

Audio/Visual Stimulation and Brain Growth

By Thomas H. Budzynski, Ph.D.

The Aging Brain

As the brain ages it may lose some of its neural circuitry. Specifically, we experience a shrinkage and reduction in the number of dendrites, the filament-like extensions of the axons or main nerve fibers. In normal circumstances the dendrites of a given axon connect with the dendrites of many other axons, thus fostering full communication of information. As these connections shrivel with age, the communicating ability decreases. We find ourselves forgetting names of people, and then names of things and facts. Short-term memory begins to fail, e.g., going into the next room to get something and then forgetting what you are there for. We find it more difficult to follow instructions or to memorize material. These symptoms can start in our 40s. That's discouraging news; the good news, however, is that the more we can stimulate our brains, the more we can slow down this process and even reverse it.

Dr. Diamond's amazing old rats

At UCLA Dr. Marion Diamond examined the maze learning ability of aged rats and found the usual deficits in keeping with their advanced age. However, when she took half the rats and increased the stimulation in their environment, their learning ability and other aspects of their functioning improved significantly. When the brains of both groups were later examined, Dr. Diamond was amazed to find that the brains of the stimulated group actually weighed more and had more dendrites than the control group who received no more than the usual stimulation. Dr. Diamond concluded that the unusual stimulation promoted the dendritic growth that contributed to the extra density and weight of these brains.

Does this happen in humans?

Large scale studies have not yet been done in this area of interest; however, Dr. Harold Russell, a Texas researcher and clinician, has completed a number of individual case studies on brain injured and aged individuals. Dr. Russell and his colleagues Drs. Carter and Ochs are exploring the use of audio/visual stimulation with such clients. Although their results are anecdotal (not part of a controlled study), preliminary indications are still impressive: in almost all of the case studies of stroke or other brain damaged victims, whose conditions had "plateaued" a number of years earlier, significant progress was made after using the stimulation daily over a period of months. Again, this research is still preliminary and firm conclusions cannot be rendered at this time. In other words, there is no research yet available with humans that conclusively proves (or disproves) that audio/visual stimulation is useful for damaged or aging brains.

It is noteworthy that Diamond and her former graduate student Allison McKenzie, Ph.D., found that brain damaged rats (stimulated strokes) recovered more quickly and more fully if stimulated regularly than the control group which received no special stimulation.

Finally, Dr. Diamond also discovered that the stimulated rats developed a stronger immune response than those not stimulated.

The power of visualization

In regard to the immune system, almost everyone has heard that it can be strengthened by any number of alternative medicine procedures, most of which involve visualization. If even half of what we have heard is true, then something remarkable is happening. Why should certain images we hold in our minds affect how strongly our immune system reacts to antigens?

Experts still argue about whether or not this effect actually exists and if it does, why. However, a number of these experts believe that visualized images are processed primarily in the nondominant (usually the right) hemisphere. This hemisphere does have a stronger link to lower subcortical emotional centers than does the dominant (left) hemisphere. The final link between the emotions and the immune system has already been established, i.e., negative, hopeless, despondent types of feelings seem to weaken immune functioning. Conversely, does it make sense that if we feed in positive, affirming thoughts and images we can activate or strengthen the immune system?

Getting inside your brain

You may know that a new and successful neurotherapy procedure for addiction involves the carrying of a structured image into a theta state. This process requires that 1) a theta state is available and 2) that the image is kept in the mind until the theta state is obtained. This combination of a particular EEG state, plus the precursor of the desired goal in imagery form, appears to have resulted in perhaps the most successful addictions program yet devised. The clients in this unusual program first receive training in relaxation and then get alpha/theta EEG neurofeedback in order to acquire the skill of self-generation of the theta state. If one can overcome a difficult addiction problem with imagery held in a theta state, could one use such a sequence for changing physical structures?

There is some precedence to suggest that this is true. It is well known in the field of hypnosis that clients in this deep trance-like state can, for example, use a suggestion for the skin to blister which will result in just that sort of physical change. Years of anecdotal data and possibly a few controlled studies have provided evidence that imaging in a deeply relaxing state does seem to affect bodily structures. What then could happen if one imaged that one could take a walk through one's own brain and look closely for signs of trouble such as partially blocked blood vessels or aneurysms (weakened blood vessel walls). Moreover, if any problems are discovered, imagine the great variety of scenarios that could be devised to repair the damage. You can even get the advice of a brilliant scientist or brain surgeon, living or dead (the imagination knows no bounds). Remember that whatever is fun for us is something we want to do again, so make your brain excursions fun. Take the experts along on the trip through the brain. Have them discuss it in a beautiful meeting room with impressive multi-media presentations.

These brain examinations and repair trips can be visualized whenever you take time out to relax. The imagery can be accompanied by any of the Voyager's Relax programs, as well as The Brain Brightener tape, specifically designed for this purpose.

Thomas H. Budzynski, Ph.D.

Dr. Budzynski graduated with a degree in electrical engineering from the University of Detroit and served as an aerospace engineer for seven years. During part of this time he was crew chief of the inertial navigation team on the top secret SR-71 "Blackbird" project. He later left engineering to earn an M.A. and Ph.D. in psychology from the University of Colorado at Boulder.

A biofeedback pioneer, Dr. Budzynski developed several of the early biofeedback devices including the first digitally-quantifying EMG, and the Twilight Learner which was featured in an article in *psychology: Today* (Aug. 1977).

Dr. Budzynski and his noted colleague, Dr. Johann Stoyva, established new standards in biofeedback and behavioral medicine research with their landmark studies at the University of Colorado Medical Center. Dr. Budzynski served as President of the Biofeedback Research Society in 1974-75.

A noted lecturer and workshop leader, Dr. Budzynski has traveled to a number of European, Australian and Canadian cities to speak on behavioral medicine, stress, pain, biofeedback and neurotherapy. He has been published numerous times in his areas of expertise. His Relaxation training Program has been a best selling stress management audio cassette program for over twenty years. With Denis Waitley he developed the top selling *The Subliminal Winner* album for Nightingale-Conant. A new Pain Control program for Thought technology combines hypnotic inductions with effective imagery.