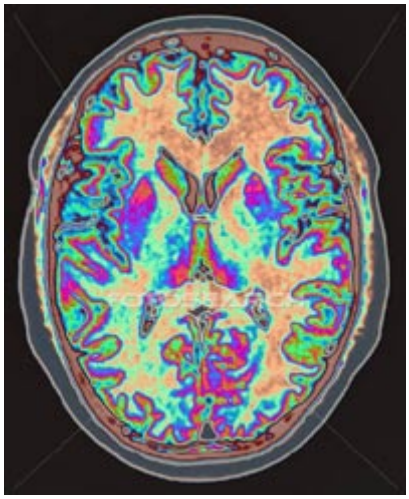
The Science Behind ProAttitude: The Stress Solution, Not Mere Stress Reduction



ProAttitude is based on clinical and laboratory research that has definitively established the doctrine of neuroplasticity. In the last three decade, neuroplasticity has been propelled to the forefront of neuroscience by the research of Paul Bach-y-Rita, Michael Merzenich, Vilanyanur Ramachandran, Randy Nudo, Jon Kaas, Donald Stein, and Richard Davidson.

Neuroplasticity (also known as **cortical re-mapping**) refers to the ability of the human brain to reorganize neural pathways based on new experiences. Attitude is highly neuroplastic because it is key in determining the way we experience people and events in life. A change of attitude that shifts our experience to the positive literally changes the structure of our brain, shrinking circuits that generate fight or flight or freeze and simultaneously expanding and rewiring networks that produce the emotional, social, analytic and practical intelligence to meet challenges and excel.

Wired For Stress And Anxiety

Unfortunately, the brains of a large number of modern human beings are wired for "survival," making them prone to reactive bouts of stress, anxiety and depression. Stress is virtually epidemic:

- Ninety-five million Americans suffer from stress.
- 39% of adults experience extreme stress. Women suffer from stress related symptoms more than men.
- 42% of adults report an increase in stress over the past year.

- Youngster from age 8 to 17 are more worried and stressed than a year ago, with 45% reporting trouble sleeping, 36% reporting stress related headaches, and 34% reporting eating too much or too little in response to stress. [1]

The culprit is genetics and past traumas, which wire the brain for fear, triggering chronic stress reactions. The stress hormones that are released cause higher order brain networks to shrink and primitive networks to expand that make us reactive and emotionally unstable.[2] Research shows that:

- A brain under stress is incapable of sustaining peak performance.
- Chronic stress also renders a person neurologically incapable of sustaining a positive emotion, motivation, or interpersonal strength.

- It impacts health and well being. The often cited study by Charlesworth and Nathan found that up to 75% of all medical visits are the result of stress-related disorders.[3] This includes hypertension, coronary heart disease, forms of cancer, osteoporosis, diabetes II, immunodeficiency, reproductive disorders, sexual dysfunction, obesity, asthma, GI disorders, skin problems, headaches, back pain, in addition to anxiety disorders, depression and substance abuse.
- Combined, stress related diseases are now the #1 killer of Americans.

THERE IS A SOLUTION

Neuroscience has found a solution to stress in neuroplasticity, meaning if our brain is wired for stress and anxiety, it can be rewired through a definable shift in attitude.

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[1] The Gallup Organization, "Lifestyle Poll" (November, 2009). In addition, American Psychological Association, "Stress in America," pg. 15

[2] Life and Health Sciences Research Institute (ICVS), School of Health Sciences, University of Minho, 4710-057 Braga, Portugal.

[3] Edward A. Charlesworth, Ronald G. Nathan, Stress management: a comprehensive guide to wellness (New York, Random House, 2004), pg. 13

A major breakthrough in this research was made by Dr. Richard Davidson, Vilas Professor of Psychology and Psychiatry at the University of Wisconsin. Davidson's research has produced concrete evidence that forms of mindfulness practice can change the workings of the brain in ways that elevate performance and cognitive processing, sustain emotional stability, and boost immune response.[4]

Davidson states: "… the brain is capable of being trained and physically modified in ways few people could imagine."

In 2000, using f-MRI technology, Davidson discovered that the prefrontal cortex generates our attitude through a mix of negative and positive emotion. Negative emotion is produced on the right side of the prefrontal cortex; positive emotion is produced on the left side.

The more our attitude leans to the right, the harder and more stressed our lives will be. The more our attitude leans to the left, the more peaceful, positive and resilient we will be, and the more we will fit the profile of a happy, successful human being.

Peace appeared to be key in actualizing this higher potential, which led Davidson to study the brains of monks. Monks routinely cultivate an attitude of calm and emotional balance through a mental practice focused on the principles of inner peace. Davidson wanted to investigate the effect this practice had on brain structure. The sixteen monks he studied were active in the world with large responsibilities and pressures, such as managing monasteries and retreat centers, overseeing religious institutions or traveling much of the year to conduct trainings and conferences.

The research team was astonished at what they found. The monk's mental practice of peace had significantly expanded networks that generate higher order brain function.

- ✓ Regions of the neocortex were larger and more fully integrated, with increased

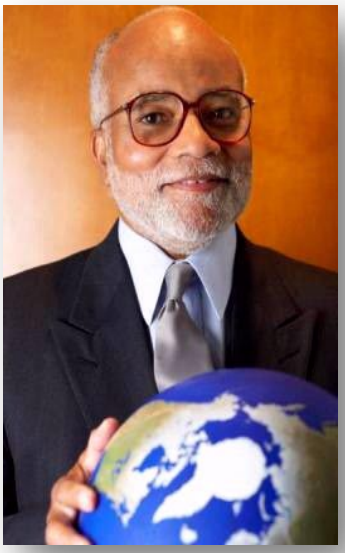
[4] Lutz, L. Greischar, N.B. Rawlings, M. Ricard, and R.J. Davidson, "Long-term meditators self-induce high-amplitude synchrony during mental practice," *Proc. Nat. Acad. Sci.*, vol. 101, no. 46, pp. 16369–16373, 2004).

blood flow. The monks had the most extreme value to the left (positive emotion) of anyone previously tested.

- ✓ There was much greater activation in brain networks that underlie social intelligence. Gamma wave activity was very high, signaling greater capacity for problem solving, creativity and goal-directed behaviors.
- ✓ There was significant activity in the insula and caudate, signaling interpersonal strength and resonance.
- ✓ Even when the monks were not actively practicing their brand of mindfulness, they continued to sustain these optimal brain states.

Conclusion: A dynamically peaceful attitude builds a powerful brain.

As our attitude shifts toward a dynamically peaceful attitude:



- Our emotional set point defaults to positive.
- Networks producing reward-based motivation and goal-directed behaviors activate.
- The executive functions that make us decisive, creative and practical come on line.
- Systems responsible for memory, learning, error detection and attention become stronger.
- Circuits that generate interpersonal resonance expand.
- Homeostasis locks in, generating higher energy and greater well-being.

Neuroplasticity In The Workplace

Dr. Jon-Kabat Zinn of the University of Massachusetts teamed with Davidson to see if neuroplasticity could change stressful attitudes within a high pressure workplace. The study focused on extreme stress in workers in a biotech business, verified by f-MRI readings that indicated significant right prefrontal activity.

After an eight-week training program in mindfulness based stress reduction, their readings shifted to the left, toward positive emotions and resilience. Simultaneously, their moods improved; they reported feeling engaged again in their work, more energized, and less anxious."[5]

[5] R. J. Davidson, J. Kabat-Zinn, et al., "Alterations in Brain and Immune Function Produced by Mindfulness Meditation," *Psychosomatic Medicine* 65 (2003): 564–570)

Improved Immune Function

The above researchers also reported that improved immune function accompanied the shift in attitude. Following a company-sponsored flu shot clinic, Davidson collected blood samples. He found higher quantities of flu antibodies in the bloodstream of those who had participated in the research, compared to employees who had not.

Neuroplastic Change Happens Fast

The evidence is that, within a defined practice, the brain structure generating stress reactions can be circumvented, and in a relatively short period of time. The workplace study (above) showed changes in just eight weeks.

Dr. Jeffrey Schwartz of UCLA documented that ten weeks for cognitive therapy changed the brains of people suffering with obsessive compulsive disorder, such that they were able to stop taking medication.[6] Zindell Segal and Helen Mayberg of the University of Toronto have established that eight weeks of mindfulness-based cognitive therapy changed the brain in people with chronic depression, such that they also could discontinue medication.[7]

[6] Sharon Begley and Jeffrey Schwartz, *The Mind and the Brain* (New York: Regan Books, 2002), chapter 2.

[7] Peter Bieling, Carol Garson, Kimberly Goldapple, Helen Mayberg,Sidney Kennedy, Mark Lau, and Zindel Segal, "Modulation of Cortical-Limbic Pathways in Major Depression, Treatment-Specific Effects of Cognitive Behavior Therapy," Archives of General Psychiatry 61, no. 1 (2004): 34–41