

Alpha Waves For Addiction

Posted on Saturday June 12, 2004

To appreciate the different ways EEG biofeedback is being applied today, it helps to understand some brain-wave basics. The brain continuously produces combinations of four distinct frequencies, or speeds, of brain waves -- delta, theta, alpha, and beta -- and our state of consciousness depends on which of these waves is dominant. When we sleep, delta waves take over, with their slow-moving signals traveling at up to 4 cycles per second, or four hertz (Hz). Slightly faster are theta waves (4 to 8 Hz), associated with the twilight consciousness on the brink of sleep in which dreamlike mental images can surface. Above theta is alpha (8 to 12 Hz), the calm and mentally unfocused state typically connected with relaxation. In our normal waking state, when our eyes are open and focused on the world, beta waves are in charge. Within beta itself, scientists recognize a range--from low beta, a relaxed but alert state of 12 to 15 Hz, to the excited, anxious state of high beta, which can climb as high as 35 Hz.

Much of the early interest in EEG biofeedback focused on helping people learn to generate waves associated with deep relaxation: alpha and theta. Alpha-theta biofeedback was pioneered in the '70s by Elmer and Alyce Green of the Menninger Clinic in Topeka, Kansas -- still a leading center for biofeedback research -- and Joe Kamiya, a researcher in San Francisco. The researchers found that if biofeedback users were alerted with an audible tone when they generated sufficient alpha waves, the subjects could, in just a session or two, get into a deeply relaxed state -- a state as deep as that reached by people who'd meditated for years. Today, alpha training is commonly practiced to reduce stress and anxiety and to help manage pain.

Recently, however, researchers have begun studying some surprising new applications for alpha-theta training. In one provocative, if small-scale, 1989 study, Eugene Peniston, a clinical psychologist then of Fort Lyon Veterans Affairs Medical Center in Fort Lyon, Colorado, gave ten chronic alcoholics thirty sessions of biofeedback training focused on boosting their alpha and theta waves. A second group was given conventional treatment, including participation in a twelve-step program and antidepressant medications. As part of what has since become known as the "Peniston protocol," alcoholics in the first group were coached in basic relaxation techniques, trained to boost their own alpha-theta waves, and led through visualization and imagery exercises (such as scenes in which they saw themselves refusing an offered drink). Counseling was also provided to help subjects work through any images and feelings that might surface. At the end of a month of treatment, the biofeedback trainees achieved an unprecedented 80 percent abstinence rate, compared to 20 percent in the conventional group. What's more, when the trainees were followed up five years after treatment's end, their recovery rate remained an impressive 70 percent, having declined by only 10 percent.

What's to account for the dramatic shift? Alcoholics before treatment have trouble reaching and staying in the alpha state, where "self soothing" neurotransmitters are produced, theorize researchers. Often they turn to alcohol as an artificial means of inducing this state of relaxation. But as biofeedback treatment progresses, and those self-soothing neurotransmitters begin to flow, the craving for a drink may be reduced.

Another possible reason for biofeedback's effectiveness is that it can help subjects stay in a theta, or hypnagogic, state for a sustained period of time. While people pass through theta on their way to sleep every night, they quickly move on to delta. "EEG helps people linger in theta," says Dale Walters, of Topeka, Kansas, who conducted biofeedback at the Menninger Clinic and is currently

working to set up a six-week outpatient biofeedback program to treat addiction in Kansas City, Missouri. In a theta state, says Walters, childhood memories and buried emotions bubble spontaneously to the surface. With the help of a psychologist, he says, such associations can often be worked through. "Those experiences lead to unblocking of intense emotions," says Walters.

Peniston's treatment is slowly beginning to make inroads into clinical settings. In Topeka, Kansas, the Life Sciences Institute of Mind-Body Health now offers an intensive outpatient program that includes seven weeks of two-and-a-half hour daily alpha-theta training sessions, coupled with intensive psychotherapy. According to Carol Snarr, a registered nurse and biofeedback therapist at the Institute, the program has so far treated not only alcoholics but also drug addicts, people with eating disorders, even smokers, some of whom have come across the country for treatment. "It is truly a way to integrate body, mind, emotion, and spirit," she says. Over the next few years, the Institute will be following patients' progress as part of a long-term follow-up study on Peniston's findings.

From: [Virginia White's Biofeedback and Behavioral Therapy](#)