

SUBJECT 4: Hemisync® Technology Training

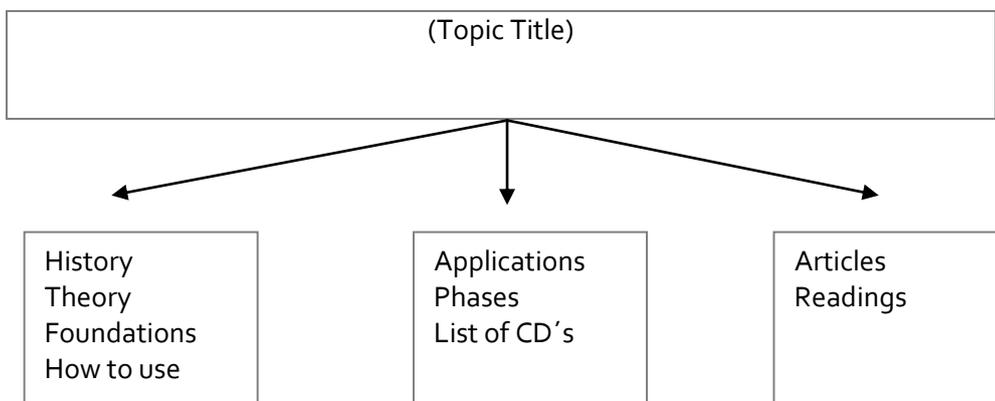
1. OUTLINE OF THE SUBJECT

Hemisync ® Technology in Training Referees.

2. OBJECTIVES OF THE SUBJECT

1. Know the basic foundations, theory, applications of Hemisync ®Technology
2. Explanation of CD´s chosen for your practise
3. Goals and phase setting through 2010 South Africa
4. Studies, researches and articles about Hemisync ®

3. OUTLINE OF THE CONTENTS



4. DESCRIPTION OF THE CONTENTS

Hemisync® Technology

- 4.1. What it is Hemisync®
- 4.2. How does it work? How to use it? Recommendations
- 4.3. General applications
- 4.4. Applications for referees. List of CD's. Suggested phases
- 4.5. Articles and readings

4.1. What is Hemisync®?

Hemi-Sync® is a scientifically based and clinically proven "audio-guidance" technology that uses sound to influence brain wave activity. This patented, and highly sophisticated technology is backed by over 40 years of research.

4.2. How Does it Work? How to Use it? Recommendations.

How Hemi-Sync® Technology Works

Robert A. Monroe, founder of Hemi-Sync, is internationally known for his work with audio sound patterns that can have dramatic effects on states of consciousness. Monroe observed, during his early research, that certain sounds create a Frequency Following Response in the electrical activity of the brain.

Those observations led to some remarkable findings dealing with the very nature of human consciousness. Researchers learned specific sounds could be blended and sequenced to gently lead the brain to various states ranging from deep relaxation or sleep to expanded states of awareness and other "extraordinary" states. This compelling research became the foundation of a noninvasive and easy-to-use audio-guidance technology known as Hemi-Sync®.

The audio-guidance process works through the generation of complex, multilayered audio signals, which act together to create a resonance that is reflected in unique brain wave forms characteristic of specific states of consciousness. The result is a focused, whole-brain state known as hemispheric synchronization, or Hemi-Sync®, where the left and right hemispheres are working together in a state of coherence. Different Hemi-Sync® signals

are used to facilitate deep relaxation, focused attention or other desired states. As an analogy, lasers produce focused, coherent light. Hemi-Sync® produces a focused, coherent mind, which is an optimal condition for improving human performance.

One of the leading researchers into brain wave synchrony, Dr. Lester Fehmi, of the Princeton Biofeedback Research Institute, points out that "Synchrony represents the maximum efficiency of information transport through the whole brain." This means that brain wave synchrony produces a sharp increase in the effects of various brain wave states. The production of synchronized, coherent electromagnetic energy by the human brain at a given frequency leads to a 'laser-like' condition increasing the amplitude and strength of the brain waves. It's evident that a "highly integrated brain," a brain, in which both hemispheres are functioning in symmetry, synchrony, harmony and unity, is a key to peak states and peak human performance.

Specific combinations of Hemi-Sync® signals, for example, can help individuals achieve laser-like focus and concentration. Depending on the intended goals, music, verbal guidance or subtle sound effects are combined with Hemi-Sync® to strengthen its effectiveness. Naturally, Hemi-Sync® sleep products incorporate predominately Delta frequencies; learning products predominantly Beta, and so forth. Users remain in total control as these recordings do not contain subliminal messages. Hemispheric synchronization does occur naturally in daily life, but typically only for random, brief periods of time. Hemi-Sync® can assist individuals in achieving and sustaining this highly productive, coherent, brain wave state.

Continuous innovation

Robert Monroe's work inspired an entire industry of mind/brain products. After 50 years of research, and thousands of lab sessions, the internationally acclaimed patented Hemi-Sync® process remains unparalleled in its ability to assist us in harnessing our human potential.

Thanks to the cooperation of notable medical institutions and universities, the scientifically and clinically proven Hemi-Sync® technology continues to be the focus of a variety of

specialized research projects. In addition, many therapists, physicians, educators, and other professionals use Hemi-Sync® extensively.

Such research is indispensable in revealing the influence of specific Hemi-Sync® sound patterns on consciousness. Over the years, these efforts have resulted in the development of scores of individual products for specific applications such as focused attention, stress management, meditation, sleep enhancement, and pain management, to name a few.

How to use it? Special characteristics

Are the Hemi-Sync® frequencies the same on each title?

No. The Hemi-Sync® process has evolved into a sophisticated multi-layering of Hemi-Sync® signals - "designer mixes" of sound frequencies, fashioned to be optimally effective for a given application. Naturally, Hemi-Sync® sleep products incorporate predominately delta frequencies; learning products predominately beta and so forth. However these designer mixes are supplemented with special sound frequencies, which enable the desired result. This is the "key" to the effectiveness of Hemi-Sync.

How long are Hemi-Sync® tapes and CDs?

Most are between 30 and 40 minutes long. Timing varies to accomplish the purpose of each listening experience.

Is Hemi-Sync® like hypnosis?

Yes, they are similar. Hypnosis is an induced, altered state of mind, in which the body is deeply relaxed, sufficient to be temporarily ignored, except for demands like bladder fullness, etc. It is sometimes described as "focused concentration." This "state" is one in which the participant has perhaps even more control over the body and self than in "ordinary" states of consciousness. Witness the fact that hypnosis is sometimes used for pain control in minor surgeries, childbirth, and even dentistry. It is an expanded state of awareness, in which one can be fully aware of the sensory data from the environment, (sound, light, temperature, etc.) and at the same time can develop awareness of other data sources as well, such as past lives, out-of-body information, information from guides, one's inner self, etc. Neither state can "make" you DO anything. You are able to maintain your

faculties for choice and value systems, including choosing to follow suggestions from the therapist or not. Hemi-Sync® is designed to leave control in the hands of the listener as well. In this sense, it's somewhat related to self-hypnosis. Hemi-Sync® does not "make" you do anything. It simply creates an effect that helps you move into a certain state, providing that you relax and are open to responding to the Hemi-Sync® process.

Are Hemi-Sync® products subliminal?

No. Subliminal recordings have the intention of embedding a particular thought in the mind of the listener by recording words at sub audible levels, often at high speeds. Hemi-Sync® sound patterns, although recorded at a sub audible level, are not verbal messages and are not recorded at high speed. The purpose of Hemi-Sync® sound patterns is to assist you in obtaining the focused brain state you desire.

Some Hemi-Sync® products have sections in which the voice is too low for me to understand. Isn't that subliminal? Or is it a defect in the product?

No to both questions. By the time the voice becomes low in volume, you are in an extremely relaxed state or perhaps asleep. The words you may not understand are simply a repetition of earlier sections of the recording. They are repeated for purposes of reinforcement, at a very low volume so as not to interfere with your state of relaxation.

Is Hemi-Sync® recommended for children?

All nonverbal recordings are fine for children. With verbally guided titles, we recommend you listen first and then decide based on your child's level of maturity.

How does Hemi-Sync® Compare To Other Products?

We occasionally receive inquiries from individuals desiring to know how Hemi-Sync® compares to other brain wave products they may have heard about. It would be inappropriate for us to comment on specific products or technologies but following are some observations we can make with regard to Hemi-Sync:

- Robert Monroe's pioneering work with hemispheric synchronization (Hemi-Sync) sound patterns inspired an entire industry of mind/brain products and technologies.
- Hemi-Sync is a technologically sophisticated process that has been awarded three U.S. patents.
- With millions of products sold worldwide, Hemi-Sync® has been shown to be a highly effective, safe, time-proven technology.
- Improving the efficacy of Hemi-Sync® has been a continually evolving process—which we have remained committed. Today's Hemi-Sync® has been refined with over 40 years of research and development and is supported by numerous studies, reports, articles and testimonials available at www.Hemi-Sync.com. Hemi-Sync® has been scientifically and clinically proven to be effective.
- Over the years, the Hemi-Sync® process has evolved into a sophisticated multi-layering of Hemi-Sync® signals—"designer mixes" of sound frequencies, fashioned to be optimally effective for a given application. Naturally, Hemi-Sync® sleep products incorporate predominately delta frequencies; learning products predominately beta and so forth. However, these designer mixes are supplemented with special sound frequencies which enable the desired result. This is the "key" to the effectiveness of Hemi-Sync.
- Ongoing Hemi-Sync® research has resulted in the development of scores of individual products for specific applications such as focused attention, stress reduction, meditation, sleep enhancement, and pain control, to name a few. Other Hemi-Sync® products are available as a series (some of which are progressive in

nature) such as the Gateway Experience® In-Home training program for exploring states of consciousness.

- We do not recommend using Hemi-Sync® in combination with other devices or technologies that influence brain activity.

What kind of equipment is required to listen to Hemi-Sync®?

A moderately priced stereo player, including portable CD players will work fine, also IPOD's. Top-of-the-line equipment is not required for Hemi-Sync® to work. Headphones are recommended for best results, and a good set of headphones will contribute to your enjoyment. Headphones that enclose the ear are preferred to reduce ambient room noise and provide a more distraction-free experience.

Will conventional speakers work as well as headphones?

You can use either. The greater the separation between the sounds introduced into each ear, the stronger the Hemi-Sync® effect. We generally recommend using earphones for experiential exercises, because earphones maximize the sound separation and tend to block out exterior noise. Speakers are also fine, and in fact may be preferable when you are playing Metamusic® or other nonverbal titles as background while engaged in another activity. Be in the same room as the speakers. To enhance the separation between the sounds, it is recommended to position yourself between the speakers, when possible.

How can I use earphones if I'm only comfortable lying on my stomach or side? And, what about getting tangled in the wires?

You may wish to try "earbuds", which are designed to fit comfortably inside the ear. Earbuds are available at many stores that sell stereo equipment. Alternatively, use conventional speakers, placed on either side of your bed or try a stereo sleep pillow.

Why am I not supposed to listen to Hemi-Sync® in my car?

When driving, you should pay attention to the road. It's not advisable to move into other states of consciousness.

Why am I not supposed to listen to Hemi-Sync® if I have a tendency towards seizures?

Seizures result from abnormal brainwave activity. Hemi-Sync's influence on brainwave activity might not be beneficial for someone with that tendency.

What's the difference between Human Plus®, Mind Food®, Heart-Sync® and Metamusic®?

Human Plus recordings teach you how to activate the benefit of a particular selection whenever you wish without listening at the particular moment when you desire the intended effect. For example, the Human Plus title, Attention, exercise teaches you how to move into a highly focused state when not listening to the Attention exercise. Most Mind Food and Heart-Sync titles provide the experience/benefit while you are listening. For example, the Mind Food title, Concentration, helps your brain move into a highly focused state of concentration while listening. Metamusic® selections contain music and Hemi-Sync® with no verbal guidance.

What if I fall asleep while listening?

That's fine. The benefits of Hemi-Sync® are achieved with or without your conscious awareness. Many Hemi-Sync® exercises help you achieve a hypnogogic state, that borderline state between deep relaxation and sleep so it's possible you may drift into sleep. If you want to familiarize yourself with the verbal content of an exercise, listen once, without headphones, while seated in a chair.

I hear a hissing noise on some of the products. Is that a defect?

No, what you are hearing is "pink sound" (sometimes described as a swishing sound). It is a combination of all the frequencies the human ear can perceive, with higher and lower frequencies adjusted to be equal in volume. Pink sound enhances the perception of the Hemi-Sync® sound patterns, and therefore plays a valuable role on certain Hemi-Sync® products. Dolby® noise reduction attempts to filter out the pink sound. Therefore, it is important not to use Dolby®, or other noise reduction systems, when listening to Hemi-Sync® audio products on tape.

How do I know if I'm getting the intended effect?

Everyone is unique. Your Hemi-Sync® experience may differ from the experience of others. In fact, your experience may be different each time you listen to a particular exercise. Just relax and trust that your experience is right for you at the time.

Is Hemi-Sync® beneficial for experienced meditators?

Yes. Many long-term meditators report that Hemi-Sync® helps them move more quickly and reliably into a meditative state. Experienced meditators also report that they seem to "go deeper," and sustain the meditative state longer when using Hemi-Sync.

What if I don't feel awake and alert after listening to Hemi-Sync®?

Certain Hemi-Sync® products are designed to leave you in a sleep state. However, if a non-sleep recording leaves you feeling a little "spacey", here are some grounding techniques to try: slowly count down from 10 to 1; drink cold water; splash cool water on your face and neck; run cold water on your wrists; weather permitting, walk barefoot outdoors while you breathe deeply.

How many times should I listen to an exercise to get the effect or benefit?

Generally, you will feel the influence of Hemi-Sync® the first time you listen. However, some products are designed as a training series. These products typically work best when you listen multiple times to reinforce and anchor the intended benefit.

Cautions and Disclaimer

While many of our audio products contribute to wellness, they are not intended to replace medical diagnosis and treatment. DO NOT listen to Hemi-Sync® while driving or operating heavy equipment, or with other devices that may influence brain wave activity. If you have a tendency towards seizures, auditory disorders, or other adverse mental condition(s) DO NOT listen to Hemi-Sync® without first consulting your physician.

4.3. General Applications

Hemisync® is commonly used to improve your skills in many applications such as:

- Focused attention, concentration, creativity
- Stress reduction, deep relaxation
- Emotional release
- Recharge, energizing
- Meditation
- Sleep enhancement, jet lag, deeper levels of rest
- Sports recovery and training
- Visualization and self control
- Change of behavioural patterns
- Pain control
- Improve learning processes
- Lucid dreaming
- Explore other states of awareness

4.4. Applications for Referees. List of CD's. Suggested phases

Applications for referees

Hemisync® is widely used in sports application for over many years.

Golf and tennis players, athletes, team sports have tested this technology for several purposes.

In professional refereeing it can be used for improving many different skills.

On one hand we know about the incredible stress demands that a top referee has to cope through the whole training season.

That stress is mainly focused in flight travels, matches, trainings, fitness tests and with seminars, tournaments and meetings at the different Associations. Therefore one main Area of application would be for providing the referee an easy tool, that requires little effort and can help in managing that overloading situation.

For Jet lag, sleep problems, unproper rest, filling dead or boring times in airports, buses, taxis and hotels... Hemisync ® can be a good help and tool.

On the other hand, and as a reaction of stress and pressure, concentration problems may appear, risk of injuries, difficult of recovery, emotional blockages and so on can be part of an athlete life, therefore, for a top referee too.

In that way Hemisync ® always from the pleasure view of things and situations can provide solutions and peak performances in that specific situations and skills.

In Energy Area, based in my experience of using this technology with myself for many years, knowing and sharing knowledge and approaches with other Hemisync ® Facilitators and teaching how to use it to some top and elite sportmen, I have chosen different CD´s that may help you in the road to South Africa 2010 and for your personal and daily life too.

List of CD´s

They are selected for different purposes. Below the purpose you can read the Title of the CD. Some of them are distributed right now, the rest will be easily downloadable bye-REF during 2009 and 2010.

1. Rest and sleep

- Supersleep
- Catnapper
- Dreamcatcher
- Sleeping through the rain

2. Deep relaxation, stress release

- Guide to serenity

3. Energy and Activación

- Access to energy
- In motion

4. Agility and Coordination

- Synchronizing

5. Pain Management

Pain management

6. Concentration

Concentration

Breakthrough

Lightfall

7. Focused Attention

Attention

8. Sensory improvement

Sensory seeing

Sensory hearing

9. Visualization and creation

Mobius west

10. Health

Circulation

Suggested phases

Phase 1 - January to June 2009

CD's selected:

Super sleep

Catnapper

Phase 2 - June 2009 to November 2009

CD's selected:

Mobius west

In motion

Attention

Sensory Seeing

Phase 3 – November 2009 to June 2010

Rest of CD's by e-REF

CD applications

Attention

Sharply focus the mind and senses on a particular thought, action or event. Enhance any performance requiring concentration such as reading, writing, typing or studying. Increase productivity and improve information retention and recall. (Human Plus -verbally guided - 60 min.)

Access to energy

Explore and experience the vast reserve of energy deep within you and learn to access that energy anytime you wish. Use *Access to Energy* to increase strength, agility, alertness, stamina, or to simply feel vigorous all over, and enjoy increased satisfaction and productivity. Length: 71 minutes.

Circulation

Develop smooth and optimum blood flow throughout your body. Learn a simple method you can use anytime, anywhere to improve your body's circulatory system. May be used to focus upon critical areas or for general maintenance. (Human Plus - Verbal guided - 60 min.)

Catnapper

Enjoy a totally refreshing nap in only 30 minutes. Verbal guidance and Hemi-Sync® provide you with a unique opportunity to obtain deeply restorative rest. Benefit from *Catnapper's* proven effectiveness during work or study breaks or to re-energize for the evening. *Catnapper* is also effective for countering the effects of jet lag, coping with irregular schedules or as the ultimate pick-me-up anytime. (Mind Food - Verbally guided - 30 min.)

Concentration

Perfect for any mental task requiring focus and concentration - use at home, work or school while studying, reading, working on a computer or balancing a checkbook. Play in the background or use with headphones to enhance mental capabilities while stimulating creativity and imagination. (Mind Food - Non-verbal) 58 min.

Dreamcatcher

Dreams are gateways to the soul. Drift gently into the mystical dreamstate with soothing ambient music, calming water sounds and Hemi-Sync®. *Dreamcatcher* supports deep, restorative sleep when used in continuous play. It may also be used for massage therapy, subtle energy healing work or for powerful meditations in the borderland sleep state. Instruments featured: harmonic chords, drones, synthesizer, and field recordings of water sounds and whale calls. Length: 55 minutes.

Guide to serenity

Experience deep levels of physical and emotional comfort with this highly effective 10-point system of total relaxation. With *Guide to Serenity* you can achieve profound states of inner peace and calm and learn to recreate such states whenever you wish. Use *Guide to Serenity* to restore your strength and vitality. Hemi-Sync® sound patterns support progressive states of relaxation until you drift gently into a natural, refreshing sleep. (Mind Food - verbally guided - 39 min.)

In motion

Supercharge your dance or workout routines with upbeat electronic music and Hemi-Sync®. Driving rhythms are combined with the innovative use of Hemi-Sync® to give you added horsepower when you need it. Use this cutting-edge composition for dance, jogging, workout routines, or play in the background while cleaning house. Includes brief warm up and cool down tracks. Length: 34 minutes.

Möbius west

Create the reality you desire. Maximize your achievements and/or establish new directions in your life. Use *Möbius West* to program change in your thoughts, feelings, or behavior and to alter mental, emotional, or physical patterns. (Human Plus - verbally guided) 61 min.

Lightfall

Also Sprach Zarathustra is frequently associated with the intellectual and technological achievements of humankind such as its use in 2001: A Space Odyssey. *Lightfall* is a modern-day interpretation of R. Strauss' classical masterwork blended with J.S. Bach's Air on a G String and Prelude in C. *Lightfall* features Hemi-Sync® concentration frequencies to

support peak-performance mental states and may be helpful to those with ADD/ADHD, dyslexia, and other learning challenges. Length: 44 minutes.

Pain management

Listening to *Pain Management* can help you reduce pain signals until they no longer seem significant. You will also learn an effective, time-proven method to diminish pain signals anywhere. Use *Pain Management* to help restore the vitality and dynamic energy needed for the perfect functioning of both mind and body. This remarkable Hemi-Sync® exercise helps you balance and equalize your mental, emotional, and physical self and guides you gently into a deeply, restorative sleep. (Mind Food - Verbal) 44 min.

Remembrance

Focus - with powerful Hemi-Sync® and music designed for quantum learning, peak performance and creative flow. *Remembrance* is perfect for any mental task requiring focus and concentration and may be helpful for ADD/ADHD, dyslexia and other learning challenges. Play in the background or use with headphones to enhance mental capabilities.

Synchronizing

Strengthen and fine tune your mind/body coordination and ability to excel. Synchronizing teaches you a method you can use anywhere to enhance your precision, speed, agility and overall performance in activities such as sports, dancing, manual tasks or artistic creation. (Human Plus - verbally guided) 60 min.

Sensory seeing

Improve and fine tune your eyesight. *Sensory: Seeing* teaches you a method you can use anywhere to sharpen your focus and enhance your sensitivity to light and movement. May also be used to ease eye strain, strengthen eye muscles, or help alleviate ongoing vision problems. (Human Plus - verbally guided) 60 min.

Sensory hearing

Amplify or decrease your sensitivity to sound. Learn a simple method you can use anytime, anywhere to control how you perceive sound. Use to compensate for hypersensitivity to sound or to hear low volume sounds more clearly. (Human Plus - verbally guided) 60 min.

Supersleep

Super Sleep helps you produce the natural brain-wave patterns of the Delta sleep state and enjoy the benefits of totally refreshing, deeply restorative sleep. Use ear buds, headphones or speakers placed on either side of the bed. Play *Super Sleep* continuously to support uninterrupted sleep and get a good night's rest. (Mind Food - Nonverbal) 45 minutes.

Sleeping through the rain

Journey across the border of wakefulness with soft, dreamy music and Hemi-Sync® - from deep relaxation into natural, refreshing sleep. *Sleeping Through the Rain* is effective with headphones, earbuds or conventional speakers placed on either side or at the head of the bed.

5. Articles and Readings

5.1. The Importance of a Good Night's Sleep

"Oh sleep! It is a gentle thing; beloved from pole to pole."
Samuel Taylor Coleridge

The simple ritual of a good night's sleep is an unparalleled necessity for good health. Referred to by William Shakespeare as "the chief nourisher in life's feast," sleep is a critical function that allows us to restore vital physical functions, fuel and nurture our creativity, enhance feelings of well-being and provide renewed energy resources for the next period of activity.

While we all know that lack of sleep affects the quality of life, few of us realize the full range of problems—physiological, psychiatric, emotional and mental—that can result from chronic sleep problems. Whether it's too little sleep, too much sleep or an inadequate quality of sleep, disturbed sleep patterns impact how we look, feel and perform on a daily basis, and can have a major impact on our overall quality of life.

An estimated 50 to 70 million Americans suffer from sleep problems, significantly impacting their health, safety and alertness. Studies conducted over the past several decades indicate that chronic sleep disorders may also contribute to heart disease, hypertension, stroke, depression, diabetes and other serious illnesses.

Little was known about sleep until renowned sleep pioneer William C. Dement, MD, PhD, established the world's first sleep disorder clinic in 1970 at Stanford University. Now in his 80s, Dr. Dement is still considered one of the world's foremost authorities on sleep, sleep deprivation, and the diagnosis and treatment of sleep disorders. He is credited with saving thousands of lives "without seeing a single patient" by researching, identifying and publicizing sleep disorders and the effects it can have on the quality of life.

One of his top initiatives, taught to thousands of Stanford students over the years in his enormously popular Sleep and Dreams course, is to make the public aware that

“drowsiness is red alert!” — encouraging each person to become aware of their own fatigue limits to avoid serious consequences. *Wake Up America: A National Sleep Alert*, a 1992 sleep study also associated with Dement, concluded that accidents and reduced productivity caused by sleep deprivation or sleep disorders could cost the U.S. up to a hundred million dollars per year. The National Highway Traffic Safety Administration reports that “drowsy driving” is responsible for the loss of more than 1,500 lives, and causes at least 100,000 vehicular accidents each year.

What robs us of our sleep? Experts consider stress the No. 1 cause of short-term sleeping problems. Other causes include irregular work schedules, jet lag, physical discomfort from illness, a distracting or uncomfortable environment, and lifestyle choices such as alcohol and/or caffeine consumption that can interfere with the ability to fall asleep and/or stay asleep. More serious problems include sleep apnea, characterized by interrupted breathing; involuntary limb movements such as restless leg syndrome; and narcolepsy, characterized by an abnormal tendency to involuntarily pass directly from wakefulness into deep sleep.

Most adults need 7 to 9 hours of sleep. Adequate amounts of uninterrupted sleep is recuperative and rejuvenating. People who routinely get less than 7 hours sleep, or 8 or more hours with several interruptions, often show symptoms of sleep deprivation: irritability, attention deficit, and increased stress levels.

Most people experience sleep problems from time to time, but chronic, persistent sleep problems can seriously affect health and wellbeing. If you consistently find yourself feeling tired or not well rested during the day despite spending enough time in bed at night, you may have a sleep disorder and should seek medical advice. A general practitioner or a sleep specialist should be able to help.

For people who have occasional sleep problems, there are some simple methods that can help promote sleep and the ability to stay asleep:

Have a good sleeping environment. Remove any distractions, such as noises or bright lights, and replace an uncomfortable bed or pillow if necessary.

Follow a sleep schedule. Going to bed and waking up at the same time every day—even on weekends—creates a solid habit.

Avoid late-day caffeine consumption. Stimulants can take hours to wear off, making it hard for some people to fall asleep at night.

Avoid alcoholic drinks before bed. Alcohol can interfere with deep, restorative sleep, keeping you in the lighter stages of sleep.

Avoid large meals and beverages late at night. A large meal can cause indigestion; drinking fluids can cause frequent awakenings to urinate.

Don't lie in bed awake. If you can't fall asleep or keep waking up, get up and do some relaxing activity until you feel sleepy. The anxiety of not being able to sleep can make it harder to fall asleep.

Don't take naps after 3 p.m. Late afternoon naps can make it harder to sleep at night.

Relax before bed. Take the time to unwind—create a soothing bedtime ritual, such as a warm bath, reading or listening to music.

Natural remedies. Holistic remedies for sleep problems include breathing techniques, visualizations, mantras and herbal preparations. Monroe Products offers a full line of audio CDs, using the extraordinary Hemi-Sync® technology, that can help you fall sleep and stay asleep, as well as catch a fully-restorative nap in 30 minutes.

5.2. The Facilitation of Attention Utilizing Therapeutic Sounds by George Guilfoyle, Ph.D., and Dominic Carbone, Ph.D.

When each ear is presented simultaneously with a pure tone signal, and these tones differ by only a small amount (from 1 to 25 Hz), they continually mesh in and out of phase with each other to produce a binaural beat. According to Atwater (1996) "the binaural beat [is] perceived as a fluctuating rhythm at the frequency of the difference between the two auditory inputs" (p. 4). Apparently the binaural beats are generated in the brain stem and are associated with a pattern of electrical activity over the surface of the cortex known as the frequency following response, which can be measured by an electroencephalograph. Morris (1991) says: "For example, if the individual listens to a tone with the frequency of 440 Hz in one ear and another tone of 444 Hz in the other ear, a binaural beat of 4 Hz will be produced. This electrical signal occurs with relatively equal frequency and strength in both hemispheres of the brain and creates a synchronization of the two sides of the brain. Because of this synchronization, Monroe has called this effect Hemi-Sync® (p. 281).

Research investigations of brain activity patterns demonstrate that particular states of consciousness are associated with some of these patterns. Thus, the delta pattern (0.5 to 4 Hz) is associated with sleep, the theta pattern (4 to 8 Hz) with deep states of meditation, the alpha pattern (8 to 12 Hz) with relaxation, and the beta pattern (12 to 30 Hz) with concentration. What Hemi-Sync is apparently able to do is to create the possibility of attaining any one of these states of consciousness by varying the frequencies of the pure tones delivered to each ear, as well as by varying the differences between the two frequencies. Delivering the relevant frequencies to the listener's ears, however, is only one factor in attaining a particular state of consciousness. The listener must be cooperative and in a receptive state of mind in order for the signals to work. In other words, it is not automatic. One can reject the effect if one so chooses.

Research with this technology is promising. Edrington (1984) used Hemi-Sync "cognitive learning enhancement tapes" with college students taking an Introductory Psychology course (Tacoma Community College, spring 1981). There were two sections taking the same course. One listened to Hemi-Sync during class, the other did not. Six tests were administered during the semester. In all but the first test, the students listening to the

Hemi-Sync tapes scored, on the average, approximately ten points higher on each of the tests. The likelihood that these differences were the result of chance factors was no more than two times in a hundred.

Morris (1991) reported that when Hemi-Sync relaxation music was added to an ongoing program of remediation therapy with twenty developmentally disabled children suffering from feeding and pre-speech problems, fifteen of them showed positive changes in the problematic behaviors, including improvements in focus of attention, overall sensory organization, and motor coordination. Physical relaxation increased and there was a corresponding reduction in fearfulness and tactile defensiveness. According to Morris, "All of the children exhibited a greater openness and enthusiasm for learning" (p. 284).

Robert Sornson, executive director of special education for Northville Public Schools, Northville, Michigan, and fellow Monroe Institute Professional Members have investigated the use of Hemi-Sync with people suffering from attention deficit disorder (ADD). Sornson (Bullard 1995) noted that people with ADD exhibit lower levels of glucose metabolism in their brains. Generally they use less oxygen across the cerebral cortex, produce brain waves that are somewhat slower than normal, and have difficulty maintaining the high levels of arousal associated with sustained alertness and focused attention. The Hemi-Sync [Remembrance](#) tape that was employed was designed to foster quantum learning and peak performance. Although no formal investigation was carried out, reports from teachers and parents administering the Attention side of the Remembrance tape to children diagnosed with ADD indicate that the faster beta frequencies embedded in the music have resulted in improvements in the children's focus of attention.

According to Zigler and Finn-Stevenson (1987) ADD children "tend to move from one site to another, they are unable to inhibit action, and they are constantly diverted by sounds and objects. Not only are the children chaotic in their behavior, they also tend to forget what they are told to do, and they seem at a loss when asked to engage in sequentially ordered behaviors (for example, when they are asked to go outside and fetch something)" (p. 460). These same symptoms--short attention span, distractibility, hyperactivity, impulsiveness, and emotional instability--can be seen in a number of mentally retarded/developmentally disabled (MR/DD) adults in day treatment settings. So if Hemi-

Sync can improve the focusing ability of ADD children, can it perform a similar function with these MR/DD adults? To find out, we created a pool of twenty mentally retarded adults from members of our program population who expressed a willingness to participate in the study, matched them on the basis of IQ (Leiter International Performance Scale), then randomly assigned them to either an experimental or a control group. Both groups attended approximately fifteen sessions of one-half hour each extending over a two-month period.

The subjects in both groups sat in a double column of five rows placed in the center of a room approximately twenty feet by twenty feet equipped with large stereo speakers at the far ends of the back wall. Both groups watched nature videos without the sound tracks and listened to the Attention side of the Remembrance tape for thirty minutes per session. The only difference in the treatment given to the experimental and control groups was the Hemi-Sync signal which was present in the experimental condition and absent in the control. Before the treatment began and again after it was terminated, each subject was administered three subtests of the Wechsler Adult Intelligence Scale, each of which demands some degree of focused attention. The first, a test of short-term auditory memory, requires subjects to immediately repeat (forward or backward) sets of numbers spoken to them. Matarazzo (1972) noted that "difficulty in the reproduction of digits correlates with lack of ability to perform tasks requiring concentrated effort" (pp. 204-5). In the Block Design Test, which requires the subject to reproduce patterns of red and white blocks, the subject must simultaneously attend to both color and pattern in solving the problem. Finally, the Digit Symbol Test, which requires the subject to associate certain symbols with the numbers one through nine, perhaps more than the other two subtests, demands sustained focus throughout the whole test.

In addition to these measures, six five-point Likert type scales were created to measure various aspects of attentiveness. Two clinician-raters, both former teachers and both familiar with all of the participants in the study, rated each subject both before and after the treatment. The conditions under which they rated the participants were constant and tightly scripted. Each participant was introduced to the study, asked the same questions, and required to perform the same tasks. Their responses to the requirements of the situation provided the basis for the ratings. Also, the raters were unaware, throughout the

experiment, of the composition of the groups. The ratings from each rater for each participant on each measure were averaged. Rater agreements on the six scales are shown in Table 1.

Table 1: Rater Agreement* on Six Measures of Attentiveness and Associated Behavior

SCALE	Pearson's (r)	P values**
Attention to Task	.63	.005
Memory for Instructions	.91	.000
Resistance to Distractions	.81	.000
Attention to Speech	.62	.006
Level of Alertness	.36	.142
Level of Irritability	.71	.001

* As mentioned by Pearson's product-moment correlation coefficient (r)

** P values represent probability that the associated r would have occurred by chance alone.

Following the last treatment session, subjects were retested and rerated. Difference scores were created by subtracting the scores they obtained on each test and rating scale before the treatment began from those obtained after the termination of the treatment. Positive scores indicate improvement. Scores of zero reflect no change. Negative scores indicate deterioration of performance. For both test scores and average ratings, the Mann-Whitney U Test was used to determine if the differences obtained from the two groups were likely to be the result of chance alone, or whether they represented a real effect.

Table 2: Average Differences in Raw Scores (Before and After) of Measures of Short-Term Auditory Memory and Perceptual-Motor Skills

SCALE	Music plus Hemi-Sync	Music Only	Mann-Whitney U Statistic
Digit Span	+0.1	0.0	75
Block Design	+1.6	-1.1	54
Digit Symbol	+2.8	-1.4	50*

* Differences significant at the .05 level of confidence

TABLE 3: Average Differences in Ratings (Before and After) of Six Measures of Attentiveness and Associated Behavior

SCALE	Music plus Hemi-Sync	Music Only	Mann-Whitney U Statistic
Attention to Task	-1.0	-2.0	54
Memory for Instructions	+1.3	-0.9	86
Resistance to Distractions	+0.5	-1.0	46*
Attention to Speech	+1.3	-0.5	46*
Level of Alertness	+0.5	0.0	58
Level of Irritability	+1.0	-0.9	48*

* Differences significant at the .05 level of confidence

In Table 2 we see that for the group exposed to the Hemi-Sync signal, all difference scores were, on the average, positive. By contrast, the average difference scores obtained by the group denied the Hemi-Sync signal were generally negative. Only in the case of the Digit

Symbol Test, however, were the differences between the two groups significant, which is to say, not likely the result of chance. (You would expect to obtain differences as great as these only five times in a hundred by chance alone.)

In Table 3 we find a similar pattern. The difference scores obtained by the group exposed to the Hemi-Sync signal were, for the most part, positive, while the difference scores obtained by the control group were predominantly negative. Apparently, repeated exposure to the Hemi-Sync signal resulted in small but real improvements in focusing ability as expressed by increased resistance to distraction and attention to speech. In addition, those people exposed to the signal appeared more serene (less irritable) than their counterparts in the control group. These results seem to confirm earlier anecdotal findings regarding the focusing effect produced by repeated exposure to the beta-inducing frequencies embedded in the Remembrance tape. Interestingly, when asked if they would like to continue the sessions, all members of the experimental group, but only two or three members of the control group, raised their hands. In fact, for several weeks after the termination of the experiment, we were approached almost exclusively by former experimental group members asking when the sessions were to begin again.

From a practical standpoint the obtained increases in focused attention were--while real--not overly large. Nor did it seem that the effects had generalized appreciably to classroom behavior. A second study has been inaugurated to determine if greater exposure to the Hemi-Sync frequency patterns (longer sessions and more sessions) results in greater increases in attentiveness. This is being explored by exposing selected participants to the Hemi-Sync signal in twice-weekly individual sessions during which they are required to play computer games demanding sustained attention. Scores per game and number of games per session are being recorded. The early sessions (with no Hemi-Sync signal present) have been devoted to obtaining baseline data. Later, Hemi-Sync sessions will continue for a minimum of six months in order to gauge the long-term effects of the signal upon attentiveness.

References

Atwater, F. H. 1996. The Hemi-Sync process. Faber, Va.: The Monroe Institute.

Bullard, B. 1995. The road to Remembrance. Hemi-Sync journal 13 (1).

Edrington, D. 1984. A palliative for wandering attention. Unpublished paper. Tacoma, Wash.

Matarazzo, J. D. 1972. Wechsler's measurement and appraisal of adult intelligence. 5th ed. Baltimore: Williams & Wilkins.

Morris, S. 1991. Facilitation of learning. In Neurodevelopmental strategies for managing communication disorders in children with severe motor dysfunction. Austin, Tex.: Pro-ed.

Zigler, E. F., and Finn-Stevenson, M. 1987. Children: Development and social issues. Lexington, Mass.: D.C. Heath and Company.

George Guilfoyle is a licensed psychologist in the state of New York. He has spent the bulk of his career working with the emotionally and physically challenged. He is presently a senior psychologist on the staff of the Young Adult Institute, Manhattan Day Treatment Program, which serves mentally retarded/developmentally disabled adults in New York City. Dr. Guilfoyle has been a Professional Member of The Monroe Institute since June, 1996. Co-investigator Dominic Carbone is psychology unit head at the Young Adult Institute. This article was adapted from a paper presented at the New York State Association of Day Service Providers Symposium, October 18, 1996, Albany, New York.

5.3. Stress – America's #1 Health Problem

Seventeen years ago the government passed a resolution declaring April "Stress Awareness Month," in hopes of increasing public awareness and education of what was referred to in a 1983 Time magazine cover as "The Epidemic of the Eighties."

Decades later stress is targeted as "America's No. 1 Health Problem," impacting human wellness from a simple increased susceptibility to the common cold to life-threatening illnesses such as stroke, heart disease, hypertension and cancer.

The bad news is that while we've had years of awareness and education, our lives have actually become more stressful. According to a 2008 American Psychological Association (APA) study, nearly half of Americans reported increased stress levels over the past years, with nearly one-third of the respondents rating their stress levels as "extreme."

The concept of "stress," as we know it was first identified in 1936 by Hans Selye, an Austro-Hungarian physician and endocrinologist. Early in his career this gifted and pioneering scientist developed a theory of the influence of stress on people's ability to cope with and adapt to the pressures of injury and disease, thereby creating the first concept of stress. He dedicated his entire lifetime to the study of stress and related problems, and is sometimes referred to as "The Einstein of Medicine" for his research and findings.

While Selye's definition of stress as "the non-specific response of the body to any demand for change" is still applicable, the concept of stress has taken on a more commonplace meaning. Once considered an inevitable by-product of the lifestyles of high-powered executives and career-track single mothers, stress has come to mean, quite simply, our ability to cope with the wear and tear of ordinary life.

Although clinical definitions of stress differ - and even change as the years go by - the bottom line for us in our personal lives is that we are constantly responding to changing circumstances, relationships, finances, information, schedules, physical demands, work responsibilities, family issues - all the stuff that life is made of.

Respondents in the APA study (more than 2500 participants) listed the factors, in descending order, that they felt produced the most stress: money, the economy, work, family health problems, family responsibilities, housing costs, relationships, personal health problems, job stability and personal safety. More than 80 percent of the respondents recognized the negative impact stress could have on a variety of conditions, which included depression, heart attack or stroke, high blood pressure, cancer, obesity, and insomnia - as well as "their ability to make decisions or get things done at least once a week."

But it's not all bad news. While stress has been defined, researched, publicized and studied, a number of stress management techniques and coping mechanisms have been identified as well.

Firstly, not all stress is bad. Dealing with stressful situations can actually give us more energy, keep us alert, and help us stay focused; giving us the sensation of feeling

"pumped," or "wired." But if (or when) the level of stress escalates, eventually we lose our ability to respond positively, although this occurs at different times for different people.

And secondly, making lifestyle changes to improve overall health, from diet and exercise to changing careers and limiting stressful activities, help us manage stress. But one of the most powerful strategies for managing stress is relaxation. A regular practice of 20-30 minutes a day of deep relaxation - particularly meditative relaxation - can not only reduce the mental and emotional stress we feel, but also help us control and even reduce the negative effects of stress on our bodies.

We can accomplish this by using age-old relaxation strategies of strolling along the beach, reclining beside a woodland brook, or taking a walk in a tranquil forest. Studies have shown that the deep state of meditative relaxation we achieve in these activities provides a natural return to personal harmony, evoking the alpha or theta brainwaves known to be produced during states of profound relaxation.

While our busy lives and demands on our time prevent us from enjoying these types of relaxing getaways on a daily basis, the ability to reach a satisfying level of relaxation in a short period of time in the course of a normal day can greatly assist in managing stress. And we now know, from years of research, that achieving the invaluable relaxed alpha or theta brainwave state is fundamental to the process.

The difficulty to quickly and easily achieve the required relaxed state has been resolved by many of the Monroe Products Hemi-Sync® audio CDs. The Hemi-Sync® frequencies contained in the CDs can greatly enhance the relaxation and meditation process by combining alpha or theta signals with soothing music or guided imagery. There are dozens of relaxation and meditation titles to choose from, offering deep relaxation and/or meditation exercises ranging in length from 30 to 75 minutes.

5.4. The Hemi-Sync® Process

by F. Holmes Atwater (June 1999) - Research Division, The Monroe Institute

Introduction

Robert Monroe developed and patented¹ a binaural-beat technology called the Hemi-Sync auditory-guidance system. The Monroe Institute, a 501c(3) nonprofit research and educational organization, uses this Hemi-Sync system within an educational process. During this process individuals listen to a combination of multiplexed audio binaural beats that are mixed with music, pink sound², and/or the natural sound of surf. Binaural-beat stimulation, coupled with the effects of the other components within the Hemi-Sync process, encourages access to focused states of consciousness.

Ancient cultures used the natural power of sound and music to safely influence states of consciousness in religious ceremonies and to promote psychological and physical health. Today, the idea that auditory stimulation can affect consciousness is widely accepted (Poole 1993). Hemi-Sync represents the state-of-the-art in the technological application of the natural power of sound and it has a variety of beneficial applications. Studies have shown improvements in sensory integration (Morris 1990), relaxation, meditation, stress reduction, pain management, sleep (Wilson 1990; Rhodes 1993), and health care (Carter 1993). Hemi-Sync has proven effective in producing enriched learning environments, enhanced memory (Kennerly 1994), improved creativity (Hiew 1995), increased intuition, improved reliability in remote viewing³ (McMoneagle 1993), telepathy⁴, and out-of-body experience⁵. Understanding of the effectiveness of Hemi-Sync goes beyond knowing about the natural power of sound to include the well-known autonomic effects of restricted environmental stimulation, controlled breathing, progressive relaxation, and the psychology of affirmations and visualizations. This paper discusses the brain-mind model, brain waves and their relationship to states of consciousness and the role of the reticular activating system (RAS) in regulating brain waves, and beneficial social-psychological conditioning and educational processes.

Binaural Beats and The Physiology of the Brain

Binaural beats were discovered in 1839 by a German experimenter, H. W. Dove. The human ability to "hear" binaural beats appears to be the result of evolutionary adaptation. Many evolved species can detect binaural beats because of their brain structure. The frequencies at which binaural beats can be detected change depending upon the size of the species' cranium. In the human, binaural beats can be detected when carrier tones⁶ are below approximately 1500 Hz (Oster 1973). The relevant issue here, however, is this innate ability of the brain to detect phase differences between the ears that enables the perception of binaural beats.

The sensation of "hearing" binaural beats occurs when two coherent sounds of nearly similar frequencies (less than 1500 Hz) are presented, one to each ear, and the brain detects phase differences between these sounds. This phase difference would normally provide directional information to the listener but when presented with stereo headphones or speakers the brain integrates the two signals, producing a sensation of a third sound called the binaural beat.

Perceived as a fluctuating rhythm at the frequency of the difference between the two (stereo left and right) auditory inputs, binaural beats originate in the brainstem within the contralateral audio-processing regions called the superior olivary nuclei (Oster 1973). This auditory sensation is neurologically routed to the reticular formation (Swann et al. 1982) and simultaneously volume conducted to the cortex where it can be objectively measured as a frequency-following response (Oster 1973; Smith, Marsh, & Brown 1975; Marsh, Brown & Smith 1975; Smith et al. 1978; Hink et al. 1980).

There have been numerous anecdotal reports and a growing number of research efforts reporting beneficial brain-state changes associated with Hemi-Sync's binaural beats. Binaural beats have been associated with changes in arousal states, attentional focus, and levels of awareness leading to sensory integration (Morris 1990), improved response to alpha biofeedback training (Foster 1990), relaxation, meditation, stress reduction, pain management, improved sleep (Wilson 1990; Rhodes 1993), health care (Carter 1993), enriched learning environments (Akenhead 1993), enhanced memory (Kennerly 1994), creativity (Hiew 1995), treatment of children with developmental disabilities (Morris 1996),

the facilitation of attention (Guilfoyle & Carbone 1996), peak and other exceptional experiences (Masluk 1997), enhancement of hypnotizability (Brady 1997), treatment of alcoholic depression (Waldkoetter & Sanders 1997), and positive effects on vigilance performance and mood (Lane et al. 1998).

Passively listening to Hemi-Sync binaural beats may not automatically engender a focused state of consciousness. The Hemi-Sync process includes a number of components; binaural beats are only one element. We all maintain a psychophysiological momentum, a homeostasis that may resist the influence of the binaural beats. Practices such as humming, toning, breathing exercises, autogenic training, and/or biofeedback can be used to interrupt the homeostasis of resistant subjects (Tart 1975). Naturally occurring ultradian rhythms driven by the reticular activating system and characterized by periodic changes in arousal (Webb & Dube 1981; Rossi 1986; Shannahoff-Khalsa 1991), may influence the effectiveness of binaural beats. One's first-person experience in response to binaural-beat stimulation may also be affected by a number of psychological mediating factors.

Brain Waves and Consciousness

Controversies concerning the brain, mind, and consciousness have existed since the early Greek philosophers argued about the nature of the mind-body relationship, and none of these disputes has been resolved. Modern neurologists have located the mind in the brain and have said that consciousness is the result of electrochemical neurological activity. There are, however, a growing number of observations that challenge the completeness of these assertions. There is no neurophysiological research which conclusively demonstrates that the higher levels of mind (intuition, insight, creativity, imagination, understanding, thought, reasoning, intent, decision, knowing, will, spirit, or soul) are located in brain tissue (Hunt 1995). A resolution to the controversies surrounding the higher mind and consciousness and the mind-body problem in general may require an epistemological shift to include extra-rational ways of knowing (de Quincey 1994) and may well elude comprehension by neurochemical brain studies alone.

We are in the midst of a revolution focusing on the study of consciousness (Owens 1995). Penfield (1975), an eminent contemporary neurophysiologist, found that the human mind continued to work in spite of the brain's reduced activity under anesthesia. Brain waves

were nearly absent while the mind was just as active as in the waking state. The only difference was in the content of the conscious experience. Following Penfield's work, other researchers have reported awareness in comatose patients (Hunt 1995) and there is a growing body of evidence which suggests that reduced cortical arousal while maintaining conscious awareness is possible (Fischer 1971; West 1980; Delmonte 1984; Wallace 1986; Goleman 1988; Mavromatis 1991; Jevning, Wallace, & Beidenbach 1992). These states are variously referred to as meditative, trance, altered, hypnagogic, hypnotic, and twilight-learning states (Budzynski 1986). These various forms of consciousness rest on the maintenance of awareness in a physiologically reduced state of arousal marked by parasympathetic dominance (Mavromatis 1991). Highly hypnotizable subjects and adept meditators have demonstrated that maintaining consciousness with reduced cortical arousal is indeed possible in selected individuals, either as a natural ability or as an acquired skill (Sabourin, Cutcomb, Crawford, & Pribram 1993). More and more scientists are expressing doubts about the neurologists' brain-mind model because it fails to answer so many questions about our ordinary experiences and evades our mystical and spiritual queries. Studies in distant mental influence and mental healing also challenge the notion of a mind localized within the brain (Dossey 1994; Dossey 1996). Nonlocal events have been proven to occur at the subatomic level and some researchers believe that the physics principles behind these events also underlie nonlocal consciousness-mediated effects (Dossey 1996). The scientific evidence supporting the phenomenon of remote viewing alone is sufficient to show that mind-consciousness is not a local phenomenon (McMoneagle 1993).

If mind-consciousness is not the brain, why then does science relate states of consciousness and mental functioning to brain waves? And why does the Hemi-Sync process include a binaural-beat technology that has the potential to alter brain waves? The first question can be answered in terms of instrumentation. There is no objective way to measure mind or consciousness with an instrument. Mind-consciousness appears to be a field phenomenon that interfaces with the body and the neurological structures of the brain (Hunt 1995). This field cannot be measured directly with current instrumentation. On the other hand, the electrical potentials of the body can be measured and easily quantified. Contemporary science likes things that can be measured and quantified. The problem here lies in the oversimplification of the observations. EEG patterns measured on the cortex are

the result of electroneurological activity of the brain. But the brain's electroneurological activity is not mind-consciousness. Therefore, EEG measurements are only an indirect means of assessing the mind-consciousness interface with the neurological structures of the brain. As crude as this may seem, the EEG has been a reliable way for researchers to estimate states of consciousness based on the relative proportions of EEG frequencies. Stated another way, certain EEG patterns have been historically associated with specific states of consciousness. Although not an absolute, it is reasonable to assume, given the current EEG literature, that if a specific EEG pattern emerges it is probably accompanied by a particular state of consciousness.

The second question raised in the above paragraph requires a more complex explanation. The Hemi-Sync process includes the powerful binaural-beat technology because altering arousal states, attentional focus, and levels of awareness allows for an increased repertoire of mind-consciousness experiences. When brain waves move to lower frequencies (lower arousal) and consciousness is maintained (cognitive experience), a unique state emerges. Practitioners of the Hemi-Sync process call this state of hypnagogia "mind awake/body asleep." Slightly higher brain-wave frequencies can lead to hyper-suggestive states of consciousness. Still higher frequencies are associated with the alert and focused levels of attention necessary for the optimal performance of many tasks.

Perceived reality changes depending on the state of consciousness of the perceiver (Tart 1975). Some states of consciousness provide limited views of reality, while others provide an expanded awareness of reality. For the most part, states of consciousness vary in response to the ever-changing internal environment and surrounding stimulation. For example, states of consciousness are subject to influences like drugs and circadian and ultradian rhythms (Webb & Dube 1981; Rossi 1986; Shannahoff-Khalsa 1991). Specific states of consciousness can also be learned as adaptive behaviors to demanding circumstances (Green & Green 1986). Functioning through the mechanism of the extended reticular-thalamic activating system, Hemi-Sync offers access to a wide variety of altered-state experiences for those wanting to explore the realms of consciousness.

Hemispheric Synchronization

The term "Hemi-Sync" was chosen as a trademark because perceiving the binaural beat indicates that the audio processing centers in the two hemispheres of the brain are functioning coherently, or in sync with each other. Many of the states of consciousness available through this technology have been identified as presenting unique hemispherically synchronized brain-wave frequencies. Although synchronized brain waves have long been associated with meditative and hypnagogic states, Hemi-Sync may be unique in its ability to induce and improve such states of consciousness. The reason for this is physiological. Each ear is "hardwired" (so to speak) to both hemispheres of the brain (Rosenzweig 1961). Each hemisphere has its own olivary nucleus (sound-processing center) which receives signals from each ear. When a binaural beat is perceived there are actually two electrochemical, synaptic waves of equal amplitude and frequency present, one in each hemisphere. This is, in and of itself, hemispheric synchrony of synaptic activity. The unique binaural beats of the Hemi-Sync system appear to contribute to the hemispheric synchronization evidenced in meditative and hypnagogic states of consciousness. Hemi-Sync's binaural beats may also enhance brain function by enabling the user to reconcile cross-collosal connectivity at designated brain-wave frequencies.

The two cerebral hemispheres of the brain are like two separate information-processing modules. Both are complex cognitive systems; both process information independently and in parallel; and their interaction is neither arbitrary nor continuous (Zaidel 1985). States of consciousness can be defined not only in terms of brain-wave frequency ratios, but also in terms of hemispheric specialization and/or interaction. An individual's cognitive repertoire and, therefore, his ability to perceive reality and deal with the everyday world, is subject to his ability to experience various states of consciousness (Tart 1975).

The Hemi-Sync Process Alters States of Consciousness

The extended reticular-thalamic activation system (ERTAS) regulates brain-wave activity (Newman 1997), an essential element in altering consciousness. The word reticular means "net-like" and the neural reticular formation itself is a large, net-like diffuse area of the brainstem (Anch et al. 1988). The reticular activating system (RAS) interprets and reacts to information from internal stimuli, feelings, attitudes, and beliefs as well as external sensory stimuli by regulating arousal states, attentional focus, and levels of awareness—by

definition, elements of consciousness itself (Empson 1986; Tice & Steinberg 1989). How we interpret, respond, and react to information then, is managed by the brain's reticular formation stimulating the thalamus and cortex, and controlling attentiveness and levels of arousal (Empson 1986).

In order to alter arousal states, attentional focus, and levels of awareness, it is necessary to provide some sort of information input to the RAS. Hemi-Sync's binaural beats provide this information. The information referred to here is the complex, brain-wave-like pattern of the Hemi-Sync binaural beat. This unique binaural-beat (neurologically evidenced by the EEG frequency-following response) is recognized by the RAS as brain-wave pattern information. If internal stimuli, feelings, attitudes, beliefs, and external sensory stimuli are not in conflict with this information (e.g., an internal, even unconscious, fear may be a source of conflict), the RAS will alter states of consciousness to match the Hemi-Sync stimulus as a natural function of maintaining homeostasis⁷.

As time passes, the RAS monitors both the internal and external environment and arousal states, attentional focus, and levels of awareness to determine, from moment to moment, the most suitable way to deal with existing conditions. As long as no conflicts develop, the RAS naturally continues aligning the listener's state of consciousness with the information in the brain-wave-like pattern of the Hemi-Sync sound field.

In objective, measurable terms, EEG-based research provides evidence of Hemi-Sync's influence on arousal states, attentional focus, and levels of awareness. Since the RAS regulates cortical EEG (Swann et al. 1982), monitoring EEG chronicles performance of the RAS. There have been several free-running EEG studies (Foster 1990; Sadigh 1990; Hiew 1995, among others) which suggest that Hemi-Sync binaural beats induce alterations in EEG. Because the RAS is responsible for regulating EEG (Swann et al. 1982; Empson 1986), these studies document measurable changes in RAS function during exposure to Hemi-Sync.

But this is only part of the Hemi-Sync process. First-person experience of consciousness is much more than just arousal states, attentional focus, and levels of awareness. The cognitive content of the experience is what gives it meaning. Whereas a specific state of cortical arousal is induced by the Hemi-Sync binaural beats, the content portion of a

focused state of consciousness depends on social-psychological conditioning and the mental ability of the individual. The educational application of the Hemi-Sync technology incorporates these dimensions. In terms of social-psychological conditioning, the Hemi-Sync audio-guidance media provide instructions on relaxation and breathing, affirmations for objectifying personal intent, and guided visual imagery. In the Institute's educational programs, skilled trainers—mediators sensitive to the subtle indices of participants' phrasing, body language, and expressiveness—provide counseling and encourage group interaction to insure an environment conducive to enhanced cognitive experience within specific Hemi-Sync generated states of cortical arousal, called Focus Levels.

Trainers are experienced in the realms being explored by program participants. Because they have first-hand knowledge of these worlds they can help others alter their own social-psychological conditioning. Trainers encourage introspection on the part of participants to aid in the integration and realization of novel experiences. When appropriate, trainers encourage participants to reframe their experiences into more useful perspectives.

To the degree that mental ability defines one's capacity to experience, cognitive skills can be enhanced through educational processes. Participants are offered materials to read. Informative lectures are scheduled throughout the duration of the programs. The use of multimedia enhances the presentation of educational materials. Planned group discussions provide the opportunity to share and to inspire each other. Development through practice is at the core of the educational process and participants are given numerous opportunities to experience the exciting focused states of consciousness available within the Hemi-Sync process.

Summary

The patented Hemi-Sync auditory-guidance system provides a safe, natural means to alter arousal states, attentional focus, and levels of awareness. The Hemi-Sync process is a unique combination of this powerful brain-wave modification technology, coupled with well-understood psycho-physiological inductive techniques (restricted environmental stimulation, controlled breathing, progressive relaxation, etc.), supportive social-psychological conditioning procedures, and conventional teaching methods.

Footnotes

¹a. Patent Number: 3884218; Issue Year: 1975; State/Country: VA; Marketed as: Hemi-Sync; Inventor: Robert A. Monroe; Title: Method of Inducing and Maintaining Various Stages of Sleep in the Human Being. b. Patent Number: 5213562; Issue Year: 1993; State/Country: VA; Marketed as: Hemi-Sync; Inventor: Robert A. Monroe; Title: Method of Inducing Mental, Emotional and Physical States of Consciousness, Including Specific Mental Activity, in Human Beings. c. Patent Number: 5356368; Issue Year: 1994; State/Country: VA; Marketed as: Hemi-Sync; Inventor: Robert A. Monroe; Title: Method of Inducing Desired States of Consciousness.

²Pink sound is "white noise" (like the hiss sound from a television after a station has stopped transmitting) which has been equalized for human hearing to create a more pleasing natural sound.

³Remote viewing is the ability to describe objects and activities blocked from sensory input by time or space by mental means alone.

⁴Telepathy is commonly referred to as direct mind-to-mind communication, a rather limiting definition when compared to Robert Monroe's broader nonverbal communication.

⁵One's mind is always experienced as being either in or out of the body. It depends on where awareness is focused. Being out-of-body simply means that there is no direct connection to certain material levels of consciousness. Being out-of-body is a consciousness experience with a shift of mind-consciousness field energy and locale. (Hunt 1995)

⁶Electronically produced binaural beats can be "heard" when audio tones of slightly different frequencies referred to as carrier tones are presented, one to each ear.

⁷The brain automatically and actively regulates all body functions to maintain homeostasis—an internal equilibrium (Green & Green 1977; Swann et al. 1982). In a natural and constant attempt to maintain a homeostasis of the elements of consciousness, the RAS actively monitors and continues the neural replication of ongoing brain-wave states (unless, of course, there is reason to make an adjustment due to new information from internal sources or external sensory input).

6. BIBLIOGRAPHY and REFERENCES

BIBLIOGRAPHY

Journeys out of the body

Robert Monroe

Broadway Books 1977

Far Journeys

Robert Monroe

Broadway Books 1985

The Ultimate Journey

Robert Monroe

Broadway Books 1994

The Journey of Robert Monroe

Ronald Russell

Hamptom Roads 2007

Hemisync Journals

www.monroeinstitute.org

REFERENCES for the Hemi Sync Process

Anch, A.M., Browman, C.P., Mitler, M.M. & Walsh, J.K. (1988). Sleep: A Scientific Perspective. (Englewood Cliffs: Prentice Hall), pp. 96-97.

Budzynski, T.H. (1986). Clinical applications of non-drug-induced states. In B. B. Wolman & M. Ullman (Eds.), *Handbook of States of Consciousness*, pp. 428-460. (New York: Van Nostrand Reinhold Company).

Carter, G. (1993). *Healing Myself*. (Norfolk: Hampton Roads Publishing Company).

de Quincey, C. (1994). Consciousness all the way down? In *Journal of Consciousness Studies*, 1 (2), pp. 217-229.

Delmonte, M.M. (1984). Electrocortical activity and related phenomena associated with meditation practice: A literature review. *International Journal of Neuroscience*, 24, pp. 217-231.

Dossey, L. (1994). Healing, energy, & consciousness: into the future or a retreat to the past? *Subtle Energies*, 5 (1), pp. 1-33.

Dossey, L. (1996). Dialogue. *Subtle Energies*, 5 (3), pp. 264-265.

Empson, J. (1986). *Human Brainwaves: The Psychological Significance of the Electroencephalogram.* (London: The Macmillan Press Ltd.)

Fischer, R. (1971). A cartography of ecstatic and meditative states. *Science*, 174 (4012), pp. 897-904.

Foster, D.S. (1990). EEG and subjective correlates of alpha frequency binaural beats stimulation combined with alpha biofeedback. *Hemi-Sync Journal*, VIII (2), pp. 1-2.

Goleman, G.M. (1988). *Meditative Mind: The Varieties of Meditative Experience.* (New York: G. P. Putnam).

Green, E.E. & Green, A.M. (1986). Biofeedback and states of consciousness. In B. B. Wolman & M. Ullman (Eds.), *Handbook of States of Consciousness*, pp. 553-589. (New York: Van Nostrand Reinhold Company).

Guilfoyle, G. & Carbone, D. (1996). The facilitation of attention utilizing therapeutic sounds. Presented at the New York State Association of Day Service Providers Symposium, October 18, 1996, Albany, New York.

Hiew, C.C. (1995). Hemi-Sync into creativity. *Hemi-Sync Journal*, XIII (1), pp. 3-5.

Hink, R.F., Kodera, K., Yamada, O., Kaga, K., & Suzuki, J. (1980). Binaural interaction of a beating frequency following response. *Audiology*, 19, pp. 36-43.

Hunt, V.V. (1995). *Infinite Mind: The Science of Human Vibrations.* (Malibu: Malibu Publishing Company).

- Jevning, R., Wallace, R.K., & Beidenbach, M. (1992).** The physiology of meditation: A review. A wakeful hypnometabolic integrated response. *Neuroscience and Behavioral Reviews*, 16, pp. 415-424.
- Kennerly, R.C. (1994).** <http://www.MonroeInstitute.org/research/human-memory-kennerly.html>
- Mavromatis, A. (1991).** *Hypnagogia*. (New York: Routledge).
- McMoneagle, J. (1993).** *Mind Trek*. (Norfolk: Hampton Roads Publishing Company).
- Marsh, J.T., Brown, W.S., & Smith, J.C. (1975).** Far-field recorded frequency-following responses: Correlates of low pitch auditory perception in humans. *Electroencephalography and Clinical Neurophysiology*, 38, pp. 113-119.
- Monroe, R.A. (1985).** *Far Journeys*. (New York: Doubleday).
- Morris, S.E. (1990).** Hemi-Sync and the facilitation of sensory integration. *Hemi-Sync Journal*, VIII(4), pp. 5-6.
- Newman, J. (1997).** Putting the puzzle together Part I: Toward a general theory of the neural correlates of consciousness. *Journal of Consciousness Studies*, Vol. 4 No. 1, pp. 47-66.
- Oster, G. (1973).** Auditory beats in the brain. *Scientific American*, 229, pp. 94-102.
- Owens, J. E. (1995). Integrating paradigms. *Hemi-Sync Journal*, XIII (3), pp.1-3.
- Penfield, W. (1975).** *The Mystery of the Mind*. (Princeton: Princeton University Press).
- Poole, W. (1993).** The Healing Power of Music. In K. Buttler & E. Fox (Eds.), *The Heart of Healing*, pp. 130-135. (Atlanta: Turner Publishing, Inc.)
- Rhodes, L. (1993).** Use of the Hemi-Sync super sleep tape with a preschool-aged child. *Hemi-Sync Journal*, XI(4), pp. iv-v.
- Rosenzweig, M.R. (1961).** Auditory localization. In *Perception: Mechanisms and Models*. (San Francisco: W. H. Freeman and Company).

Rossi, E.L. (1986). Altered states of consciousness in everyday life: The ultradian rhythms. In B. B. Wolman & M. Ullman (Eds.), *Handbook of States of Consciousness*, pp. 97-133. (New York: Van Nostrand Reinhold Company).

Sabourin, M.E., Cutcomb, S.E., Crawford, H.J., & Pribram, K. (1990). EEG correlates of hypnotic susceptibility and hypnotic trance: Spectral analysis and coherence. *International Journal of Psychophysiology*, 10, pp. 125-142.

Sadigh, M. (1990). <http://www.MonroelInstitute.org/research/effects-of-hemi-sync-on-electrocortical-activity.html>

Shannahoff-Khalsa, D. (1991). Lateralized rhythms of the central and autonomic nervous systems. *International Journal of Psychophysiology*, 11, pp. 225-251.

Smith, J.C., Marsh, J.T., & Brown, W.S. (1975). Far-field recorded frequency-following responses: Evidence for the locus of brainstem sources. *Electroencephalography and Clinical Neurophysiology*, 39, pp. 465-472.

Smith, J.C., Marsh, J.T., Greenberg, S., & Brown, W.S. (1978). Human auditory frequency-following responses to a missing fundamental. *Science*, 201, pp. 639-641.

Swann, R., Bosanko, S., Cohen, R., Midgley, R., & Seed, K.M. (1982). *The Brain - A User's Manual*. p. 92. (New York: G. P. Putnam's Sons).

Tart, C.T. (1975). States of consciousness. pp. 72-73. (New York: E. P. Dutton & Company).

Tice, L.E. & Steinberg, A. (1989). *A Better World, A Better You*. pp. 57-62. (New Jersey: Prentice Hall).

Waldkoetter, R.O. & Sanders, G.O. (1997). Auditory brainwave stimulation in treating alcoholic depression. *Perceptual and Motor Skills*, 84, p. 226.

West, M.A. (1980). Meditation and the EEG. *Psychological Medicine*, 10, pp. 369-375.

Webb, W.B., & Dube, M.G. (1981). Temporal characteristics of sleep. In J. Aschoff (Ed.), *Handbook of Behavioral Neurobiology*, pp. 510-517. (New York: Plenum Press).

Wilson, E.S. (1990). Preliminary study of the Hemi-Sync sleep processor. Colorado Association for Psychophysiological Research.

Zaidel, E. (1985). Academic implications of dual-brain theory. In *The Dual Brain*. (New York: The Guilford Press).