

# *Change Your Mind* *...while you sleep*



## HOW AND WHY IT WORKS: THE RESEARCH

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SUPERSLEEP® PROGRAM

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# How and Why It Works: the Research

*“There’s a revolution going on... The present era in neuroscience is comparable to the time when Louis Pasteur first found that germs cause disease.”*

Candace Pert, Neurochemist

This quote is as true today as it was when Dr. Pert wrote it decades ago. I was in on the beginning, and created a revolution of my own with *Change Your Mind*.

I accidentally “discovered” *Change Your Mind* by falling asleep while I was playing a Suggestopedia audio tape I had made to improve my goal setting, time management, and delegation behavior - and it worked anyway. I got results listening to a tape I never “heard” - that played while I was asleep.

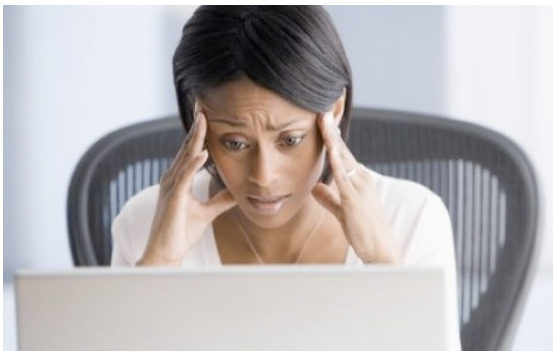
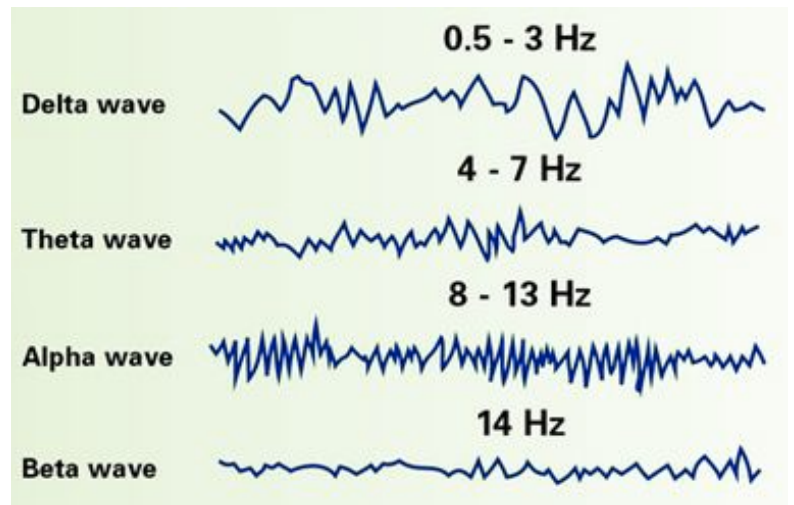
Though I got results immediately, I didn’t understand how or why it was working. I did several years of research to figure it out, learning the science behind the different elements of the program — Brain States, Theta, Subliminals and Supraliminals, Music and Cadencing, and Mommy and I are One.

Here is a brief summary of what I learned, with a bibliography of my sources.



Brainwaves are the rhythm of the brain. They are electrical signals or patterns generated by brain cells (neurons) and other brain structures. When a large number of neurons beat together in synchrony, they create a strong rhythm - pattern - signal - wave.

Electrical monitoring equipment (electroencephalograph - EEG, measures the vibrations in cycles per second (cps) called hertz (Hz) and graphically charts them - EEG brain mapping. A thin line on the graph means faster brainwaves, and a curving / spiking line on the graph means slower brainwaves.



**High Beta** ranges from 29 to 35 Hz: the brainwave water of anxiety and stress.

Frequencies above this have been charted, and these higher frequencies appear to be higher states of functioning. There's lots to learn about it.

**Beta** ranges from 14 to 28 Hz: the brainwave state of normal waking consciousness -- logical thought, analysis, concentration, alertness, problem solving, and action. You are in beta most of your waking hours—when you are thinking, speaking, and doing, and when you are reading this book. In beta, you discern, compare, judge, and criticize.



**Alpha** ranges from 8 to 14 Hz: the brainwave state of relaxation -- pleasant feeling states, automatic and routine activities (non-thinking activities like brushing your teeth), freedom from pain, and physical healing. You are in alpha when you are feeling soothed and calm—relaxing, letting your mind wander,

daydreaming, bathing/showering, meditating, praying, letting go, dissolving into the environment, drifting off to sleep, being in a twilight state.

In alpha, you have rapid learning with heightened memory. You may experience an altered sense of time, free association (non-logical), and extrasensory perception. Alpha is the doorway to the nonconscious. It is also the doorway to healing. There is no healing above alpha: mental, physical, emotional, or spiritual. It is the doorway to psychotherapeutic insights -- and the “awakened mind.”

**Theta** ranges between 4 and 8 Hz: the brainwave state of deep meditation, sleep and sleep-like states, and dreaming. You can be in theta awake, when you are in deep reverie, when it brings quietness of body, emotions and mind. This waking state is associated with creative people, hypnotic susceptibility, and long term meditators. This is the state of psycho-immunology - mind healing.



**Delta** is below 4 Hz: the brainwave state of deep dreamless sleep -- a deep trancelike nonphysical state.





The process of learning to identify and control your brainwave states is called brainwave training, biofeedback, neurofeedback, and neurotherapy. Using EEG instruments, you learn to identify your brain wave states and to change or produce them at will. Depending on the condition or change desired, treatments last from several to fifty sessions. Do-it-yourselfers can work with brainwave states through simple electroencephalography computer programs and light and sound machines (available through wellness catalogs and internet sites).

Biofeedback is best known for its stress reduction origins, but it is emerging as a tool to treat attention-deficit disorder, migraines, epilepsy, anxiety, learning disabilities, depression, head injuries, seizures, sleep disorders, chronic fatigue, headaches, post traumatic stress disorder, mood swings, alcohol abuse, and addiction.

For instance, many individuals with attention problems produce more slow brainwaves (theta) and fewer fast brainwaves (beta). Slower waves indicate daydreaming, reverie, and other forms of mental drifting, while faster brainwaves indicate concentration. Individuals trained to reduce their amount of slow brainwaves and produce larger amounts of beta increase their attention and concentration time.

I've enjoyed many biofeedback sessions and what I learned from them. I tried both Quantitative EEG work, which has dozens of inputs, and Qualitative EEG, with primarily alpha and theta inputs. I much preferred the Qualitative method, developed by Dr. Margaret Ayers. The program was easy to understand and use, and the practitioners involved were stellar in training and information.



*“I believe REM sleep (functions) are in fact the Freudian unconscious.”*

Jonathan Winson, MD, psychiatrist & noted  
brain researcher

*“I believe REM is where the action is for  
miracles.”*

Teri Mahaney, PhD,  
creator of *Change Your Mind*

The theta REM sleep state is your *Change Your Mind* state. Sleep states are divided into two main types: Rapid Eye Movement (REM) dreaming sleep and non-Rapid Eye Movement (NREM) sleep. Mammals (except spiny anteaters) and birds have REM, while reptiles do not. About 25% of total sleep is spent in REM and 75% is spent in NREM. Adults experience four or five REM cycles per night, and infants are in REM about eight hours a day.

REM sleep is a puzzling state, because it appears paradoxical and self contradictory. While your heart rate and breathing are higher during REM sleep (which means light sleep), your muscles are more relaxed and it is harder to awaken from this state (which means deep sleep). Your eyes dart and flit, your pulse surges, your breathing is rapid and irregular, and you have fine finger movement. To observe this, watch a cat sleep. During REM sleep, a cat's whiskers, tail, ears, and paws twitch.

Neuroscientists are learning what areas of the brain and what combinations of brain cells are essential for specific tasks such as learning and encoding memory. Jonathon Winson, noted brain researcher, found theta rhythm hits the memory center when an animal is learning things essential to survival. For instance, cats display theta in their memory centers when stalking prey: rabbits display theta in their memory centers when they are afraid of a predator. Winson has shown that the very same “memory” brain cells that register animals' learning during wakefulness are reactivated when the animals go into REM sleep. He believes information processing occurs during REM sleep which merges the new information with the

old memories. He states REM is the neural process whereby, from early childhood on, strategies for behavior are being set down, consulted, or modified.

Other researchers, psychiatrists, and scientists agree the theta brainwave state is the key to changing your mind:

Thomas Budzynski, a biofeedback researcher, describes the theta state as “a zone ... in which one can absorb new information in an uncritical, non-analytical fashion.” He speculated that this allows new information to bypass the critical filters of the left hemisphere and be “learned” by the right hemisphere. Therefore, information leading to a change in self concept, change in belief system, and change of habitual behaviors would occur more easily in theta. “In theta, behavior and belief systems change more easily, as we bypass the critical and logical beta state. We absorb new information in an uncritical, non-analytical fashion.” (Budzynski)

Norman Dixon states emotionally determined memories are more affected by subliminal messages, making this brainwave state the most appropriate for changing emotional memories or emotional patterns subliminally (Dixon).

Gary Lynch states for memories to form, long-term potentiation (L.T.) must take place. The LT. process involves electrical and chemical changes in the neurons associated with memory, and the key to LT. is the theta brainwave pattern. “We have found the magic rhythm that makes LT. is the theta brain wave pattern.” (Lynch)

James Chalet states the theta brainwave state has specific mental processing functions, and "it seems reasonable to assume that sleep is a particularly favorable time for strengthening and consolidating memories" (Chalet).

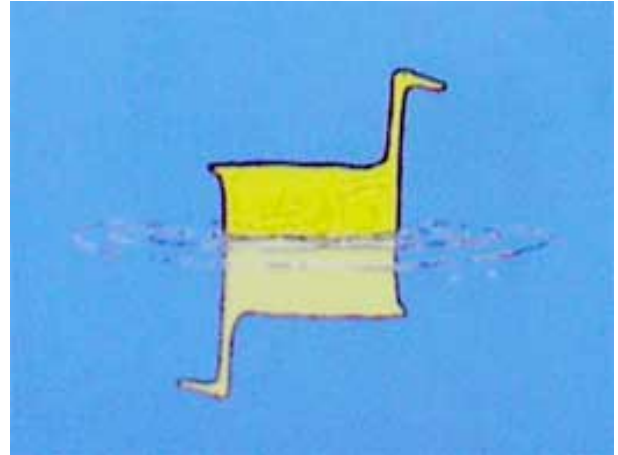
Gene Brockopp states we may facilitate an individual’s ability to allow more variations in their functioning through breaking up patterns at the neural level. This moves them away from habit patterns of behavior to develop elegant strategies of functioning (Brockopp).

By listening to your *Change Your Mind* recordings while you sleep, you mix the new learning (the statements on your recording) with your long term memories. The new messages are integrated and harmonized, and you create new ways of thinking, feeling, and acting.



## Subliminals and Supraliminals

Subliminal perception -- the concept of discrimination by the brain without conscious awareness by the person -- is a scientific fact. Your brain takes in messages below your level of conscious awareness, and it responds to those messages. "Subliminal perception is not just a 'watered down' version of normal perception but different in kind" as well (*Some*). Laboratory research projects have repeatedly demonstrated that subliminal messages affect your dreams, memory, verbal behavior, emotional responses, drive-related behavior, conscious perception, and perceptual thresholds.



But laboratory research is difficult to decipher because it is loaded with academic stiffness, technical jargon, personal bias, and controversy. Many researchers are arguing about what subliminal research is, while others are using questionable research models to prove their points (flashing obscene drawings to young women and monitoring their dreams for sexual reenactments). Reading the research often reveals more about the researcher than your mind/brain!

Among the subliminal researchers, Silverman, Dixon, and Shevrin provide useful and significant findings. Norman Dixon, noted expert in the field of preconscious processing, finds the controversy over subliminal perception within the psychological community to be based on (1) fear of the existence of an unconscious, (2) the threat to personal liberty that subliminal programming implies, and (3) confusion over the specific words used in the research.

For research purposes, the word subliminal means sub-limen, or below the limen. But the limen is a statistical concept technically defined as below the 50% point of classical psychophysics (*Zenhausen*), or that stimulus value which gives a response exactly half the time (*McConnell*). This research definition has little meaning in non-laboratory settings and does not fit research models for subliminal tapes/CDs/MP3s.

In everyday language, the words subliminal and supraliminal are commonly used for sub-threshold (below the threshold) and supra-threshold (above the threshold). Your threshold

is your point of conscious awareness. For instance, if you are listening to an audio tape with a spoken message on it, and you can consciously hear the words and understand them, you are receiving a message above your threshold. This is popularly called a supraliminal message. If you can't hear the words, you are receiving a message below your threshold, popularly called a subliminal message.

Most laboratory subliminal research is based on visual experiments which are conducted using a tachistoscope, a device which flashes words or pictures onto a screen at intervals of four milliseconds or less. Very little research has been done on verbal subliminal messages (subaudible messages) in which a voice is embedded under music, ocean waves, or nature sounds so that it cannot be heard.

Some research has been done on the effectiveness of subliminal versus supraliminal messages, however, and on the effectiveness of using the two together. Shevrin presents words both above and below conscious awareness - supraliminally and subliminally - and analyzes the response of brainwaves recorded at the moment each stimulus is delivered. Both supraliminal and subliminal messages cause brainwave activity, but this does not mean behavior change will follow. One study showed perception could be altered with subliminal messages, but supraliminal messages were necessary to change physical performance such as learning a new sport. To change a sensory task required a combination of subliminal and supraliminal messages. (*Zenhausern and Hansen*)

In addition, research shows that "emotionally laden messages must be shown longer than neutral messages before a subject will respond to them". (*Garner*) In addition, each of us has a unique subconscious which gives different affective and motivational meaning to the same messages. (*Poetzl*) While this can be strikingly demonstrated in individuals, it has been difficult to repeat in experimental settings. (*Westerlundh*)

Simply stated, we are each unique with a different set of experiences, beliefs, feelings and thoughts stored in our brains. These interact with new messages and create responses unique to us, making it difficult to generalize about results from any research model that looks for sameness.

One thing is the same for all of us, however. If we want to change old patterns, we must change them in the subconscious, specifically in the theta brain wave state.



Ancient cultures used the natural power of sound and music to influence states of consciousness both for religious ceremonies and to increase psychological and physical health. Today, the idea that sound can affect consciousness is widely accepted.

Several researchers found that 17th and 18th century composers encoded certain harmonics into their pieces, which are tones that resonate high above the audible music. Leading edge brain research suggests the neurons of the brain resonate to these harmonics, leading to a state of health, healing and greater personal awareness.

Georgi Lozanov, a Bulgarian physician and psychologist, incorporated this music into his system of learning called Suggestopedia or Suggestology in Europe and Superlearning® in the U.S. Lozanov found that people performing supernormal feats of memory had a relaxed state of body during their heightened state of mind. Their brain waves were at alpha and their heartbeat was slowed. He experimented with classical music to induce that relaxed state (which was much easier than having his subjects practice years of mental yoga, meditation, and mind control to get the same results).

Lozanov studied the baroque composers—Vivaldi, Telemann, Corelli, Handel—and found that the slower sections (largo sections) of their music induce a meditative state. Each of these sections of music has 60 beats to the minute which slows the heartbeat and relaxes the body while leaving the mind alert.

Lozanov's next step was to study rhythm and learning. Material presented at one second intervals was retained at a rate of 20%. Using five second intervals, the retention rate jumped to 30%. Going to ten seconds intervals, the retention rate rose to 40%. Americans using the Lozanov system found that the eight second cadencing was most effective. To learn

more about the Lozanov method, read Superlearning© by Sheila Ostrander and Lynn Schroeder.

Your *Change Your Mind* recordings are based on this research. The music is created from the largo sections of baroque symphonies, and the suggestion statements are repeated three times to an eight second cadencing. This assures their effectiveness.

## Mommy and I Are One

Dr. Lloyd Silverman of New York University blazed the trail for psychologically sound subliminal “therapy.” Working with the idea that conflicting wishes in the subconscious often underlie mental problems, he began using subliminal messages with schizophrenics. He found he could increase or decrease their symptoms dramatically by using different subliminal messages. He eventually discovered one simple five word sentence which had universal effects when given subliminally, yet lost its effectiveness when given supraliminally. This sentence became the subject of hundreds of subliminal research projects and has proven effective with programs for weight loss, smoking cessation, alcoholism, academic achievement, etc.



The sentence—*Mommy and I are one.*

Dr. Silverman believes *Mommy and I are one* is a symbiotic fantasy or fantasy of merging, and that merging with the "good mother of infancy" is a sort of archetypal experience that paradoxically allows us to become self-sustaining individuals.

*Mommy and I are one* seems to fulfill a number of psychological needs, but its strength may lie beyond psychology. Fantasies of oneness have been interpreted psychologically as an unconscious desire to return to the womb—the pre-birth state of safety and comfort—when we were one with the mother. This state of preexistence (before the pain of birth and the agony of

a separate existence) is considered the unconscious source of religious myths about a lost paradise. Conditions such as alcoholism, drug addiction, violence, and suicide are viewed psychoanalytically as stemming from the unresolved desire to return to this “oneness.”

Spiritually, mystics maintain that meditation creates oneness with a cosmic consciousness, and the merging or reconnecting with spirit (God) is at the heart of all major religions. Perhaps Mommy and I are one sparks this oneness as well. Clearly, including this statement in a *Change Your Mind* recording meets many needs.



The *Change Your Mind* program

integrates all these factors -

brain states, theta, subliminals and supraliminals, music and cadencing, and  
Mommy and I are One -

to create an easy way to transform old programming and patterns.

Who knew I would start a revolution — by falling asleep!!!

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