapy. Is it practical to take this protocol apart in its different aspects to find its power, or would this be reductionistic thinking akin to examining the vocal cords to see how one is a talented singer and another is not? The power of this protocol seems to lie in its generalized

interaction with many aspects, and it may be of greater value to examine how its impact in specific areas contributes to a whole that creates a positive outcome for most patients treated. Empirical science, as we know it, seeks to understand reality from the point of view of the five senses. However, this protocol seems to represent a technology designed for the induction of higher states of consciousness and insight, and one's relationship to the world is altered by these insights. It is a therapy that contains elements of the five senses, but its very nature takes one beyond the five senses to abilities that may lie latent within us all. It is a transpersonal therapy. Toward the end of his life, Abraham Maslow, one of the major pioneers in humanistic psychology, called attention to possibilities beyond self-actualization in which the individual transcended the customary limits of identity and experience. In 1968 he concluded, "I consider Humanistic, Third Force Psychology, to be transitional, a preparation for a still 'higher' Fourth psychology, transpersonal, transhuman, centered in the cosmos, rather than in human needs and interest, going beyond humanness, identity, self-actualization, and the like" (Maslow, 1968; Walsh & Vaughan, 1980). This protocol seems to follow his prediction. In this chapter I propose to show that within the protocol itself rational explanations of its generalized effectiveness may be found.

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II. THEORIES OF THE PROTOCOL'S EFFECTIVENESS

To begin, the seemingly remarkable workings of the alpha-theta protocol tend to fit well within the framework of generally accepted psychological contexts, among them the functions of various states of consciousness, state-dependent learning and retrieval of memories, the relatedness of multiple diagnoses in patients with major dysfunction and addictions, the effects of childhood trauma, mind-body connections, and patient-therapist relations. Each of these is discussed in the following sections.

A. STATES OF CONSCIOUSNESS AND THE CONTINUUM OF AROUSAL

Brain wave frequencies are correlated with various states of consciousness/arousal. With a predominance of beta waves (approximately 13 Hz and higher), arousal occurs and the thinking process with its accompanying ego reactions is engaged. There is a focus on the external world. With a predominance of delta waves (0-4 Hz), a sleep state, the brain is at the opposite end of the arousal spectrum, and one basically is disassociated from the external world. With a predominance of theta waves (4-8 Hz) focus is on the internal world, a world of hypnogogic imagery where an "inner healer" is often said to be encountered. Alpha brain waves (8-13 Hz) may be considered a bridge from the external world to the internal world and vice versa. With some addicts and patients previously exposed to major trauma, alpha amplitudes can be low, thereby creating an inflexibility that keeps one from shifting readily between inward and outward states (M. Sams, personal communication, May 1996). Generally with such patients there is an avoidance of internal states where one may find awareness of self.

In everyday existence, the ideal state of the ego may well be a state of poise between the inner world of self and the outer world of objects. As one increases alpha amplitudes via neurotherapy, he or she gains the ability to shift with ease and appropriateness. Any overintense concern with the outer world is tempered and the individual may gain detachment with a sense of humor and loss of ego-centeredness. As one turns inward and attains deeper states, sensorimotor awareness tends to decrease and consciousness

centers on questions concerning the meaning of life. Patients exposed to these states usually describe the latter experience as serene and peaceful, providing them with new abilities and possibilities. They seem to develop a powerful coping skill and may have access to such inner calm no matter what is occurring in their environment (Wuttke, 1992). Another related notion is suggested by the work of Thom Hartmann (1997), who states: "Everybody is familiar with the edge between normal waking consciousness and sleep: it's often a time of extraordinary feelings, sensations, and insights, particularly as we move from sleep into wakefulness.... When the brain is brought to the edge of the world of God, the place of 'true' consciousness, a fractal intersection occurs. An unstable and dynamic system is created, and, like the rainbow colors of water and oil, new energies and visions are created." The Peniston alpha-theta protocol seems to enhance this ability to shift states, to move to this edge. In such states many aspects of the self involving wisdom and insight may be encountered, and awareness of earlier traumas (or "woundings") occurs, thus making them more accessible for healing.

B. STATE-CONTEXT DEPENDENT LEARNING & RETRIEVAL

An aspect of the power of this protocol might be found in the realm of state-dependent learning and memory, or state-context dependent learning and retrieval as Jon Cowan (1993) has noted. The predominant waking brain wave frequency of children under the age of 6 is in the 4-8 Hz range associated with the "theta" frequency band in adults. As we mature, our average brain wave frequencies get faster, and in adulthood these lower frequency waves are usually associated with reverie and hypnogogic imagery, occurring largely in the transitions from wakefulness to sleep.

The surfacing of memories from early childhood during the alpha-theta brain wave training fits observations of "state-dependent memory." Because information learned while in one state of consciousness may be more difficult to access when in another state of consciousness, the natural shift in dominant brain wave frequencies during maturation could result in dysfunctional childhood learnings being preserved in the unconscious as an adult. To gain access to most of these "state-bound" memories, one may have to return to

the state in which they were created, in other words, a predominantly "theta state." In utilizing the Peniston protocol of alphatheta therapy, there is often a profound alteration in the state of consciousness of the patient. As the "subconscious" appears to become more accessible to consciousness in this deeply altered state, traumatic memories of the past are often released and appear as flashbacks from the past. As these flashbacks are relived with current adult resources and perceptions available, the contents of the "subconscious" seem more readily available for healing and alteration.

Dr. Tom Budzynski (1971, 1997) reported that a predominance of theta in the EEG was the ideal state for "rescripting" or "reimprinting" the brain, eliminating destructive behaviors or attitudes that are a result of "scripts" laid down in childhood (during times when the child is naturally in a theta state) and replacing them with more suitable and more positive scripts for a mature adult. Rossi (1986) states that each time we access the state-dependent memory, learning, and behavior processes that encode a problem, we have an opportunity to "reassociate and reorganize" or reframe that problem in a manner that resolves it. This reliving, releasing, and rescripting may be one of the few ways in which an adult can modify old scripts and store new information in the subconscious.

Robert Boustany (personal communication, 1998), a biophysicist involved in neurofeedback research, also alludes to phenomena related to state-dependent learning. He suggests that NMDA receptors act as a double lock and key to encoded patterns of behavior in the individual, and that ability to "broadly" activate the NMDA receptors is essential to personal transformation. As proposed, this activation must occur in the hippocampus of the brain, but also may occur in the amygdala and a few other areas. The use of the term *encoded patterns* indicates that children will learn certain survival response patterns while they are very young and the brain is still forming. These patterns are reflected in the subtle structure of the brain and are correlated with behavior. They may be considered as electronic circuits, which respond in specific ways. The response patterns encoded in the brain of the young child create unconscious responses later in life, some of which may be maladaptive. As an older child or an adult, a cognitive awareness that a certain behavior causes problems will not change the behavior until the "emotional pliability" to handle that insight is developed. Neurofeedback may be one means of creating more adaptive behavior by facilitating change in these encoded patterns. While

neurofeedback has been used successfully in the treatment of a variety of problems, the NMDA receptors hypothesis seems particularly well demonstrated in the treatment of alcoholism as explained later in this chapter.

Boustany proposes the following mechanisms and reasoning with respect to neurofeedback's effectiveness with alcoholism. The neurotransmitter glutamine has a protective effect against alcohol, and can be used to prevent an individual from becoming inebriated. Glutamine in the brain also relates to function of the NMDA receptors. Glutamine is required at the first stage of the two-stage process of reaching long-term potentiation (LTP) in NMDA receptors. (LTP refers to a process in which cell response to a given stimulus becomes increasingly frequent and of increasingly greater amplitude than usual.) Without LPT in certain brain regions individuals show rigid aversion to change. Although adequate levels of glutamine normally are required for LTP, certain types of repeated stimulation and theta wave production also are reported to facilitate LPT, which persists for hours or even days. Thus, in the absence of sufficient glutamine, training for high-amplitude theta waves (relative to other frequencies) with neurofeedback is believed to facilitate LTP in certain hippocampal cells, with resulting decreases in rigidity and an increasing ability to access and change encoded patterns of maladaptive behaviors. In the alcoholic, glutamine is present in reduced quantities, and hence LTP is reduced. Such persons tend to be tense and rigid and have great difficulty spontaneously producing high-amplitude theta waves. Nevertheless,, with sufficient numbers of sessions, they often learn to produce such waves. In treating alcoholism, the production of high-amplitude theta waves, as learned through neurofeedback, results in a more adaptive individual, as indicated by pre-post MMPI 2 testing. Individuals with proper neurofeedback training recognize both cognitively and emotionally the nature of their behavior and seem more readily able to walk away from addictive behaviors. It also is common for the individual who has undergone proper neurofeedback protocols to have remarkable insights into the reason for the addiction, which is a strong indication that learning, flexibility, and adaptability have increased. Typically, the individual can no longer tolerate even small amounts of alcohol, and seems readily able to end addictive behavior.

In summary, Boustany's theory asserts that NMDA receptors act as a double lock and key on encoded patterns of behavior, and when LTP is reached in certain NMDA receptors, the

individual can gain conscious access to these patterns, and thus become more adaptive, physically predisposed to stop alcohol use, mentally perceptive relative to the addiction, and emotionally able to relate to the need for change.

C. TRAUMA AND MIND-BODY INTERACTION

In the following section I discuss the notion that childhood traumas or "woundings" are the basic source of many different psychiatric disorders, several of which may exist simultaneously. Next, I discuss evidence for mind-body interactions in the manifestations of effects of early trauma, and speculate on how various alpha-theta related changes in higher conscious processes may relate to the many positive results so commonly observed during and following neurotherapy.

In surveying the field of neurotherapy we are finding that many seemingly disparate diagnoses are being treated successfully. In addition to Peniston and Kulkosky's (1989, 1990, 1991) published research on populations presenting with alcohol addiction and post-traumatic stress disorder (Vietnam veterans), Dr. Carol Manchester (1995, 1997; Manchester *et al*, 1998) reports achieving integration of dissociative identity disorder in 30-60 sessions, a disorder usually requiring years of therapy and even then with inconsistent results. Brownback and Mason (1998) have reported similar results. Psychological disorders, including affective disorders, personality disorders, "rage-aholism," eating disorders, addictions, and relational dysfunctions (including marital conflict and codependency) presumably are being successfully treated (White, 1994). Somatic complaints including hypertension, cardiovascular problems, chronic fatigue, and immune dysfunction (Schummer, 1995) were reported to be improved with this unusual approach. Several clinicians offer peak performance training. One has even worked with Olympic athletes (R. Patton, personal communication, April 1991).

Addictions, along with multiple personality disorders (MPDs), or dissociative identity disorder (DID) as it is now frequently called, usually present with a multiplicity of diagnoses. MPD patients frequently meet the diagnostic criteria for many psychiatric disorders, including depression, borderline personality disorder, somatization disorder,

substance abuse, bulimia and anorexia nervosa, panic disorder, and others. There also has been much written recently about dual diagnosis (usually multiple diagnoses) in the addict and the negative effect on recidivism (Wolpe *et al*, 1993; Continuum, 1993) and yet these patients are reported to be good candidates for this protocol of an altered state therapy.

In our work at the Neurotherapy Center in Houston, multiple diagnoses are being addressed and showing positive outcomes as measured by the MMPI and the Millon administered both pre- and post-treatment. For example, our center did an outcome analysis focusing on the five scales of depression found in these two personality tests. The population was 44 heterogeneous patients taken in order of presentation. In four of the five scales we found a statistically significant reduction ($p > 0.001$) in depression (White, 1995, 1996).

With the appearance of both research and clinical reports describing the multiplicity of disorders being addressed, most of them quite successfully, skeptics have been aroused. One of the major critics of EEG feedback (at least in the field of attention deficit disorder) speaks for many of them. Russell Barkley publicly stated during an interview by Russ Mitchell for the *Eye to Eye with Connie Chung* television show (Mitchell, 1994): "We have a rule of thumb in this business. The more things you claim you can cure, the less effective your treatment is likely to be. It's a good rule of thumb to keep in mind." In spite of the skeptics, we see remarkable positive shifts in people presenting with multiple diagnoses when using the Peniston protocol.

What accounts for the far-reaching effects of this protocol on so many disorders, including both physical, mental, and emotional diagnoses? Perhaps it is that, since we are working with the brain and central nervous system regulation with all its manifestations, we are going to the source of the problem. With the feedback tones of a computer set to reward the production of alpha and theta brain waves, the slowed cortical activity may set the stage for generalized healing and the emergence of higher states of consciousness (Wuttke, 1992).

1. CHILDHOOD TRAUMA AND STRESS

One might consider the work of Dr. Bruce Perry (1992, 1997) who states that prolonged "alarm reactions" induced by traumatic events during infancy and childhood can result in altered development of the central nervous system (CNS). He hypothesizes that with this altered development one would predict a host of abnormalities related to catecholamine regulation of affect including anxiety, arousal/concentration, impulse control, sleep, startle, and autonomic nervous system regulation. He further states that it is likely that the functional capabilities of the CNS system mediating stress in the adult are determined by the nature of the stress experiences during the development of these systems in utero and during infancy and childhood. When the stressful event is of a sufficient duration, intensity, or frequency, stress-induced "sensitization" occurs-the neurochemical systems mediating the stress response change, becoming more sensitive to future stressful events. Many factors appear to be important in the lasting impact of the trauma, for example, the nature of the trauma, the degree to which body integrity is threatened, the family support system following the trauma, whether the trauma is acute or chronic or both, and whether the pattern of the trauma and/or abuse is continued into adulthood.

A child who is reared in an unpredictable, abusive, or neglectful environment may have evoked, in his or her developing CNS, a milieu that will result in a poorly organized, "dysregulated" CNS catecholamine system. Early life trauma may play an important role as a facilitator of genetically determined vulnerabilities to a variety of neuropsychiatric disorders and medical conditions. That is, it could be hypothesized that such an individual would be susceptible to the development of more severe signs and symptoms when exposed to psychosocial stressors through the course of his or her life. For instance, Schneider (1998) states that a child, particularly in the first year, who lives in a constant state of fear from abuse will often exhibit an overdevelopment of the sympathetic pathways that may lead to post-traumatic stress disorder (PTSD). With the brain bathed in dopamine and acetylcholine, the amygdala is overstimulated, with lasting and permanent effect in the orbital frontal area of the cortex. Ventral tegmental dopamine is accelerated and the sympathetic system is overstimulated. The child is potentiated to develop PTSD later in life. When trauma is experienced, the vulnerable system from childhood may elicit PTSD

symptoms. PTSD involves a heightened excitation of both sympathetic and parasympathetic systems as defense against trauma. Even if the brain itself is not injured, the old PTSD-eliciting circuits apparently remain.

From the field of genetics, Blum (Miller & Blum, 1996) has offered further information on the handling of stress. His research proposes a reward deficiency syndrome (RDS), which involves imbalance of neurotransmitters in the brain related to the A1 allele of the dopamine receptor gene (DRD2). Originally called "the alcohol gene" it is now recognized that it is not limited to an alcoholism marker, but may be a gene involving pleasure states. To feel pleasure or relief from pain, the brain's receptors must be stimulated with large amounts of dopamine, particularly in times of high stress. When there is an imbalance or shortage of dopamine and other pleasure-related chemicals, the addict will ingest mood-altering substances to control stress and restore a sense of well-being, a desire for euphoria. (These substances imitate and fit into the brain's receptors for natural brain chemicals and prevent the reuptake of these naturally occurring "feel good" chemicals, creating a flood of such chemicals and resulting in feelings of euphoria.) A traumatized person with this gene variant could illustrate this inability to manage stress. In fact, there is one report that 59% of Vietnam veterans diagnosed with PTSD showed this DR2 gene variant (Miller & Blum, 1996).

In a recent issue of *Science News*, two brain-imaging studies, conducted independently, were reported which indicated that severe, repeated sexual abuse in childhood may result in damage to the hippocampus, a structure in the brain that helps orchestrate memory. Significant reductions in the size of the hippocampus were found both in a study of Vietnam veterans and in a population of women who had suffered severe sexual abuse during childhood. The severe trauma reportedly had unleashed a cascade of stress hormones that harmed the hippocampus and related areas over time (Bower, 1996). Such cerebral injury may predispose people to experience an altered state of consciousness known as dissociation, which involves an alteration in consciousness induced by terror, including absorption in one's thoughts to the exclusion of the external world, feelings of detachment from one's body or self, and/or memory lapses. Such injury often leads to the development of other symptoms of PTSD, perhaps exacerbated if the genetic marker for RDS occurs as mentioned earlier.

As the studies mentioned suggest, there is much evidence that trauma, especially childhood trauma, can have negative effects on brain development and function and later resistance to stress.

2. MIND-BODY RELATIONSHIPS

The work of Candace Pert (1993,1997) illustrates that emotion and body chemistry are inseparable, "mind is body and body is mind." It is known that stress elicits neuropeptides and that the whole body undergoes physical changes when it is under stress. Years of research from scientists such as Walter Cannon and Hans Selye have shown the potential for stress to hamper the immune system. Furthermore, it has been shown that feelings of helplessness and powerlessness can suppress immune response (Schummer, 1995). However, it also has been reported that a variety of techniques, such as eliciting specific images or positive feelings, giving certain suggestions, and learning to respond to stressors in more relaxed ways, all have the potential for increasing the ability of the immune system to counter disease (Achterberg, 1985). Further studies have shown that the immune system itself is under direct control of the central nervous system, perhaps especially those areas of the brain implicated in the relating of imagery to body processes (Achterberg, 1985; Rossi, 1986). Thus, something as intangible as one's perception of an event alters the chemistry of the body (Pert, 1997). It follows from this that the imagined rejection of unwanted behavior and the image of desired outcome involved in the alpha-theta protocol have potent roles to play.

On this mind-body point, Steve Fahrion (1995), quoting Henry (1992), stated, "Activities that are usually unconscious in the early stages of life must be allowed to arise in the form of symbols (in other words, hypnogogic imagery) that have both emotional and informational value that themselves serve to integrate the activities of the limbic system and the neocortex." Perhaps this is the condition produced when one enters the "theta state" and is held there by the feedback loop. In this state one experiences awareness without active thought (process without content), a sort of void in which unconscious material is accessible apart from the surveillance of the waking ego and in which only "potential" exists. As the void is extended in this state (as with Dr. Deepak Chopra's "silent

space between the thoughts"), elements of the "hidden blueprint of intelligence" (Chopra, 1989) may be unmasked and altered by the patient's current intent, earlier made real to him or her through active visualization.

It is known that emotions alter neurochemistry and vice versa, and that neurochemistry alters brain waves. Could it not happen the other way around? Could not the altering of brain waves alter neurochemistry? The brain's cortex interacts with the limbic system, often referred to as the emotional brain, by means of its cortical-subcortical connections. These cortical-subcortical connections process elements of emotional memory orchestrated by the limbic system, perhaps from "banks" of the unconscious and perhaps mediated by the hippocampus (Winson, 1990). By consciously and deliberately increasing amplitude of theta during neurofeedback, a specific state of consciousness may be created into which one can "drop" imagery of desired outcome, providing intent to this goal-directed system as an agent of change.

It has been stated that we have no voluntary control over production of theta brain waves (Serman, 1995). If so, we must question whether or not, during neurotherapy, one is simply learning the ability to let go of the "thinking" mind and enter a state where theta waves are dominant. With the feedback tones of neurofeedback equipment, one learns to enter this state with some degree of reliable consistency. It would seem that this essentially constitutes the equivalent of deliberate control of the theta rhythm. In any event, from the research mentioned earlier, one can readily hypothesize that the changes which occur during neurotherapy are reflected not only in the brain wave patterns, but in the underlying neurochemistry as well.

To summarize this section on trauma and mind-body interaction, the view was presented that traumas, especially early childhood "woundings," adversely affect brain structure, neurochemistry, and the immune system, giving rise to multiple symptoms and diverse psychiatric diagnoses. It was suggested that the altered state associated with production of theta frequency EEG (perhaps in conjunction with specific visual imagery) alters neurochemistry in positive directions, thus accounting for its reported effectiveness with diverse disorders.

D. PATIENT-THERAPIST RELATIONSHIP

In examining possible reasons for effectiveness of the alpha-theta protocol, it would be inappropriate to overlook the importance of the therapeutic alliance. Brugental (1987) states, "The art of psychotherapy . . . insists that what goes on inside the therapist, the artist, is crucial to the whole enterprise." Relatedly, others such as Dr. Edgar Wilson have reported brain wave synchrony between healer and patient at the time of peak effectiveness (Cowan, 1993). Fahrion *et al* (1993) found that this interpersonal EEG synchrony was highest during times of apparent healing, especially in the alpha frequencies between left occipital areas of the practitioner and the patient. Several instances have been reported by clinicians in which even the thoughts of the therapist in another room simultaneously seemed to influence the subject matter of spontaneous imagery of the patient.

White and Martin (1998) state that the quality of the patient relationship with the therapist seems to be a significant component, especially during the abreaction/catharsis. The therapist's empathy and sensitivity to the patient's emotional healing experience during the highly charged, vulnerable experience of the theta state is important to create the atmosphere of trust needed for the patient's willingness to "let go." The seasoning of the therapist, not so much by the years lived, but by life traumas the therapist has experienced and from which he or she has healed, may create the power and compassion of the therapist's "inner healer" that connects with the inner healer of the patient and offers hope. While the exact nature of any such connection may be unmeasurable at present, neurotherapists generally agree that trust of the therapist and rapport between therapist and client are crucial to successful treatment. As in Bell's theorem (Herbert, 1988), the therapist and patient can no longer be considered as separate and independent units, because both are changed in the process of healing.

III. TOWARD A SYNTHESIS

Section II of this chapter covered views of the effectiveness of neurotherapy from the viewpoint of generally accepted constructs in psychology, that is, varying states of arousal associated with different EEG frequencies, state- and context-dependent learning and memory, and effects of early stress and trauma on subsequent development and behavior. These perspectives on the effectiveness of the alpha-theta protocol seem to have common threads which lead to the possibility of a synthesis. To get to that point it is important to view these seemingly disparate approaches not as isolated viewpoints, but as parts of a system. In this section I attempt to do this by first discussing the concept of chronic trauma disorder.

Colin Ross (1989), an authority on multiple personality disorder (MPD), writes that the *Diagnostic and Statistical Manual* (American Psychiatric Association, 1994) should have a category for chronic trauma disorder, of childhood or adult onset, with and without MPD. This would be a hierarchical diagnosis of which currently disparate diagnoses are a part, with persons who had been most severely abused earlier in life and who developed dissociation as a defense becoming MPD. Those who were less severely traumatized (or less "gifted" at dissociation) might develop somatic symptoms, personality disorders, panic disorders, depression, and/or addiction, all probably exacerbated by genetic predispositions.

Ross (1989) analogized that chronic trauma disorder is a single field, with distinct regions. These different regions are called affective disorder, eating disorder, substance abuse, and so on. Numerous regions of the field can be activated simultaneously in a given patient. These subregions can occur in different combinations in different patients. From this point of view, chronic trauma disorder could be seen as a single diagnostic entity. Following such reasoning, the core issue (the chronic trauma) may be hidden in one's unconscious, and may be viewed as permeating all levels of the self: physical, mental, emotional, and spiritual. Thus, childhood trauma would become the source out of which multiple symptoms and disorders flow. Relatedly, results of acute trauma in adulthood would correspond to PTSD. Severity and chronicity of previous trauma could account for the varying severity and multiplicity of diagnoses seen in clients. Perhaps a core diagnosis

of trauma disorder would be most appropriate, with modifiers of acute versus chronic, childhood versus adult onset, and with or without dissociative features.

We all have experienced some degree of trauma or "wounding." That is, we all were born small, helpless, and dependent in a world of giants who controlled our lives and abused some of us. How could we escape some trauma at an age where we may not have been permitted, or had the opportunity, to process events of emotions and, in most cases, were not capable of processing them had we been allowed to? So, in this view, each of us carries with us core issues based on earlier trauma that helped form the foundation of present and future patterns of beliefs, reactions, and emotions. The more deeply wounded carry with them repressions that manifest themselves as symptoms leading to multiple psychiatric diagnoses.

In the following paragraphs I attempt to explain how the alpha-theta neurofeedback protocol may be effective in overcoming or ameliorating trauma disorder. In doing this, there will be some reiteration and elaboration of ideas presented in Section II, along with introduction of some additional ideas mainly from the field of transpersonal psychology.

A. A MULTILEVEL MATRIX

The Peniston protocol (Peniston & Kulkosky, 1989), initially focusing on the reduction to elimination of addiction, has, in my opinion, created a multilevel matrix approach that can simultaneously treat multiple diagnoses such as affective disorders, anxiety, post-traumatic stress disorders, personality disorders, and some somatic complaints along with addiction. As shown in graphic form in Fig. 13.1, I perceive these disorders as ranging along a horizontal continuum. Juxtaposing certain aspects of self-the unconscious, physical, emotional, mental, spiritual, and transpersonal aspects in this case-along a vertical axis creates a multilevel matrix describing the potential reach of this protocol. Computerized EEG feedback, a therapeutic relationship between patient and clinician and the imagery of desired outcome, succeeds in interfacing technology with compassionate personal contact. I believe this protocol concurrently affects the physical addictions, the underlying neurological conditions, psychological states, *and* the client's spiritual nature.

Major details of the dynamics of this matrix of intervention may be further understood by considering concepts such as COEX systems, and various concepts from the transpersonal domain.

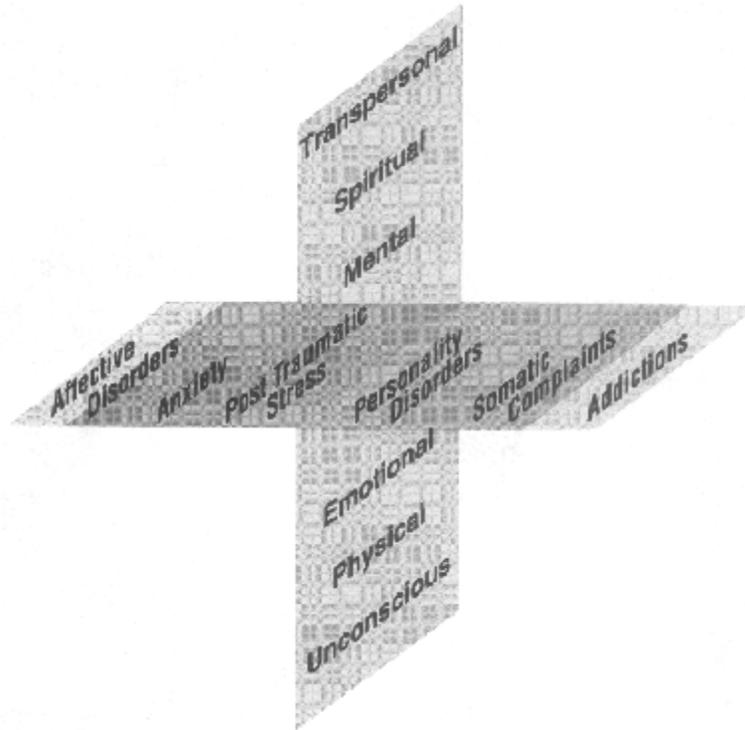


FIGURE 13.1 The Peniston protocol creates a multilevel matrix of intervention with its horizontal axis of diagnoses and presenting problems and its vertical axis of levels of the Self and Self connected to All That Is.

B. COEX SYSTEM

In deeply altered states, when people experience abreactions and flashbacks, they are encountering what some refer to as the *psychodynamic realm*. These experiences are associated with and derived from material from the subject's life, particularly from emotionally highly relevant events, situations, and circumstances. They seem related consistently to important memories, problems, and unresolved conflicts from various periods of the individual's life since early childhood. These flashbacks can take the form of reliving memories of traumas not accessible in normal states of consciousness. The memories may take the form of a variety of experiences that reflect unconscious material

in the form of symbolic disguises, distortions, and metaphorical allusions, often presenting as hypnagogic imagery that seems to spring into consciousness from unconscious sources. This concept relates to the writings of Stanislav Grof (1976, 1980, 1985) and his work at the National Institute of Mental Health with LSD psychotherapy, another consciousness-altering type of therapy used in the 1950s and 1960s until the drug was scheduled by the federal government. Grof offers the principle of specific memory constellations, for which he has used the name COEX systems (systems of condensed experience). A COEX system can be defined as a specific constellation of memories from different life periods of the individual. The memories belonging to a particular COEX system have a similar basic theme or contain similar elements, and are accompanied by a strong emotional charge of related quality. The deepest layers of this system are believed to be represented by vivid memories of experiences from the period of birth, infancy, and early childhood, and seem to represent a summation of the emotions belonging to all the constituent memories of a particular kind. A given individual can have several COEX systems. Entering the deeper state evoked by alpha-theta neurofeedback training, with its apparent access to deeper layers of repressed emotion, perhaps affords one the opportunity to confront certain COEX systems containing unprocessed energies related to past trauma (state-dependent retrieval).

In "normal" or waking consciousness, in both our internal and external perceptions, we experience ourselves as existing within the boundaries of our physical body and are confined by the usual spatial and temporal boundaries. We vividly experience our present situation and our immediate environment. We recall past events and anticipate the future. We live in our "life drama." In the training with feedback tones of a computerized EEG, as the patient obtains deep alpha and theta states, there appears to be a disidentification with the "ego self." It is within this state that many of our clients spontaneously report experiences of flashbacks of earlier forgotten and traumatic times, events that may have been etched in memory systems because of their perceived survival value. From this detached state, the intensity of the emotional reaction is greatly lessened. "Ego bracing" is lessened to eliminated. In this state, which I call "suspended animation," with the encounter with suppressed material facilitating inner resolution of the earlier trauma, the personality system seems to move to a higher order of functioning (White & Martin, 1998). As noted earlier, COEX systems are said to be specific constellations of memory

accompanied by strong emotional charges of related quality. When consciously accessed, affect related to traumatic memories may be discharged (catharsis) and neurochemistry modified in a positive manner. When trauma is "released" in this manner, it may make it possible for new, more desirous "programs" to be entered into the "unconscious" by way of the prescribed, intentional imagery involved in the alpha-theta protocol.

If one ascribes to the theory of chronic trauma disorder and to the idea that, as children and perhaps as adults, all of us have lived on a continuum of actual or perceived abuse, we all may have a need to explore related COEX systems. What causes one to experience test anxiety or fear of talking before groups? What causes the athlete to clutch in that moment when ultimate performance is needed? Could it be anxiety of many possible etiologies, most of which involve childhood adaptations? Many peoples' lives show evidence of excessive fear of not being good enough, an obsessive need to prove oneself, extreme need for approval, a perceived need to perform extremely well, a need to be loved and accepted at any cost, or a need to be number one, all possibly growing out of some early trauma related sense of inadequacy and low self-confidence. While there could be as many degrees and specific causes of these as there are people and childhoods, alpha-theta neurofeedback may, for the reasons suggested earlier, have value in most such cases.

To summarize Section III thus far, alpha-theta neurotherapy seems to enhance the ability of the brain to shift state. By encouraging the brain to move toward the lower end of the arousal continuum, the protocol may access theta state-dependent memories of early traumas, which when retrieved, can be altered in a positive way, with accompanying positive changes in neurochemistry.

C. THE TRANSPERSONAL DOMAIN

While the preceding paragraphs are an attempt to synthesize several views on dynamics of neurofeedback, no examination of the effectiveness of the alpha-theta protocol would be complete without commenting on the transpersonal realm reportedly often encountered

using this protocol. Observations of the transpersonal realm are beginning to suggest that consciousness is involved in the so-called material world in ways previously unimagined (Grof, 1993). Amit Goswami (1993), professor of physics at the University of Oregon, even offers the premise that consciousness creates the material world. In any event, the material world and the world of consciousness and creative intelligence, rather than being from two distinctly different realms with discrete boundaries, appear to be engaged in a constant dance, their interplay forming the entire fabric of existence. This is echoed by physicist Nick Herbert, in his book *Quantum Reality* (1985), and is a notion that is being confirmed in research by others in modern physics, biology, thermodynamics, information and systems theory, and other branches of science (Grof, 1993). Out of his government research with 4,000 patients in LSD psychotherapy in controlled settings and a further 20,000 "Holotropic Breathwork" sessions with people from all walks of life, Stanislav Grof, M.D., formerly a professor at Johns Hopkins School of Medicine, offers a cartography of inner space that transcends linear space and time and includes, but goes beyond, one's individual biographical domain to the transpersonal such as out-of-body experiences, spirit guides, visions of light, sense of being pure energy in the cosmos, and so on. In general, this realm moves beyond the Newtonian cause-and-effect world and parallels ancient views of human consciousness that have existed for millennia. Philosopher and writer Aldous Huxley called this the "perennial philosophy." There are parallels with shamanism, the great spiritual philosophies of the East (such as different systems of yoga), various schools of Buddhism or Taoism, the mystical branches of Judaism, Christianity, and Islam, and with many other esoteric traditions of all ages. This mystical reality is said to bring knowledge and insight from sources beyond, and can happen in an altered state if the barriers separating self from nonself become fluid, and the imagination reaches beyond the intellect (Achterberg, 1985). Related to this, it is not unusual for some neurotherapy patients to report experiencing an "inner guidance." This takes many forms, on a continuum from deep insight to the sense of another being or animal appearing to them. Among the transpersonal experiences reported by many alpha-theta neurofeedback patients, three concepts seem to be especially common and facilitative of major positive change. The first of these is what some have called the "witness consciousness." In this phenomenon the client appears to be transported into a suspended, objective state wherein he or she experiences an observing self. Deepak Chopra (1989, 1993) offered a metaphor for this type of process with a verse from an ancient Indian Upanishad: "A man is

like two doves sitting in a cherry tree. One bird is eating of the fruit while the other silently looks on." This dimension of self seemingly is able to experience and perceive a "bigger picture" of any original trauma, enabling the patient to perceive from a broader domain and experience less judgment and more acceptance. This capacity to go beyond the pain of the original trauma seems to allow one to release and discharge prior unexpressed emotional pain. There seems to be a carryover when the patient returns to what one might call "normal" waking consciousness, with one then living more in a state of acceptance of "what is" rather than how one wishes it to be, and more able to "let go" of unwanted thoughts and feelings.

A second concept is the "resource self." This seems to be an aspect of the witness consciousness although there is a different quality to the experience. Whereas the witness consciousness could be defined more as an "observing self" that watches with interest and without judgment, the resource self is experienced as the personal adult self available to the child being abused in the abreactive flashback situation and becomes "his" or "her" champion and rescuer. In essence, it seems the individual incorporates the protective and nurturing "inner parent" for representing/rescripting his life. A part of self thus is reclaimed that is not the victim and can take care of and care for oneself.

The third concept is that of the "inner healer." The deeply altered state of consciousness that some neurotherapy practitioners term the "theta" state may also produce this inner healer that "targets" somatic issues, strengthens the immune system, and, otherwise, physically energizes the subject (Schummer, 1995).

One middle-aged professional man, who had no prior experience of the transpersonal realm, reported during treatment that he had experienced a guide that he referred to as his "higher power," which appeared in different guises. Initially his guide appeared as a hawk. Frequently, the guide appeared as a Native American who told him he was his great, great, great grandfather (who was known to have been an American Indian). In one alpha-theta session, the hawk reportedly appeared to him and took him on its wings and soared out into the cosmos. From there, the hawk pointed out the earth to him and then the pinpoint that was his home. He explained to him the insignificance of his local reality in comparison to the vastness of the cosmos. No sooner had he absorbed this idea, than he

claimed he was quickly propelled to earth where he was taken to the microcosm world of the earthworm. It was then explained to him the significance and importance of all things. Truth is often found in paradox (White & Martin, 1998). This same man had had a difficult relationship with his father for most of his life. They were not close and he did not understand his father and his coldness. During one session, he was "taken back" in time to where he reported experiencing that he was his father as a child. He returned to normal waking consciousness with a new understanding and compassion for his father (White & Martin, 1998). Again Grof (1993) confirms this: ". . . people in non-ordinary states have reported that they experienced episodes occurring long before their own conceptions. For example, many report being able to enter the consciousness of their parents during their mother's and father's childhoods and to experience through their parent's consciousness events from that time."

To help understand these transpersonal experiences that seem to positively alter attitudes and create healings, one might turn to quantum physics, which claims reality is an undivided wholeness and that, in spite of its obvious partitions and boundaries, the world in actuality is a seamless and inseparable whole (Herbert, 1985; Capra, 1975). Similarly, the English physicist David Bohm states that one is led to a new notion of unbroken wholeness, which denies the classical analyzability of the world into separately and independently existing parts. The inseparable quantum interconnectedness of the whole universe is the fundamental reality (Bohm, 1983). On the other hand, one might consider such experiences simply as akin to dreams experienced in the altered state of sleep that, nevertheless, appear to facilitate positive behavioral change. Perhaps these phenomena also could be conceived of as resulting from neurofeedback-induced changes in neurochemistry. In any event, they often are reported and seem to be important correlates of successful healing experiences.

The alpha-theta neurotherapy protocol may recapitulate the Hero's journey (Campbell, 1988) where life sends us on our odyssey from the warmth of the oneness and safety of the womb (naivety) to experience the "sacred wounding" of the young child, to the adult's healing of the wounds and the insightfulness that follows that healing, to the return to more conscious oneness with conscious knowing (maturity). This is a cycle in which the external journey becomes the journey inside the self, spiritually and psychologically, perhaps returning to the center of our own existence.

IV. A CASE STUDY

The case study of B.K. offers a means to further illustrate various points made earlier in this chapter. B.K. was the first patient our clinic trained with the alpha-theta protocol several years ago and, though we have trained many since, she still remains a very clear example of the healing process that can occur.

A. BACKGROUND AND TREATMENT EXPERIENCE

B.K. was referred to us by her Alcoholics Anonymous sponsor who called to say that B.K. had been sober for 3 years, but had begun drinking about 3 months prior and was craving alcohol. Her sponsor knew of nothing more to do with her and asked if we could help. B.K. made an appointment and appeared at our office in what seemed to be a somewhat anxious and skeptical state, but stating that she wanted help with her dilemma. Typical of most of our patients who are treatment resistant and/or high risk, she presented with multiple diagnoses. She was obese and reported that she had frequent panic attacks, was a binge eater, was depressed and had suicidal ideation, though she had no plan and said she really did want to live. She was a self-mutilator and had migraine headaches. Perhaps the most difficult aspect of her case was that she was "emotionally phobic"-unable to express any feelings and would panic, become immobilized, dissociate, binge eat, or leave and get drunk when pressed to face any emotion-arousing situation.

B.K. came from an alcoholic family. Her sister is an alcoholic; her mother, a nurse, died of alcoholism; her father, a doctor, senile before his death, also was alcoholic. Her mother's brother froze to death on a porch at age 19 when he came home drunk and his family would not let him in the house. She said she knew that her paternal grandfather was alcoholic, and believed that some of her mother's family members also may have been. Her initial testing with the MMPI-2 revealed an anxiety disorder or dysthymic disorder superimposed on a schizoid personality disorder. Both of the diagnoses fit our clinical impression of her. Her testing also showed a possible schizophrenic disorder. Results of Millon II testing revealed some elevation on borderline personality and on the compulsive

and dependent scales, all of which also fit our impression of her.

She agreed to treatment using neurotherapy. At the sixth session, she experienced abreactions during the session and was having auditory hallucinations, but desired to continue with sessions. She began having flashbacks and during the fifteenth session experienced a flashback and perceived that she had been sexually abused in the crib, presumably by her father. She recognized this as the probable core of her lifelong problems. She had lived her life as a victim (her own and others'), yet when she had the flashback of crib abuse, she claimed her adult self appeared to her in the room and said in a booming voice, "How dare you!" and took the baby from the abuser. This apparently was what some call the "resource self" that had not appeared in her life before. Using neurotherapy, we have found that this phenomenon occurs with many female clients who have reportedly experienced sexual abuse. The adult self will enter the flashback and say "How dare you!" or "Don't you ever do that again!" and rescue the child. An inner resource seemingly is reclaimed, and the patient never is fully the victim again. This has been a spontaneous occurrence, apparently emerging from some part of the self and not programmed by us.

B.K. completed the treatment with a total of 30 sessions and was retested. The MMPI-2 (see Fig. 13.2) showed no clinical diagnosis on Axis I and personality disorder NOS on Axis II. There was a major drop in the Depression scale from 81 to 53. She was no longer suicidal. She showed the same shifts on the Millon II with the Dysthymia scale dropping from 102 to 34, and Borderline dropping from 86 to 70. These scores also fit our impressions of her. Perhaps most noteworthy was her pretreatment Millon II score of 71 on the Schizoid scale reflecting her unwillingness to process any emotional content. Her post score of 00 on this scale suggested that she now could be "emotionally available" for further therapeutic treatment. Her elevation on the Histrionic scale on the post-treatment Millon II (see Fig. 13.3) may be perceived as a positive developmental step, suggesting she was now not blocking her emotions. She was still slightly high on Psychopathic Deviate on the MMPI-2 scale. We often see this scale remaining slightly high after EEG feedback training, and this could be related to a developmental stage of owning one's own creativity and independence. She came in for five "booster" sessions during the next year when she felt stressed and sensed that she was losing some of her inner peace and

connection to herself.

After the completion of the neurotherapy program, B.K. reported no craving for alcohol and said she was able to face her emotions. She then went through our center's PAIRS program, which is an intense 120-hour group program extending over 4-5 months, attended by couples and singles. The focus is predominantly on the relationship with one's self. It is usually a very emotional experience, and our belief is that she could not have gone through this if she had not completed the EEG feedback training. During this extensive period of time, she only left the room and the group one time. She was gone for about an hour and returned. She shared with the group that she had left, and told them that she knew why she had left-it was the weekend on sexuality. She reported, quite proudly, that she knew why she had left and that, though she had left, she never left the building and had returned.

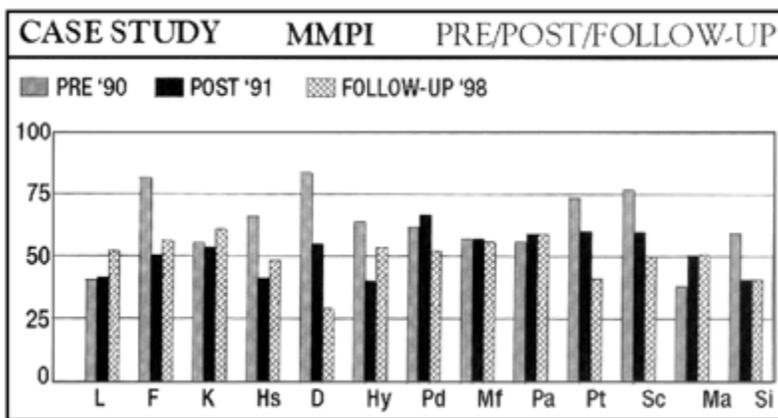


FIGURE 13.2 Pre-, post-, and follow-up testing graph of the MMPI-2 of B.K.

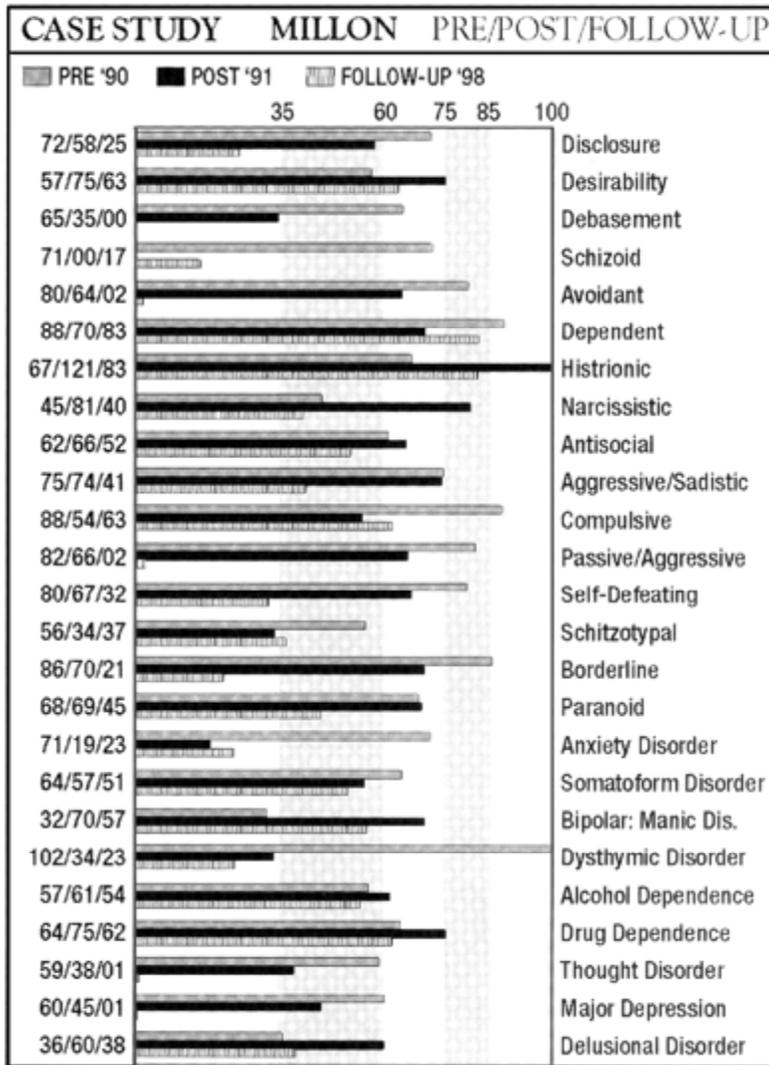


FIGURE 13.3 Pre-, post-, and follow-up testing graph of the Million II of B.K.

B. FOLLOW-UP

Several years later I saw B.K. at a lecture and she came up to speak. She appeared healthy and well groomed. She was still overweight, but said she was no longer bingeing on food and had remained sober. She said she was in an incest survival group and that memories were still surfacing, but when they did she would feel sad and grieve for a few days and then be able to let the associated negative feelings go and move on with her life.

She reported a good relationship with her husband and claimed to be doing well on her job.

At the time of this writing she agreed to do an almost 8-year follow-up on her MMPI-2 and Millon II personality inventories (see Figs. 13.2 and 13.3). All scales of the MMPI-2 now are fully within normal limits. The computerized printout stated that this clinical profile is within normal limits, with no clinical diagnosis provided on either Axis I or Axis II. The Psychopathic Deviant score had dropped to within normal limits, and the Depression scale had dropped from its original T score of 81 to 30. The Millon II follow-up showed that the Borderline scale (originally scored 86) now is 21; Dysthymia (originally 102) now is 23; Debasement is 0; Avoidant and Passive-Aggressive scores are 2, with Thought Disorder and Major Depression scores of 1. B.K. has continued her sobriety and her path to health. B.K.'s case involves many aspects of the healing commonly seen using this protocol and illustrates many points, including what have been called the "witness consciousness" and the "resource self," which were described in the preceding section.

V. SUMMARY AND CONCLUSIONS

Alpha-theta neurotherapy has demonstrated what the research team of Elmer and Alyce Green and Dale Walters at The Menninger Foundation said in the 1970s: Causing the brain to generate theta activity daily over a period of time seems to have enormous benefits, including boosting the immune system, enhancing creativity, and triggering or facilitating "integrative experiences leading to feelings of psychological well-being." The protocol seems to transcend the patient's lack of motivation to change, initial incapacity to create internal visual imagery, and/or disbelief in the effectiveness of the treatment. Frequently a patient's experience and results far exceed the goals targeted (in the visual imagery).

Entering a deeply altered alpha-theta EEG state of arousal seems to create a link to a subconscious realm where a wider vision of the self without its ego adaptations is contacted. This link may be associated with concepts of context and state-dependent learning and memory. Beyond overcoming the presenting problem, the treatment appears to evoke in the patient more general, adaptive shifts in behaviors, attitudes, relationships, health, mental processing, job performance, and creativity. A large number of psychiatric diagnoses appear to respond to this treatment. In this chapter, it was suggested that this may be due in large part to neurofeedback enabling conscious access to repressed memories and related to affect concerning earlier trauma, especially childhood trauma. With this access may come cathartic reactions, positive changes in neurochemistry, and an "opening" of formerly unconscious realms to the effects of positive imagery and suggestions. Furthermore, it was speculated that when the conscious mind enters the EEG range of theta and "surrenders" to what some call the "mind field" the brain/mind system is enabled to go through a dramatic and profound reordering process much like that described by Illya Prigogine (Capra, 1996) as "escape to a higher order." Such transcendent experiences may involve transpersonal realms that some have attempted to explain through concepts of quantum physics. These transpersonal phenomena include frequent experiences during neurofeedback of a witness consciousness, a resource self, and an inner healer. Whether one ascribes these phenomena to explanations from quantum physics or to dreams or hallucinations, they appear to be important factors in many of the major personality changes seen following neurofeedback.

In the alpha-theta protocol the raising of amplitude of alpha and theta EEG is seen as a precursor to the process of healing. The possibility exists that if one could create a structured meditation program for a patient, over a period of time there would be similar deep shifts in personality and behavior. However, as Walsh et al (1980) state, meditation training is usually extraordinarily intense and arduous, often demanding decades if not a major portion of life to reach complete fruition. I suspect that with neurotherapy we are compressing time, and, in less than 2 months, achieving results that adepts such as yogis experience only after many years of meditating. Achterberg (1985) states, "Electronic technology used as biofeedback has taught us to enter an altered state of consciousness at will. Shamanism, as it has been practiced in the traditional manner of healing, may become obsolete after 20,000 years."

The broad range of effectiveness of this therapy might lack credibility if it were not for the fact that early childhood trauma has such a wide range of psychological and physiological effects. It is sometimes proposed that addiction is the behavioral expression of an emptiness the addict finds within and the attempt to find a spiritual connection to fill this void. The same might be said for most of those who carry residue of childhood trauma expressed in some complex interaction with the central nervous system. Perhaps, in addition to the theories of the effectiveness of alpha-theta training discussed in this chapter, it is the experience of such a spiritual connection that is a major healing force behind the extraordinary healing so often seen with this training. In other words, one connects with the God within, in whatever terms one wishes to express that, and opens one's heart to love-love of oneself and love of the other.

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