OVERCOMING DEPRESSION THROUGH BRAIN STATE CONDITIONING

By Vijendra K. Singh and Lee Gerdes

Depression or major depressive disorder (MDD) is a very serious medical illness affecting an estimated 25 million Americans and millions more worldwide. It significantly changes an individual's ability to function on a daily basis. Symptoms include persistently sad or irritable mood, pronounced changes in sleep, appetite, and energy, difficulty thinking, concentrating, and remembering, physical slowing or agitation, lack of interest in, or pleasure from, activities that were once enjoyed, feelings of guilt, worthlessness, hope-lessness, and emptiness, recurrent thoughts of death or suicide and persistent physical symptoms that do not respond to treatment, such as headaches, digestive disorders, and chronic pain. The cause of depression is not very well understood, but the disorder has a neurobiological basis (Mayberg, 2007). We hypothesized that depressed individuals have an imbalance in the brain (Gerdes, 2008) and conducted a pilot study of brain training using brain state conditioning (ESQ. We found that depressive tendencies can be suppressed by BSC.

The study included four subjects (two males, aged 35 and 38 years, and two females, aged 41 and 60 years). Their goal was to overcome depression and improve sleep deprivation, cognitive performance, social interaction, decision making, attention and focus, drug addiction and dependency, motivation, mood stabilization, happiness and well-being, and physical health and balance. Depressed subjects were recruited by tele-phone interview, followed by the completion of an objective survey. To administer BSC, subjects were given an initial assessment of about 60 min. during which their brains were mapped, followed by four to six consecutive sessions of 90 min. each spread over two to five days. They were asked to complete Beck's Inventory pre-BSC and post-BSC (Beck, 1996). Our observations were recorded and stored in a computer database and subsequently analyzed. The method of BSC was according to Gerdes (2008).

After the administration of BSC, all four subjects showed positive outcomes, including reduction of Beck's Inventory score. The response to BSC was divided into two test scores: (i) BAI score for anxiety behavior; and (ii) BDI-II score for depressive behavior. Despite individual differences, all four

Vijendra K. Singh, Ph.D, is the Director of Neuro-science Research atthe Brain State Technologies in Scottsdale, Arizona. After graduating from Lucknow University, India,he received his doctorate from the University of British Columbia, Vancouver, Canada. Formerly a Professor at the University of Michigan, Utah State University, Medical University of South Carolina and University of British Columbia. He has devoted his entire career to studying brain diseases, mental illnesses and immune deficiency disorders. Currently he leads research into brain training modalities, including BSC,to help people who suffer from brain diseases and mental health problems. vsingh@brainstatetech.com

Lee Gerdes is CEO of Brain State Technologies, LLC, Scottsdale, AZ, a company with 140 affiliate offices in 18 countries. Lee's education includes a B.A. in Math and Physics, Doane College, Crete, Nebraska; Master of Divinity, Wartburg Seminary, Dubuque, IA; graduate work in engineering at Columbia University, New York; and graduate work in Clinical Psychology, JFK University, Orinda, CA. Lee has 40 years of experience in the computer software field and has previously served as VP of Solutions for Net Perceptions and as Principal Consultant and software applications design leader for other companies and consulting firms. leeg@brainstatetech.com

Beck, A. T. (1996). Beck's Anxiety Inventory (BAI) and Beck's Depression Inventory, 2ⁿᵈ Edition (BDI-II), The Psychological Corporation, Harcourt Brace & Company, San Antonio, Texas, USA.

Gerdes, L (2008|. Limitless You: the infinite possibilities of a balanced brain. (Vancouver BC., Canada, Namaste Publishing)), pp. 1-281.

MacMaster, F. P., Mirza, Y., and Szeszko, P. R. (2008). Amygdala and hippocampal volumes in familial onset major depressive disorder. *Biol. Psychiatr.* 63,385-390. Mayberg, H, (2007). Brain pathway may underlie depression. *Sci. Am.* 17,26-31. Sen, S., Duman, R., and Sanacora, G. (2008). Serum brain-derived neurotrophic factor, depression, and antidepressant medications: meta-analysis and implications. *Bio!. Psychiatr.* 64,527-532.

subjects responded to BSC and showed noticeable reduction in the two test scores. The BAI score for anxiety was reduced by 54 to 100%. The BDI-II score for depression was reduced by 43% in subject code #2 and 80 to 95% in subject code #1, #3 and #4. Reduction in these test scores is a direct reflection of their response to BSC and the depressive tendencies were either completely diminished or significantly suppressed. Their sleep improved and they also showed lower level of stress, anxiety, and substance abuse. Depression has a neuroanatomical basis. Patients with depression show dysfunctional neuronal systems in the prefrontal cortex, anterior cingulate cortex, temporal cortex and basal ganglia (Mayberg, 2007). They also showed neuronal loss in the hippocampus (McMaster et al., 2008) and low levels of brain-derived neurotrophic factor (BDNF) (Sen et al., 2008). Since the hippocampus is the primary brain region involved in memory function, hippocampal loss of neurons may explain cognitive decline in patients with depression. Amongst all mental health issues, depression is the single most common problem in adults. The disorder is no longer restricted to adults since many children are also diagnosed with depression. Although depression has a common clinical presentation, symptoms vary from one patient to another, which may imply that depression is a heterogeneous disorder possibly comprised of subsets. This also means that no single treatment will be solely effective for depression and each subset will require highly personalized modalities. In this respect, we suggest that BSC is a novel approach to brain training for alleviating the suffering from depression.

Acknowledgments

Brainwave
Optimum Brain Training
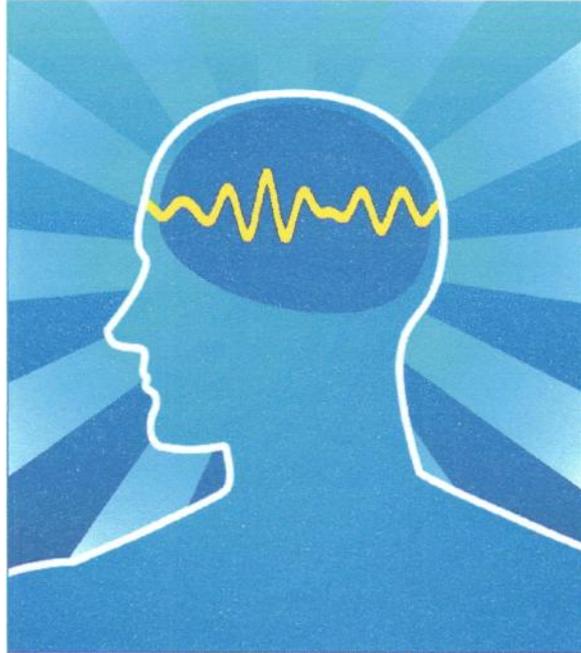
Article 1:   Overcoming Depression Through Brain State Conditioning
Journal: Frontiers in Neuroscience, September 2009
        Vijendra Singh, Ph.D
        Lee Gerdes

Optimizing brain function using state-of-the-art technology.

Duncan Harte, M.A.
Daniel Richard, C.N.H.P

3140 Lakeshore Road, Suite 110
Kelowna, BC
250.448.8544
www.BrainWavebc.com