

## BRAINWAVE ENTRAINMENT

### A BRIEF HISTORY

Brainwave entrainment was first identified in 1934, although its effects had been noted as early as Ptolemy.

Not long after the discovery of the Alpha brainwave by Hans Berger in 1929, researchers found that the strength of the wave could be "driven" beyond its natural frequency using flickering lights. This is called "Photic Driving", which is another word for brainwave entrainment using photic (light) stimulation. In 1942 Dempsey and Morison discovered that repetitive tactile stimulation could also produce entrainment and in 1959, Dr. Chatrian observed auditory entrainment in response to clicks at a frequency of 15 per second.

By the 1960s entrainment started to become a tool rather than a phenomenon of the brain. Anesthesiologist M.S. Sadove, MD, used photic stimulation to reduce the amount of anesthesia needed for surgery. Bernard Margolis published an article on brainwave entrainment used during dental procedures, noting less anesthesia required, less gagging, less bleeding and a general reduction in anxiety.

In a 1973 issue of Scientific American, Dr. Gerald Oster examined how combining 2 pure tones resulted in a rhythmic beat which he called Binaural and Monaural Beats. In comparing Binaural beats against Monaural beats, Oster noted that Monaural beats were shown to elicit extremely strong cortical responses, which is the electrical activity responsible for entrainment. Oster concluded that while Binaural Beats produced very little neural response (because the depth of a Binaural Beat is only 3db or 1/10 the volume of a whisper), they could be useful in diagnosing certain neurological disorders.

In the 1980's studies continued with Dr. Norman Shealy, Dr. Glen Solomon and others researching entrainment for headache relief, Serotonin and HGH release, as well as general relaxation. Michael Hutchison wrote his landmark book *MegaBrain* in 1981, outlining the many possible uses of entrainment from meditation to super-learning. In 1980, Tsuyoshi Inouye and associates at the Department of Neuropsychiatry at Osaka University Medical School in Japan found that photic stimulation produced "cerebral synchronization". Dr. Norman Shealy later confirmed the effect, finding that photic stimulation produced synchronization in more than 5,000 patients. In 1984, Dr. Brockopp analyzed audio-visual brain stimulation and in particular hemispheric synchronization during EEG monitoring. He said "By inducing hemispheric coherence the machine can contribute to improved intellectual functioning of the brain."

In 1981, Arturo Manns published a study which indicated the amazingly strong entrainment value of Isochronic Tones, as opposed to Monaural or Binaural beats. This was later confirmed by others such as David Siever.

Studies continued into the 90's with researchers such as Dr. Russell, Dr. Carter and others who explored the vast potential of using entrainment with ADD and learning disorders. Research has also been conducted into PMS, Chronic Fatigue, Chronic Pain, Depression, Hypertension and a number of other disorders. Steady research continues today with the work of Dr. Thomas Budzynski, David Siever, psychologist Michael Joyce and many others. The results of entrainment have been so promising that many modern clinical EEG units presently come with built in entrainment devices.

There is over 70 years of solid research behind brainwave entrainment . So why hasn't it become more well known? Mainly because our culture is very much dependent on drugs, and, in comparison to the pharmaceutical giants, there is not a lot of money to be made in entrainment: it is inexpensive, easy to use at home and can be a viable solution to a huge variety of problems. Also, the idea that music is able to directly affect the brain sounds preposterous at first, until you read the research and discover the science behind it. We have found that most people are skeptical until the day they actually use iMusic. Despite the combination of solid scientific, empirical and a huge amount of anecdotal evidence, the world is still very skeptical of entrainment and brain training. But the word is spreading. Every day more psychologists, mental health clinics, coaches, teachers and professionals are discovering entrainment, and finding it remarkably useful.

#### Further Reading

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