

**A Qualitative Study of Heart-Mind  
Coherence Techniques for Stress Relief  
and Mental and Emotional Self-management**

BY

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## **Abstract**

In this dissertation, I explore the experience of living and practicing heart-mind coherence techniques as taught by the HeartMath Institute. What is the experience of individuals who have had heart-mind coherence training? How do they use these tools in their daily lives?

This is a qualitative study of heart-mind coherence as taught and developed by the HeartMath Institute in Boulder Creek, California. This study is based on the journaling (via a Weblog) and the reflections of 8 HeartMath<sup>®</sup> practitioners. These individuals agreed to practice the HeartMath techniques daily, keep a journal, and respond to three research questions for a 30-day period.

During this study the research participants posted their responses to the following three questions:

1. How did you apply the HeartMath tools in your life today?
2. What effects did you experience as a result of utilizing the HeartMath tools?
3. What aspects of your life were touched or impacted by your use of the HeartMath tools?

The research participants posted their responses to the above three questions on a secure blog. They posted every day for 30 days. Their postings were then transferred to an NVivo database. Once all the data had been entered into the database the data was coded using the NVivo applications utilities. This coding process is iterative and additional codes can be added during the analysis phase.

After the NVivo coding is completed the application reveals common themes or findings in the research data. Five salient findings emerged from the data analysis. These findings are:

1. Increased level of coherence or calmness
2. Improved stress management
3. Increased energy
4. Better focus
5. Improved performance

These findings indicate that the research participants had several common experiences that they each described in their own individual terms. All of the participants wrote about how they benefited and broadened their life experiences through utilization of the HeartMath tools.

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## Chapter 1

### Framing the Question

*I Sing the Body Electric*

I sing the body electric,  
The armies of those I love engirth me and I engirth them,  
They will not let me off till I go with them, respond to them,  
And discorrupt them, and charge them full with the charge of the soul.

*Walt Whitman* (Whitman, 1993, p. 119)

#### Background

This poem reveals Whitman's appreciation not only of the beauty of the human body but also of the soul. I have a deep interest in learning more about the interrelationship of the body and soul, about the integral person. One factor that can be a real "disruptor" to the functioning of the integral person is stress. If one is experiencing significant stress it is difficult to achieve the high level functioning of one's integral nature.

There has been quite a bit of research over the last 20 to 30 years on what causes stress, what the effects of stress are and different methods of mitigating the stress in one's life.

I would now like to highlight several of these stress reduction techniques. This overview is not the primary intent of my research, but it sets the stage for my research and provides an avenue for focusing my research topic.

First there are the physiological approaches to managing stress. Meditation is one of the oldest approaches to managing the stress in one's life. Yoga, which includes meditative components, appears to have been practiced at least as early

as 3000 BC (Johnston, 1970). The practice of yoga meditation allows the individual to strive for the achievement of their utmost potential (Patel, 1984). Meditation was also practiced in the early Christian church, which seems to have been mostly limited to those in religious life.

Meditation techniques all have a common focus of being a preventative measure that can assist in an overall self-improvement. Meditation is usually carried out on a regular basis such as once or twice per day. Practicing meditation on a regular basis helps to reduce the stress-inducing effects of daily living. The regular periods of calmness that are typical during meditation are thought to temper the cumulative effects of stress and assist the body and mind in their revitalization (Cotton, 1990).

A technique closely associated with meditation is controlled breathing:

In Sanskrit, India's most ancient language, the level of functioning that involves energy is prana, which literally means "life force." Some 3000 years ago, yogis with highly developed extrasensory perception pronounced that "life is in the breath," and by breath they meant more than just the lungs, the blood circulation, and the gaseous exchange which takes place between inspired air and blood circulating in the lungs. (Patel, 1991, p. 142)

Being in a calm state and employing diaphragmatic breathing leads to mental relaxation. There appears to be a reciprocal relationship between the mind and our breathing. Deep diaphragmatic breathing can be one of the most important tools we have in reducing stress. The deep, even breathing produces a natural effect that strengthens our nervous system and induces deep relaxation in the body

(Patel, 1991). This controlled method of breathing can have a profound effect on the individual if used on a regular basis.

A more recent approach to stress management is a condensed version of progressive relaxation training developed by Dr. Joseph Wolpe, which was a variation of the early work by Dr. Edmund Jacobson. Dr. Wolpe's technique became known as systemic desensitization. The idea was to teach individuals a shortened version of progressive relaxation training. This technique later evolved into a model of relaxation as a coping skill (Carrington, 1998).

Music has also been shown to be beneficial as a stress management tool. The use of music to treat health problems is firmly rooted in history (Boxberger, 1962).

Music therapy is and will undoubtedly continue to be an important therapeutic modality to treat stress associated with a variety of conditions. I believe that the value of this therapeutic modality lies in its ability to address the whole person concurrently and simultaneously—that is on the physical affective, cognitive, and social levels. Music appears to be a noninvasive technique with few if any side effects, with relative ease of administration, with no stigma attached, and with increasing promise as seen in the literature. (Lehrer & Woolfolk, 1993, p. 432)

Another more recent approach to stress management is the utilization of cognitive approaches to managing stress:

Cognitive approaches to therapy derive from the phenomenological approach to psychology, which suggests that the individual's view of him- or herself and his or her world plays an essential role in determining behavior. In the case of stress and stress-related problems, the individual's view is important in a variety of contexts: (1) the individual's interpretation of those events or situations which have been labeled as stressful; (2) his or her interpretation of the consequences of the stressor; (3) his or her view of his or her own ability to cope with the stressor or stress reaction. (Cotton, 1990, p. 189)

Cognitive therapies such as Albert Ellis's rational-emotive therapy, Aaron Beck's cognitive therapy, and Donald Meichenbaum's cognitive behavior therapy and stress inoculation training all address stress management (Cotton, 1990).

Biofeedback is defined as "the technique of making unconscious or involuntary bodily processes (as heartbeat or brain waves) perceptible to the senses (as by the use of an oscilloscope) in order to manipulate them by conscious mental control" (*Webster's*, 1977, p. 111). Biofeedback by itself is not a method of stress management. Biofeedback used in conjunction with a relaxation technique is a method of stress reduction. The advantage of using biofeedback in a stress management program is that biofeedback can provide the individual with a quantifiable indicator of their stress level. This indicator can be of significant benefit to the individual as it provides the user "feedback" as to whether the relaxation technique that they are using is actually providing a benefit.

The stress management techniques I have just discussed are meant to provide a broad overview of some of the more established techniques. My research is not a study of the various stress management techniques available; but a qualitative study of the effects experienced by utilizing a stress management technique in one's life.

After further research I became aware of the HeartMath Institute and the techniques they teach to facilitate stress reduction and emotional self-management. The HeartMath techniques utilize several components of stress management that I have just discussed. The HeartMath techniques include: relaxation, breathing, biofeedback, and a cognitive element. The combination of

these several elements of stress management might provide a synergistic effect on what the individual experiences from using the HeartMath techniques. Therefore, my research focuses on studying the qualitative effects practitioners experience when using the HeartMath techniques.

The HeartMath Institute and others have conducted research on the effects of the HeartMath tools and techniques on physical and emotional well-being; these include stress reduction, mental self-management, and emotional self-management.

Stress is any

pressure, strain, or a sense of inner turmoil resulting from our perceptions and reactions to events or conditions. [Stress is] a state of negative emotional arousal, usually associated with feelings of discomfort or anxiety that we attribute to our circumstances or situation. (Childre & Martin, 1999, p. 270)

It occurs when our perception of events doesn't meet our expectations and we are unable to manage our reactions. Illness, injury, career and lifestyle changes—such major events are common causes of stress. However, it is the pressure and tension we feel in response to the minor everyday hassles—like rush hour traffic, waiting in line, a surfeit of e-mails—that do the most damage. We identify the outside events themselves as the source of stress, but in fact stress is really caused by our emotional reactions to events.

We can't eliminate stress from our lives, but we can learn how to manage it, to reverse the damage it can cause. “[HeartMath’s] programs and products have been used in over 40 countries to help transform stress into productive energy” (SpiritMatters, 2010).

One of the primary generators of rhythmic patterns within the body is the heart. The heart has been shown to be a part of an extensive communication system with the brain and other major organs in the body. The heart also has a significant role in the generation of our emotional state. Every beat of our heart transmits electromagnetic fields that radiate through our bodies and includes the brain. The heart also has a role in neurological and hormonal affects on our bodies. The heart lies at a critical, interconnecting point of many interactive systems that allow the heart to serve as an entry point into the body's communication network that connects our mind, body, emotions, and spirit (HeartMath Institute, 2005a).

This integrative relationship between the emotional and cognitive functioning of the human experience is supported by the research of neurologist Antonio Damasio. In his book, *Descartes' Error*, Antonio Damasio (1994) offers research that reveals that patients that experienced damage to their frontal lobes, a key location of integration of the emotional and cognitive functioning of the brain, can no longer function effectively in the everyday world. This research reveals that even though these individuals retain the intellectual functioning of their brains, the emotional system input to our thought centers not only facilitates rational thought but is in actually indispensable to the process (Damasio).

This relationship between our emotional systems and the higher thinking processes of our cognitive thinking is being revealed at the very basis of human physiology.

Every change in the physiological state is accompanied by an appropriate change in the mental emotional state, conscious or unconscious, and

conversely, every change in the mental emotional state, conscious or unconscious, it accompanied by an appropriate change in the physiological state. (Green, 1997, p. 58)

Researchers have even taken the idea of the integrative relationship between our emotional systems and cognitive functioning further and have proposed that these systems operate as fields within the human experience. This field theory's

principle innovative feature is that it claims that the events, images, and other items recalled in long-term memory are not stored *in* the brain; they are only *accessed* by the brain from an ambient field. In this concept long-term memory is not physically located in the cerebral networks; the latter act only as the transducer of signals received from the vacuum holofield, which then functions as an extrasomatic memory store. Retrieval from that field occurs on the holographic principle. Interference patterns are re-converted into the image of objects or events that have originally recorded the given pattern, following Fourier transformation rules. (Laszlo, 1995, p. 100)

This interrelationship between our emotional systems and our intellectual capacity can be viewed in an even more encompassing perspective by applying systems theory to this interrelationship.

Systems theory regards living systems as “wholes” in terms of dynamic processes that combine energy and information in reciprocal relationships. Since living systems are always open and interactive with other systems . . . they cannot be described in classical terms, or in terms of linear chains of cause and effect. And this also means, obviously, that the atomistic and reductionist approach to living systems simply cannot work. If we are to examine differences in living systems, the emphasis in systems theory is on differentiations in structure and form that correlate with different modes of carrying and exchanging information. The privileged model of living systems for systems theorists is the ecosystem which is presumed to exist as a whole, and which cannot be studied in the absence of the assumption that the observer and the observed system are part of this whole. (Kafatos & Nadeau, 1990, p. 185)

Thus this interrelationship between our emotional systems and cognitive functioning may be viewed as a system that can be viewed as a feedback system with many complementary modes of ‘carrying and exchanging information.’

Research conducted by the Institute of HeartMath (IHM) has shown that techniques that combine intentional heart focus with the generation of sustained positive feelings lead to a beneficial mode of physiological function termed “psychophysiological coherence.” This psychophysiological coherence is indicated by a sine wave-like pattern in the heart rhythms, increased heart-brain synchronization (the alpha rhythms in the brain become more synchronized with the heart), and entrainment between the heart's rhythmic patterns, respiration, blood pressure rhythms, and other physiological systems. Although psychophysiological coherence can occur naturally when people are feeling genuine positive emotions and during sleep, sustaining this condition for any length of time is rare (Childre & Martin, 1999).

Research by Childre and Martin (1999) has shown that when one is experiencing a state of psychophysiological coherence, our inner systems are functioning with a higher degree of synchronization and efficiency. This state correlates with a more positive emotional nature, improved cognitive performance, and better health. HeartMath studies conducted across broad populations have associated increased psychophysiological coherence with reduced anxiety and depression, decreased symptoms of stress, enhanced immunity, reduced cortisol, and increased DHEA [Dehydroepiandrosterone]. Studies conducted by the HeartMath Institute in collaboration with Stanford



University and other institutions have shown that heart-centered techniques and psychophysiological coherence facilitate the body's healing processes and improve physical health outcomes. For example, participants in these studies have shown improvements in the clinical status of individuals with hypertension, diabetes, or congestive heart failure (Childre and Martin, 1999).

The HeartMath tools and techniques include: Freeze-Frame, Cut-Thru, and Heart Lock-In, as well as several refined versions of these tools. The Freeze-Frame technique was developed by Doc Childre. It is a unique heart rhythm coherence training system. Freeze-Framer objectively monitors your heart rhythms or heart rate variability and indicates when there is coherence. This tool helps individuals to learn to self-generate coherence and track their progress. With practice they learn how to shift into coherence at will, even in situations that previously would have drained their emotional vitality and light heartedness. Individuals are able to readily see and experience changes in their heart rhythm patterns as they practice this emotional regulation technique. These heart rhythms generally become less irregular and more sine wave-like as they send more heart-felt love and appreciation through the various physiological, mental, emotional, and energy based systems (Childre & Martin, 1999).

The Freeze-Framer technique allows you stop any reactions you might be having to the movie, which is your life. The technique allows you to initiate a time-out so that you can get a clearer picture of what's happening at that point in time. Aligning you heart and mind allows you to gain instant and direct access to your heart intelligence (Childre & Martin, 1999).

The HeartMath Institute defines heart intelligence as the heart being an intelligent system in which the mental and emotional systems are brought into balance and coherence. The HeartMath Institute describes this physiological coherence as having the following characteristics:

- High heart rhythm coherence (sine wave-like rhythmic pattern)
- Increased parasympathetic activity
- Increased entrainment and synchronization between physiological systems
- Efficient and harmonious functioning of the cardiovascular, nervous, hormonal and immune systems. (McCraty, 2001, p. 16)

Heart intelligence can be taken even further by looking at the relationship of the heart and intuition. Throughout history the heart has been at the heart of most religious traditions. If you look at the ancient traditions of the Sumerians, Egyptians, Hebrews, Greeks, Christians and Buddhists they all saw the heart as the home of the spirit. HeartMath researchers have concluded that “it appears that the heart is involved in the processing and decoding of intuitive information” (McCraty, Atkinson, Bradley, 2004, p. 133). The heart has been viewed through history as a source of wisdom and positive emotions. This wisdom can be described as heart intelligence or intuition. “The ability of the heart to respond to emotionally relevant information indicates that the heart seems to be tuned to or assesses a field of information that is not limited by the boundaries of time and space” (McCraty & Rees, 2009, p. 10).

Cut-Thru is a technique that allows you to let go of emotions that you want to release. You can then follow up by enhancing other emotions. Over time

this emotional state reinforces your neural network. The primary purpose of Cut-Thru is to help people recognize and reprogram their subconscious emotional memory pathways, pathways that affect our perceptions and our day-to-day thoughts and feelings. The Cut-Thru technique can help rebuild those pathways so that our future responses are not the same conditioned responses (Childre & Martin, 1999).

In *The HeartMath Solution*, Childre and Martin (1999) describe the Heart Lock-In technique as designed to allow you to amplify the power of your love and the power of your heart; it allows individuals to delve deeply into the heart and discover an expanded awareness located there. A Heart Lock-In provides a regenerative experience and a connection to the intuitive intelligence that is an inherent attribute of the heart.

### **My Purpose and Passion**

I want to investigate the experience of using the HeartMath techniques and their possible effects on stress levels and emotional self-management. Does the practice of the HeartMath tools and techniques affect the integral person, the whole person? What is the experience of using the HeartMath tools and techniques?

The main purpose of my research is to study the experience of using the HeartMath tools and techniques; but I am also going to look for what effects are observed in individuals using these tools and techniques. HeartMath researchers (McCraty, Bradley, & Tomasino, 2005) have shown that maintaining a positive

emotional state gives rise to a mode of functioning they have defined as “psychophysiological coherence.” In this state, heart rhythms exhibit a sine wave-like pattern and the heart’s electromagnetic field becomes correspondingly more coherent. The existing HeartMath research “suggests that psychophysiological coherence is important in enhancing consciousness—both of the body’s sensory awareness of the information required to execute and coordinate physiological function, and also to optimize emotional stability, mental function, and intentional action” (McCraty, Bradley, & Tomasino, 2005, p. 16 -17).

I have had my own personal experiences in my process of becoming. This process can be described as an individual’s growth in consciousness or the unfolding of their inner spirit or nature. A part of that process was my education. And a part of the educational experience is using the HeartMath tools and techniques.

I have observed that young people can have a difficult time dealing with the complexity of our society, the fast pace of our culture, the absence of parent figures (mentors), and information overload. Can the HeartMath tools and techniques better prepare young people to deal with the issues that seem to make their “becoming” more difficult? Can the HeartMath tools and techniques facilitate their development in consciousness in this challenging environment? In other words, can our mental, physical, emotional, and spiritual awareness be affected by these techniques?

## **Researcher's Context**

I have been intrigued with the idea of “becoming” from an early age. Who was I becoming? What was I becoming? What was involved in the process of becoming? My dissertation documents the possible effects the HeartMath experience has on individuals in whatever form is revealed in my research. These effects could be emotional, mental, physical, or spiritual.

Early in my life in my development I had two conflicting approaches: the natural world of the farm I grew up on and the intellectual world of Western culture. The natural world gave me a sense of belonging, the knowledge that I had a place, that everything was connected, and that every thing—animate and inanimate—fulfilled a role in our world. My formal education placed me in a different world. This approach taught that if you’re smart enough and work hard enough you can mold the world to fulfill your wants and desires. I began to accept this worldview to a large extent. I began to think that if I could learn enough then I would be successful, that I would find my place.

This illusion was shattered by the very educational system that was telling me that this was how the world was. When I was in the sixth grade, the teacher called on me to answer a social studies question. I read her my answer and she announced, “That’s not the right answer.” I said “Yes, it is the right answer; I looked it up in the encyclopedia.” By now everyone’s attention was focused on me. The teacher responded, “Show me!”

I walked to the back of the room, picked up the volume of the encyclopedia where I had found the answer, turned to the correct page, and read her the answer. The teacher responded, “That’s not the right answer, books aren’t

always right.” This incident shattered my illusion that knowledge, the intellectual path, had all the answers. I made the harsh discovery that there are differing realities and that there is no one right answer.

This incident is one of many that began to challenge me to discover the “correct” path to my becoming. Over the next several years I explored many different paths: the religious, the esoteric, the intellectual once more, and the spiritual. Each helped me to become the person that I was created to be.

My journey finally led me to a church called Unity and then through a Unity connection to the California Institute of Integral Studies (CIIS). Unity teaches that a person is more than an intellectual being, more than an emotional being, more than a spiritual being, and more than a physical being. Unity teaches that a person is an integral or whole being with many different aspects. It took me a long time to fully understand this teaching.

When I first became involved with Unity in 1975, I rushed headlong along a spiritual path. I thought that spiritual reality was the most important thing in the world. Interpersonal relationships were frivolous and distracted me from my spiritual studies. Physical existence was merely a vehicle for my spiritual development. Everything revolved around my spiritual development. If something didn't contribute to it then it wasn't important.

Looking back today I don't know how I came up with that perspective. It is not what Unity teaches. I was still seeing the world in black and white, through an either/or lens that said there had to be *a single way* to my becoming.

What I then discovered, through life experiences and especially through studying various worldviews at CIIS, was that there are multiple ways of knowing. This process (multiple paths of becoming) was a blessing in disguise, because through this process I began to develop other aspects of myself and my becoming in a manner that was right for me.

This process of trying to discover who I was, who I was becoming, and what was involved in that becoming led me, after many trials, to think about the heart and heart energy. This process was triggered early in the 1980s at a 2-day workshop given by Dr. Carol Ruth Knox, a Unity minister from Walnut Creek, California, at the Unity Church in Golden Valley, Minnesota.

It was titled “The Prayer of the Heart.” The workshop included written materials, lectures, group discussions, and audiotapes. We experienced what Dr. Knox described as developing a prayer consciousness in the heart—a consciousness of continual prayer focused in the heart area. Here is how she described the Prayer of the Heart.

Some Gnostics maintain that self-knowledge is knowledge of God; the self and the divine are identical. This capacity to know God through one’s self is the very fiber of the Prayer of the Heart; this attitude is mystical, Gnostic and Eastern, as defined in terms of origin, and not readily acceptable to the Western mind. Jesus of the *Nag Hammadi Library* (a Gnostic text discovered in Egypt in 1945 whose content is traceable to the first three centuries of the Christian era) speaks of illusion and enlightenment, not of sin and repentance as the Jesus of the New Testament. Instead of coming to save humanity from sin, Jesus comes as a guide who opens the individual’s access to spiritual understanding. Such awareness of illusion and enlightenment and its availability to each human being is the heart of the Prayer of the Heart. It denies nobody; it makes no one subservient; its internal process leads each participant to a sense of universal human equality and participation in one body. (Knox, 1983, pp. 34-35)

In her dissertation “The Prayer of the Heart: A Method of Transformation,” Carol Ruth Knox (1983) wrote that the earliest form of the Prayer of the Heart is attributed to St. Symeon. St. Symeon, considered to be the noblest mystic of the Greek Orthodox Church, is credited with defining a form of interior prayer that was adopted by the monks at Mt. Athos: “Lord Jesus Christ, have mercy on me. Son of God, help me!”

Carol Ruth Knox taught the concept of developing a state of prayer consciousness in one’s heart. She also believed that this prayer consciousness could be constantly maintained. Her workshop was the seed, the beginning of an entirely different perspective in my own becoming. I was beginning to perceive a more integral view of that becoming.

About 5 years later, as I was looking through the material from the workshop, I noticed that Knox’s Ph.D. was from the California Institute of Integral Studies. This was what led me to CIIS.

During my studies at CIIS I became more focused on my desire to understand the process of becoming. I became aware that I was developing an understanding of the integral being; the whole person. I also developed a belief that we needed to create environments that were more supportive of individuals journeying through their own process of becoming. Are there tools and techniques that individuals can be taught to use to help their own process of becoming? This continues to be the passionate question I am living at this moment.

I came to realize that there are many paths to the process of my development—paths of religion, spirituality, meditation, prayer, and silence. But



the idea of “the heart” kept recurring in my search. What could I learn about the heart? It was at this time that I began to focus on the heart and how the heart might be a part of my process of becoming. In my journey of self-discovery I discovered the techniques taught by the Institute of HeartMath in Boulder Creek, California.

The Institute of HeartMath (IHM) has been exploring the communication pathway between the heart and brain for several years. They have studied the physiological mechanisms whereby the heart influences emotions, health, and perceptions. HeartMath researchers are investigating why people experience certain feelings like love, compassion and appreciation in the area of the heart. They study how stress and our emotional states affect the autonomic nervous system, hormonal system, immune system, and our heart and brain. In their research they have discovered that heart rhythms or the heart rate variability was a clear indicator of our inner emotional states and the amount stress we were experiencing. The research at HeartMath revealed that experiencing negative emotions lead to disorder in the heart’s rhythms and in the autonomic nervous system, which has a dramatic effect on the rest of the body. Conversely, positive emotions induced coherent heart rhythms and harmony in the bodies various systems. This research clearly demonstrated that health could be improved by coherent heart rate variability patterns (McCraty, 2001).

More intriguing are the dramatic positive shifts that can occur in a person’s perceptions and the ability to reduce stress and more effectively deal with difficult situations after learning techniques which increase coherence in the rhythmic patterns of the heart rate variability. We observed that the heart was acting as though it had a mind of its own and was profoundly affecting perception. In essence, it appeared that the heart

was affecting our intelligence and awareness. Many of the answers have begun to come together and now provide a scientific basis which explains how and why the heart affects our mental clarity, creativity, emotional balance and effectiveness. Our research and others' indicate that the heart is far more than a simple pump. The heart is, in fact, a highly complex, self-organized sensory organ with its own functional "little brain" that communicates with and influences the brain via the nervous system, hormonal system and other pathways. These influences profoundly affect the brain function and most of the body's major organs. (p. 3)

The HeartMath Institute had developed tools and techniques that its research showed were helpful in reducing stress, improving learning, and increasing the coherence of heart rate variability. Perhaps these were the tools and techniques I was looking for. They might be able to create an environment that facilitated an individual's becoming.

### **Situating the Research in Its Context: Research and Commentaries on Heart-Brain Communication or Heart Coherence**

Finding the balance between the heart and mind in one's life is a tricky task. The world of today is fast-paced, complex, chaotic, and at times overwhelming. How then to achieve a balance in the heart-mind communication channel? A survey of the literature shows that investigations of the heart-mind communication pathway (heart coherence) have been conducted in many areas. A recent literature search identified a significant number of research reports related to heart brain communication.

Some of the earliest research done to confirm two-way communication between the heart and brain was done by Beatrice Lacey and John Lacey (1978) at the Fels Research Institute in the 1970s.

In situ, within the chest cavity, the heart's autorhythmicity is modified by both neural and humoral factors. The heart is slowed and speeded by the vagal and sympathetic cardiac efferents. But action at the effector organ does not end the process: Sensitive interoceptors feed back to the central nervous system information about the timing, force, volume, and pressure of each heartbeat. This feedback loop provides an oscillatory input to the central nervous system. (p. 99)

Through their research, the Lacey's confirmed the heart was communicating with the brain through the central nervous system. Additional research performed by other scientists would reveal the effects of this communication on the human physiology.

Dr. Paul Pearsall (1999) a psychoneuroimmunologist describes heart brain communication as follows:

The electromagnetic energy of the heart is instantaneously registered in the electroencephalogram (EEG), an instrument that measures the bioelectric energy of the brain. This means that the brain/heart/body connection is likely to sometimes be experienced as a powerfully sudden and serendipitous event. When we focus on our heart, we connect our entire body system in a synchronized brain/heart/body energy "happening" as might take place when a frightened mother finds the sudden strength to lift a car off of her child or a person performs some other "superhuman" feat. (pp. 166–167)

This idea of a brain/heart/ body connection is developed further by Dr. Candace Pert (1997). She writes,

Recent technological innovations have allowed us to examine the molecular basis of the emotions, and to begin to understand how the molecules of our emotions share intimate connections with, and are indeed inseparable from, our physiology. It is the emotions, I have come to see, that link mind and body. This more holistic approach complements the reductionist view, expanding it rather than replacing it, and offers a new way to think about health and disease—not just for us scientists, but for the lay person also. In my talks, I show how the molecules of emotion run every system in our body, and how this communication system is in effect a demonstration of the bodymind's intelligence, an intelligence wise enough to seek wellness, and one that can potentially keep us healthy and

disease-free without the modern high-tech medical intervention we now rely on. (pp. 18–19)

Pert's concept of a molecular basis of the emotions takes the concept of brain/heart communication beyond the idea of an energy pathway to one of a molecular pathway. Dr. Pert's believes that a "bodywide network of peptides and receptors might be the molecular basis of emotion" (p. 178).

**Survey of methods used.** There is very little research into the experience of the heart-mind communication pathway and the HeartMath tools and techniques. Most of the studies are quantitative and do not address the issues proposed in this study.

## **The Problem**

I attended a HeartMath training program to experience for myself what these techniques were and how they felt, and to research them more thoroughly. HeartMath training provides personalized instruction on how to enhance one's overall sense of well-being, reduce stress, and improve performance. The training includes:

- **Core Values.** Discover the heart of who you are and what you want most in your life.
- **Stress.** Identify what blocks you from the life you want to live, your personal dreams, mission and goals.
- **The Physiology of Performance.** Learn the scientific underpinning of the HeartMath System.
- **Neutrality .**Learn how to disengage from the negative impact stress has on your body and mind.

- Quick Coherence®. Learn this fundamental tool in the HeartMath System for achieving physical, mental, and emotional balance.
- Heart Lock-In®. Learn to restore nervous system health, increase energy levels and improve your overall sense of well being.
- 
- Freeze-Frame®. Learn how to improve mental acuity and problem-solving skills.
- Authentic Communication. Learn how to enhance your relationships and how to reduce the stress that results from miscommunication.
- Heart Mapping® - Learn how to bring more creativity and out-of-the-box thinking to your plans and projects. (HeartMath Institute, 2005b, under “Course Topics”)

There are many tools, techniques, and processes that individuals can use in their own process of self-development. But one of the problems is to determine which are useful and might best help develop the whole person, the integral being that we are. Through my own process in personal transformation, I have developed a keen interest in tools and techniques that may enhance development in consciousness.

Some of these techniques increase our intellectual capacity, others enhance our spiritual development, others our physiological health. My question became: Are there techniques that help the whole person and, because they assist in the development of the whole person, also assist in the development of consciousness?

After studying and using the HeartMath tools and techniques for over 5 years, I speculate that they may help provide environments more supportive of an individual’s own becoming. They may benefit the whole, integral person.

Many quantitative research studies support the benefits of HeartMath tools and techniques but there have been no qualitative studies that describe what this experience really is. That is what I want to research.

### **The Question**

What is the experience of using the HeartMath tools in one's daily life?

### **The Intention and Significance**

This study investigates the experience of using the HeartMath technique, using qualitative research methods, and fully explores the experience of HeartMath's heart-mind coherence techniques. This study evaluates any possible effects these techniques may have in the development in consciousness of individuals who use them. Tiller, McCraty and Atkinson (1996) describe Freeze-Frame as a self-management technique by which one focuses on the heart in order to disengage from moment-to-moment mental and emotional reactions. Does the practice of the HeartMath tools and techniques affect the integral person, the whole person? What is the experience of utilizing the HeartMath tools and techniques in one's life?

My research, using a phenomenological framework, investigates the experience of individuals who use the HeartMath tools and techniques. Does the use of the HeartMath tools and techniques affect the whole person? What is the experience of individuals who use Freeze-Frame, Cut-Thru, and Heart Lock-In on

a frequent, regular basis? I hope to identify aspects of their lives that may be affected: health, consciousness, relationships, value systems.

Briefly, this study is designed to determine the possible qualitative effect of the HeartMath tools and techniques on the whole or integral person. The results of this research will be published in multiple ways: hardcopy at CIIS, copies will be sent to all the research participants, an Adobe pdf format will be published on the Web site that was used during the data collection period and a copy will be provided to the HeartMath Institute in Boulder Creek, CA.

The results of the work will also be shared with the HeartMath network of certified trainers. The trainers will benefit from this research by having more information on how the HeartMath tools and techniques affect the whole person. Having a better understanding of the effect of HeartMath will assist the trainers in their abilities at providing the best possible training to their clients. This knowledge will also help the HeartMath trainers in their one-on-one coaching. Knowing the relationships of how the HeartMath tools and techniques affect individual's stress levels, interrelationships, energy, ability to focus, calmness, or other benefits will prove immensely valuable for the HeartMath trainers in their work in the future. Therefore, whatever results are revealed in this research will have significant benefits to large group of individuals.

## Chapter 2

### Methodology

#### **Qualitative Research Frame: Situating the Inquiry and Selecting a Methodology**

This chapter is organized into nine sections including this introduction. The sections include: the design of this study, the targeted population and sampling method, the instrument, data collection, field testing, data analysis, internal validity, and limitations. The purpose of the study was to investigate the experience of using the HeartMath techniques and their possible effects in the development of consciousness. What is the experience of using the HeartMath tools and techniques? How does this experience affect the whole person?

With the above stated purpose, the following research design was created to provide a structured approach to investigate the HeartMath experience.

**Research design.** A qualitative descriptive case study methodology was chosen because it is the best approach to answering the research questions. “The case study method allows investigators to retain the holistic and meaningful characteristics of real-life events—such as individual life cycles, organizational and managerial processes, neighborhood change, international relations, and the maturation of industries” (Yin, 2002, p. 2). Yin defines case study in terms of the research process: “A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident” (p. 13).



Merriam (1998), however, defined case study in the terms of its end product: “A qualitative case study is an intensive, holistic description and analysis of a single instance, phenomenon, or social unit” (p. 21).

Each of these views contributes to the general understanding of this type of research. But Merriam (1998) concludes “that the single most defining characteristic of case study research lies in delimiting the object of case study (p. 27). Smith’s (1978) notion of the case study as a bounded system and Stake’s (1995) view that the case is an integrated system, both allow us to view the case as a single entity. “The case then, could be a person such as a student, a teacher, a principal; a program; a group such as a class, a school, a community; a specific policy and so on” (Merriam, 1998, p. 27). Miles and Huberman (1994) define case as “a phenomenon of some sort occurring in a bounded context” (p. 25). They graphically present it as a circle with a heart in the center. The heart is the focus of the study, while the circle “defines the edge of the case: what will not be studied” (p. 25).

The phenomenon you are studying must be bounded if it is a case. One way to determine if the topic is a case is to determine if the number of people involved is limited or the observation period is limited (Merriam, 1995). In my study I have selected a discrete number of participants (10) and have bounded the case further by defining the questions posed to the research participants. The case specifically looks at the experience of using the HeartMath tools and techniques. “The decision to focus on qualitative case studies stems from the fact that this design is chosen precisely because researchers are interested in insight, discovery,

and interpretation rather than hypothesis... By concentrating on a single phenomenon or entity (case), the researcher aims to uncover the interaction of significant factors characteristic of the phenomenon” (Merriam, 1995, pp. 28–29).

A qualitative descriptive case study provides a thick, rich description of how participants respond to the HeartMath experience in their lives. The core of the research purpose and questions is best addressed with employing a qualitative descriptive case study methodology. Case study, in this research design, refers to the collection and presentation of detailed information about a small group and includes the accounts of the subjects themselves. This research does not attempt to focus on the discovery of a universal or generalizable truth; instead the emphasis will be on exploration and description.

**Population and sample.** A purposeful sample was used to select participants for this study to ensure a mix of age, gender, socioeconomic status, and professional discipline. Selected participants have completed the HeartMath training program and agree to practice the HeartMath tools and techniques on a daily basis, communicate their experiences with HeartMath in daily journal entries on a Web-based diary (Weblog or blog), and describe any “new” ways, they have experienced, of utilizing or applying the HeartMath tools in their lives. This purposeful sample is required to gather rich descriptive information on how the HeartMath training and tools were used by participants from varied disciplines and backgrounds. Ten participants were selected to participate in this study by working with the HeartMath Institute. The HeartMath Institute sent e-mail invitations to a list of certified HeartMath trainers to obtain a “pool” of potential

participants. Invitations to participate in the study were also posted on a couple of blogs that concentrate on the topic of heart coherence. A mix of educators, business people, government workers, and HeartMath trainers were invited to participate. Invitations were e-mailed to individuals meeting the above requirements. The invitation included a description of the study that includes the purpose, time required, and confidentiality involved. Participants were asked to respond with their names, telephone numbers, and e-mail address on an electronic "Please Tell Me More Card" if they were interested in learning more about the study and e-mail the "Please Tell Me More Card" to a specific e-mail address. They were informed that their name, telephone number, and e-mail address would not be used for any other purpose than to contact them about the study.

The list of potential participants then became a part of the research pool for this study. Ten participants were then randomly selected from the pool of participants generated from this process. After the random selection, the researcher contacted each participant to explain the study further, including participant expectations and to go over guidelines for informed consent. Once the candidate understood the intent of the study, their responsibilities and the informed consent guidelines, the researcher then confirmed with each individual that they had been selected to participate in the research study. Individuals who agreed to participate were then mailed the informed consent form with a stamped pre-addressed envelope and asked to return the signed form to the researcher.

**Instrument.** Participants were give three open-ended questions to respond and make at least one entry a day for a for 30-day period. These daily journal entries were made online using a secure Web site <https://w303.com/author> and each participant used a code name for all entries. Once on the site, the participant received a reminder of the parameters of the study and then invited to enter specific information pertaining to the HeartMath training and tools and specifically the role of these tools in their every day life. The researcher is the only one that could view the logs and several times a week, after a participant made a log entry, the researcher would respond with three consistent phrases:

1. Thank you your entry has been received.
2. Thank you, can you give a specific example for (date) entry.
3. Thank you, can you say more about your entry made on (date)

Participants received a reminder during the week to make their journal entries. The reminder stated, “Thank you again for participating in the Qualitative Study of Heart-mind Coherence Techniques for Stress Relief and Mental and Emotional Self-management. This is a reminder that you must make an entry every day for this study. Your participation is appreciated and will assist many others.” The reminder had the Web link in the e-mail so that participant could easily click to the site.

**Data collection.** The study used a secure Web site that protected the participant’s identity and entries. The Weblog used a secure Web site with access controlled by using user ids and passwords. Each individual participant was

assigned a user id and password that was used for the study. Only the individual and myself were able to access an individual's postings. The researcher put in place the following procedure to ensure that the Web site was fully operational 24-7 during the one time span of journey entries. The Weblog was hosted on a secure site that was maintained by an independent company. The company monitors the site to ensure 24-7 operation.

**Field testing.** The tool and online data entry system was tested two weeks before the formal study began. Three HeartMath participants agreed to test the tool and the data entry system over a two week period, making three entries per week. The same informed consent and confidentiality procedures were used during the field testing. The three field testers received a code name and instructions on how to access the Web link to make their data entries. They received data entry reminders and all their entries received one of the three possible responses that were outlined above in section V. After the end of the two week test period, the researcher sent each participant a survey on the usability of the data entry system and the standard focused questions used to frame the journal entries. Changes were then made to the site and data entry system based on this field testing. None of the data collected during the field testing is included in the study.

**Data analysis.** All entries into the online data collection system were read by the researcher to obtain an initial overview of the full content. Then the data

was copied and then dumped into the qualitative data analysis software made by QSR International, NVivo.

NVivo is a computer program for qualitative data analysis that allows one to import and code textual data, edit the text, retrieve, review, and recode coded data; search for combinations of words in the text or patterns in the coding; and import from or export data to other quantitative analysis software. NVivo was developed by QSR International, the makers of NUD\*IST. QSR's first product was created in 1981 (then called NUD\*IST) to support social science research and contained tools for innovative "Non-Numerical Unstructured Data Indexing Searching and Theorizing." The product suites and services offered by QSR have evolved over the years. The latest version of the product was released in February 2006, and is called NVivo 8.0.

NVivo is an easy-to-learn tool, because it works like the old loose-leaf binder that many qualitative researchers of the past are familiar with (Walsh, 2003, p. 253). NVivo opens with a small window referred to as the Launch Pad (aka Project Pad), which has four core tool functions: (a) create a new project, (b) open and existing project, (c) open a tutorial, and (d) exit the program.

All data is arranged around **Documents** and **Nodes**—the two main working frameworks within the tool. Documents are simply data that one analyses in the study. All NVivo documents are in rich text format. Nodes are places where one stores ideas and categories. It is important to note the difference between a code and a node, in NVivo terminology. A Node is a physical location where you store the groups of ideas that would be coded. Thus, coding (putting things into codes) is a process; a way to label certain aspects of the data and to sort information in distinct categories. The node on the other hand holds all of the information that has been coded under a certain category. **Attributes** are properties assigned to nodes or documents. Once attributes are defined, each document or node will have specific values for each attribute. These attribute values can be numeric,

string, Boolean or date-time type. These attributes can be usefully applied for better data management and effective searches. The NVivo **Search** tool can be used to search for string, coding patterns or attribute values in the project database. These features enable the user to search for patterns across their data. (Bandara, 2008, p. 8)

The analysis software aided the researcher to identify themes and variations from the 30 days of data entries. General themes and variations were coded by the software then examined by the researcher. The researcher then examined the data base to determine if there were specific relationships between utilization of HeartMath training and tools and how participations translated them into their daily lives. Each entry that reflected a daily life application was coded and then categories of application emerged. Using unidentified quotes from participants, each category was named and specific examples were drawn. Variations in application were also placed in categories and using quotes from participants and specific examples, categories were named and described. A matrix emerged specific to the research question(s).

**Internal validity.** Three safeguards were used to ensure the current study's validity. First, each participant was sent a transcript of all their journal entries and asked to read them over and make any changes or additions that they felt would clarify their entry. Once they were validated by the authors, the data was copied then transferred into the qualitative data analysis software. The researcher then had a doctoral level researcher, without any ties to HeartMath, review the data and the two sets of categories and examples generated during the analysis. The researcher incorporated the feedback of this outside reviewer into

the final data analysis. Finally, to address research bias, the researcher presents below a full disclosure of his role and connection with HeartMath.

This dissertation represents the author's own work conducted for the purposes of a Ph.D. program in Integral Studies at the California Institute of Integral Studies in San Francisco, CA. The researcher has taken the HeartMath training but is not associated with HeartMath in any commercial context. All significant data or analysis used in this dissertation from other sources—including work the author may have carried out for purposes other than for this program—has clearly been identified as such.

### **Study Limitations**

Since the case study methodology is a descriptive method, not explanatory one, cause-and-effect relationships cannot be drawn. Behavior can only be described, not explained.

Social sciences case studies often rely on descriptive information provided by different people. This leaves room for important details to be left out. This lack of detail could affect the conclusions of the research.

There were two primary limitations resulting from my use of the NVivo software. The first limitation was my lack of experience with the software. I had never used NVivo software before using it for this research; so I would classify myself as a novice user. The tool was an immense asset in managing the plethora of data and ideas that resulted from the research participant's data. Also the ability of the software and its use of coding greatly simplified the task of determining



relationships, categories and themes from the various research participants' data. After using the NVivo I discovered that my research could have benefited even more from various other functionality of the software that I wasn't aware of when I started the work on my research. NVivo has modeling capability that could have been utilized during my literature review. For example, the model functionality could have been used to identify direct relationships between published studies and sets could have been used to better organize the literature based on different demographic aspects of the paper origins. The research management of this study via NVivo may have been further improved if the modeling functionality had been used. The second limitation was a limitation in the NVivo tool itself. NVivo only works with a limited number of file types and requires that the researcher converts the data to plain text formats. Plain text formats can result in loss for formatting of the documents and reduce the richness of the material. Plain text format also makes it difficult to capture data in tables or footnotes. This limitation also makes it impossible to maintain non-text information within the tool. This limitation was not a significant limitation in my research as none of my research participants included non-text information in the journaling. It could be a significant limitation in other research environments.

Also the sample size utilized in this study is relatively small and may impact the generalizability of the study.

Unlike the other types of qualitative research . . . (basic or generic qualitative study, ethnography, phenomenology, grounded theory), two levels of sampling are usually necessary in qualitative case studies. First, you must select "the case" to be studied. Then, unless you plan to interview, observe, or analyze all the people, activities, or documents

within the case, you will need to do some sampling within the case.  
(Merriam, 1995, pp. 64–65)

The first level of sampling in my research, my case, was defined as certified HeartMath trainers who utilize the HeartMath tools and techniques on a daily basis. The second level of sampling for my research was 10 individual research participants. A sample of 10 participants is relatively small, but NVivo did reveal important results from the data.

## **Chapter 3**

### **Literature Review and Limitations**

The main goal of this dissertation is to study the experience of living and practicing the HeartMath tools and techniques, through which the individual practitioners can explore the nature of the heart-mind communication. Its fundamental purpose is to question the Cartesian dichotomies and to support the view that techniques, such as those taught by HeartMath, contribute to individuals achieving a more integrated expression. Mind-body dualism assumes the existence of two distinct principles of being in the universe: spirit and matter, or soul and body. This was the basic understanding behind the teachings of Plato: that the physical world of sense phenomena is but a poor reflection or image of the true spiritual world; that sense things are mere shadows of the eternal spiritual things or “ideas.” I investigated the participants’ experience of living and practicing the HeartMath tools and techniques, and determined if those experiences revealed a more integral reality.

For this purpose, this literature review is divided into five sections: (a) Overview: Heart-mind Communication; (b) Issues in the Exploration of Heart-mind Communications; (c) Review of Heart-mind Communications: HeartMath; (d) Review of HeartMath’s Heart-mind Coherence; and (e) Issues in the Study of the Experience of HeartMath’s Heart-mind Coherence.

#### **Overview: Heart-Mind Communication**

One of the most significant features of our modern society is the acceptance of the belief that the heart and the mind are totally separate entities and that they do not communicate or work together in an integral fashion. According to Dr. Paul Pearsall (1998), a clinical psychologist, the heart is more than a pump, more than the most powerful muscle in the human body. Using research from many fields, interviews with transplant patients and their families, and his own experiences as a cancer survivor, the prolific author contends that the heart thinks, feels, remembers, and communicates with other hearts. For several centuries the brain, or mind, was the “sole proprietor of our human essence” (p. 15). The idea that “contemplation, reflection, remembering, and emotionality could originate anywhere else than within [the brain]” (p. 15) would create a lot of angst in modern man.

This separation of the mind from the rest of the body is reflected in Descartes' statement: “I knew that I was a substance the whole essence or nature of which is to think, and that for its existence there is no need of any place, nor does it depend on any material thing; so that this ‘me,’ that is to say, the soul by which I am what I am, is entirely distinct from body, and is even more easy to know than is the latter; and even if body were not, the soul would not cease to be what it is. (Descartes, 1964, p. 25)

This concept led to the widespread belief that we could exist as pure thinking beings independently of our bodies. The idea that there is a clear separation of the mind from the body, as well as the dismissal of the body, has held sway for over 400 years. It has had a dramatic influence on modern science, including a role in modern technology and medicine. The result of this way of thinking is reflected in the world in which we find ourselves today.

The heart has been mostly left out of the alliance between the brain and its body, its pumping power admired even as its circulatory function is often

overextended and abused by an ever-demanding brain. The hearts own delicate way of thinking and feeling about the world and the info-energetic cellular memories with which it may be uniquely conversant are often ignored by cardiologists trained to think about the heart but not about how the heart might think. (Pearsall, 1998, p. 15)

With the brain “ruling our world” we have seen the evolution of an increasingly individualistic and separatist society. Humanity is struggling to control the world we live in and we have become much less connected to it (Pearsall, 1998):

We don't have to and should not give up our quest to learn more about the remarkable brain and our respect for its magnificent powers of reason in order to begin to learn more about the untapped spiritual info-energetic wisdom of the heart. An irrational world brings us only misery, but a millennium in which the gifted brain is moderated and instructed by a gentle heart could bring us a shared paradise on earth. If we are willing to try to combine the best the brain has created, and will create, with the wisdom of the heart's code that may be our soul calling out the cellular memories that give meaning to these creations, we can become much smarter than we have ever been. We can have two major intelligences and learn to adore the rational skepticism of science and still look for the energy of the soul conveyed by the heart. (p. 17)

So where does the heart belong in our modern society? What is the true impact of the heart on our thinking and feeling nature? Early in man's history the heart was recognized as having a more significant role and impact.

**Heart-mind communication practices.** The study of lived experiences is still somewhat problematic depending on whether awareness is viewed as immediate or constructed. This is based on the idea that awareness by definition cannot be aware of itself. It is the most serious critique of the phenomenological tradition of the lived body and has resulted in different approaches to its resolution.

Bourdieu (1990) addresses this issue of phenomenology by stating that phenomenological knowledge is a reflection of an experience. The intent of this reflection is to reveal the “light of truth” of that experience. This knowledge cannot go beyond a description of this lived experience. “This is because it excludes the question of the conditions of possibility of this experience, namely the coincidence of the objective structures and the internalized structures which provides the illusion of immediate understanding” (pp. 25-26). This criticism by Bourdieu seems to be true on the surface as long as the “lived experience of the social world” is taken as static and passive. Here Bourdieu is taking the immediacy of the experience only as an effect of the social world. Another approach would be to take the experience itself as the creation of the social world, that is, through the creation of meaning (Gendlin, 1997).

Merleau-Ponty’s view of the “lived body” is another perspective on the lived experience and can be stated as

Western scientific culture requires that we see our bodies both as physical structures and as lived, experiential structures—in short, as both “outer” and “inner,” biological and phenomenological. These two sides of embodiment are obviously not opposed. Instead, we continuously circulate back and forth between them. Merleau-Ponty recognized that we cannot understand this circulation without a detailed investigation of its fundamental axis, namely, the embodiment of knowledge, cognition, and experience. For Merleau-Ponty, as for us, embodiment has this double sense: it encompasses both the body as a lived, experiential structure and the body as the context or milieu of cognitive mechanisms. (quoted in Varela, Thompson, & Rosch, 1993, pp. xv-xvi)

This approach is a method of inquiry that allows one to investigate the circulatory movement between the human experience and cognitive science.

This circulation is a primary area of interest in my research. Using a qualitative approach enables me to discover this circulation and determine the multiple ways that that HeartMath tools and techniques affect the integral being.

### **Issues in the Exploration of Heart-mind Communications**

Our understanding of the experience of heart-mind communication has been developed throughout the history of mankind. The heart has been viewed by many ancient cultures as the primary organ influencing not only our emotional nature; but also our thinking and feeling nature. If we look at the writings of many of these cultures, we see countless descriptions of the heart as having many of the attributes modern man uses to describe the mind, for example, intelligence, critical thinking and morality.

The ancient book of definitions called *Neijing* refers to the heart as the ruler of the human body, which includes the mind, as the seat of intelligence and consciousness (Fruehauf, 1997). The *Neijing* states that if we nourish the heart in our daily practice, our lives will be long and healthy. If the ruler's or heart's vision becomes clouded then your path will become congested and the body will be harmed. Therefore if our lives that are centered around distracting activities, then we will experience harmful consequences (Fruehauf).

According to this ancient form of medicine, the heart contains *shen*. One of the primary qualities of *shen* is mental activity or consciousness. Thus *shen* appears to be at the heart of all mental and physical activities.

In *The HeartMath Solution*, Childre and Martin (1999) state that “In the Kabbalah the heart is the Central Sphere, the only one of ten to touch all the others, it’s reputed to hold the key to the mysteries of radiant health, joy, and well-being” (p. 8). The ancient Jewish traditions also viewed the heart as a central communication pathway.

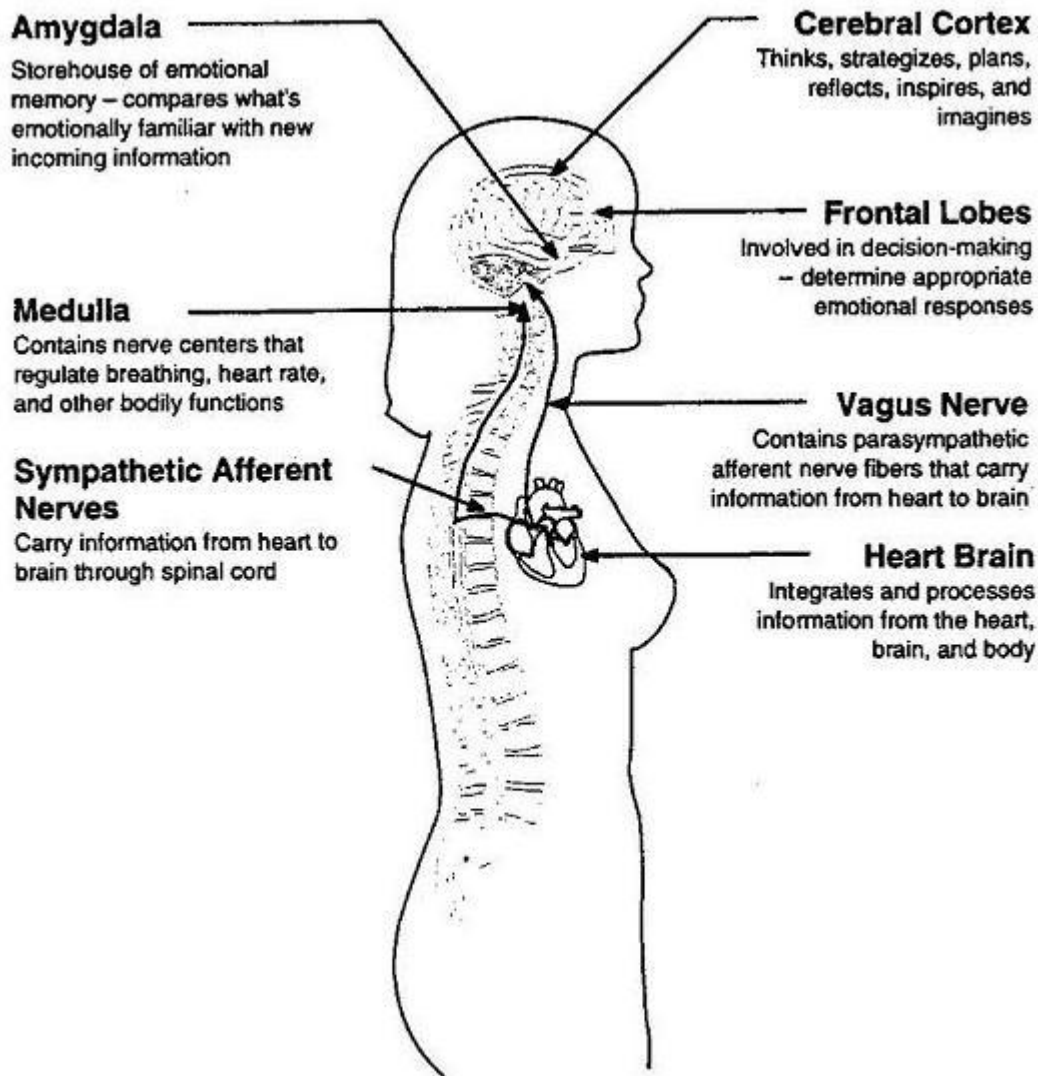
Contemporary research, including that reported by the HeartMath Institute in California, claims

The heart communicates with the brain and the rest of the body in three ways for which there’s solid scientific evidence: *neurologically* (through the transmission of nerve impulses), *biochemically* (through hormones and neurotransmitters), and *biophysically* (through pressure waves). In addition, growing scientific evidence suggests that the heart may communicate with the brain and body in a fourth way: *energetically* (through electromagnetic field interactions). Through these biological communication systems, the heart has significant influence on the function of our brains and all our bodily systems. (Childre & Martin, 1999, pp.28-29)

Neurocardiology, the study of the nervous system with the study of the heart, reveals the neurological pathways for this communication between the heart and brain. Figures 1, 2 and 3 highlight these neurological pathways.

These neurological communication pathways support the concept of the interrelationship of heart-mind communication pathways. Descartes viewed reality as having a clear division of the mental and physical realms. This perspective allowed modern science to explore the outer world in ways that would not have been possible without his method of seeing the world. But clearing my view, exploring the heart-mind communication experience can not be viewed with the assumptions of a clear demarcation between the mental and physical realms.





### Neurological Communications from the Heart to the Brain

This diagram illustrates the neurological pathways through which the heart communicates with the brain. The heart's intrinsic nervous system (the *heart brain*) contains *sensory neurites* as well as *local circuit neurons* of several types. The sensory neurites, which are distributed throughout the heart, sense and respond to many types of biological information, including heart rate, pressure, hormones, and neurotransmitters. The local circuit neurons are arranged in processing stations that integrate inflowing neurological information from the

brain and bodily organs with input from the heart's sensory neurites. Once the heart brain has processed this information, it sends messages to the brain via "afferent" neural pathways – that is, pathways that flow toward the brain. The *sympathetic afferent nerves* travel to the brain through the spinal cord. The *vagus nerve* contains thousands of nerve fibers, many of which also carry information from the heart to the brain. These neural pathways enter the brain in the *medulla*, a brain center that regulates many vital bodily functions. From there, the neurological information from the heart travels to higher brain centers involved in emotional processing, decision-making, and reasoning.

*Figure 1.* Heart-brain neurological communication. Reprinted from *The HeartMath Solution* (p. 31), by D. Childre and H. Martin, 1999, San Francisco, CA: Harper. Copyright © 1999 by The HeartMath Institute. Reprinted with permission.

Gendlin (1992) claims that the body is much bigger than perception. This idea is based on the concept that the body is always interacting with its environment on many levels and our perception, or what is presented to our consciousness, is a mere part of it. Gendlin expresses the multifaceted nature of the body's interplay with its environment. Gendlin states that perception "is usually something that appears before or to a body" (p. 346). He views the body as an interaction. The body not only breathes, but it also senses the temperature of the air it is breathing in. When the body eats, it smells and tastes the food. The body grows and feels. The body walks and it perceives the hardness of the earth. And this body moves not only to move from one point to another, but to satisfy a desire to move. The body's senses dramatically affect our next action. We act in every situation from the bodily sense of each situation (Gendlin). Gendlin's

statement, that “we act from the bodily sense of each situation” (p. 346) implies that our body acts as an integrated whole.

### **Review of Heart-mind Communications: HeartMath**

**The concept of heart-mind coherence.** Throughout history writers, philosophers, poets, and spiritual leaders have sensed the importance of the heart and the centrality of the heart to the human experience (Childre & Martin, 1999). Antoine de Saint-Exupéry (1943) wrote “And now here is my secret, a very simple secret; it is only with the heart that one can see rightly; what is essential is invisible to the eye” (p. 70).

What can we learn about the energy of the heart, the communication between the heart and the mind?

Our ancestors knew that the heart had energy—a powerful energy—and that it conveyed deep wisdom. However, as the human species developed its brain, it began to lose sight of its heart. At this point in history as we venture into space, create global communications, and invent all sorts of technological tools and toys, we are poised to destroy ourselves, our children, and everything around us. Have we simply lost our minds, or have we lost something deeper? Have we lost our hearts? (Pearsall, 1998, p. ix)

Over the last several years, neuroscientists have been making discoveries about the heart. Their research has shown that the heart has its own independent nervous system. It is even being called “the brain in the heart.” This research has determined that there are at least 40,000 neurons in the heart (Armour & Ardell, 1984). “The heart’s intrinsic brain and nervous system relay information back to the brain in the cranium, creating a two-way communication system between the

heart and brain. The signals sent from the heart to the brain affect many areas and functions in the amygdale, the thalamus, and the cortex” (Childre & Martin, 1999, p. 10).

The HeartMath Institute research took this even further. It initiated investigations into how this “brain in the heart” operates and how it influences behavior. One of the primary areas of HMI research was in investigating how to cultivate the “brain in the heart” or heart intelligence. Their research showed that

Positive emotions . . . were found to increase order and balance in the nervous system and produce smooth, harmonious heart rhythms. But these harmonious and coherent rhythms did more than reduce stress; they actually enhanced people’s ability to clearly perceive the world around them. (Childre & Martin, 1999, p. 14)

With these assumptions, the HeartMath Institute developed techniques to cultivate this “heart intelligence” and began to train instructors and practitioners in them. These techniques form the foundation of HeartMath’s concept of heart-mind coherence.

**The history of heart-mind communication.** This form of communication even transcends thoughts and words. Hawaiians practice a form of prayer called *pule ‘ohana*, which means to pray together as a family. In this form of prayer no words are said, and all thoughts and mental distractions are ignored. Members of the family are expected to silence the brain and allow their hearts to join in prayer with those of other family members (Pearsall, 1998). Pearsall described how he sat with the family and could feel the energy coming from the family group. He could feel his own heart’s rhythms becoming more coherent, calm, and serene.

Pearsall felt that the joining of hearts in this experience allowed them to pray together without the brain's interference. This allowed the heart's energy to increase the coherence and power (Pearsall). Pearsall is speaking of a cardio-coherence form of prayer that brings a sense of harmony to the individuals experiencing it. Other researchers are expanding this understanding to something beyond a "cardio-coherent energy."

There are also more integral views of communication, prayer, or this "coherent energy" one experiences. HMI research argues that each person radiates a particular electromagnetic frequency that can be measured with instrumentation (Childre & Martin, 1999). It also claims that each person can also function as a receiving set and receive signals that come from both within and without. They can actually attune their bodies, minds and hearts to higher vibrations by adjusting their inner circuits; different states of consciousness correspond to different electrical waves in the heart and brain. By choosing thoughts and feelings individuals can attune themselves to certain frequencies. When they experience one of the core feelings such as love or compassion, they stimulate the electromagnetic field that is generated by the beating of the heart. Using the intelligence of the heart along with the intelligence of the head, they tap into divine guidance (McArthur & McArthur, 1997).

The Prayer of the Heart takes the understanding of heartfelt prayer even beyond the view of tapping into this divine guidance. The Prayer of the Heart was written by St. Symeon, a mystic of the Greek Orthodox Church: "Lord Jesus Christ, have mercy on me Son of God, help me!" (Payne, 1980, p. 270) The

Prayer of the Heart was intended to build a state of awareness whereby it is being practiced within the heart on a continual basis.

One of the great gifts of the Prayer is its capacity to incorporate all parts of the human being without judgment. There is no separation between body and spirit, nor their function; each flows into the other, serves the other, like a dance of integration and intermingling. God is everywhere, in all parts, and through the Prayer body and Spirit are communicating and communing that Truth each moment until it is known. (Knox, 1983, p. 59)

### **Contemporary scholars' perspectives on heart-mind communication.**

Now that we've discussed the historical perspective, some perspectives of heart-mind communication by contemporary scholars will be reviewed. A term used by the HeartMath Institute is the idea of "heart intelligence" (Childre & Martin, 1999, p. 1). The HeartMath Institute theory is based on the claim, "heart intelligence actually transfers intelligence to the emotions and instills the power of emotional management. In other words, heart intelligence is really the source of emotional intelligence" (p. 13).

Research at the HeartMath Institute based on this assumption has shown that positive emotions increase order and balance in the nervous system and that this state produces smooth, harmonious heart rhythms (Childre & Martin, 1999). The HeartMath Institute has developed tools and techniques that can be used to facilitate this inner state of harmony and balance thereby taking advantage of heart intelligence. These HeartMath tools allow individuals to "experience positive emotions at will. As science continues to discover how people can harness and direct the coherent power of the heart, it offers tremendous hope that

society can shift from disorder and chaos to a new era of coherence and quality living for all” (p. 14).

These perspectives on heart-mind communication provide a rich framework from which to delve into the exploration of the experience of heart coherence techniques as taught by the HeartMath Institute.

## **Review of HeartMath’s Heart-Mind Coherence**

**History of HeartMath’s heart-mind coherence.** Doc Childre founded the Institute of HeartMath in 1991. He and several colleagues had all experienced improvements in their “own lives through the practice of listening to and following [their] hearts, [they then] turned [their] curiosity to the investigation of *how* and *why* that process works. [They asked themselves] ‘Does the heart operate simply under the direction of the brain, or does it possess an intelligence of sorts that has influence on our mind and emotions?’” (Childre & Martin, 1999, p. 6) The intent of the Institute of HeartMath was to investigate the premise that the heart communicates with the rest of the body and that somehow it influences other systems.

The intent behind the word *HeartMath* was to combine the two essential aspects of HeartMath’s work. The first is that of heart. Historically the heart has been identified with love, a deep sense of caring, affection, and courage—all aspects of a higher purpose for human beings (Childre & Martin, 1999). *Math* can be defined as the science of numbers and their operations. The term *HeartMath* represents “the stepping stones of the system—the nuts-and-bolts approach to

systematically unfolding ‘heart’ qualities. It also refers to physiological and psychological equations for developing the incredible potential of the heart” (p. 7).

A great deal has been learned about the heart over the last 30 years or so. One of the most fascinating discoveries is that the heart has its own independent nervous system; the heart contains at least 40,000 neurons or nerve cells (Armour & Ardell, 1984). The research has shown that there exists two-way communication between the heart and the brain. This provides a totally different awareness of the heart: it is so much more than just a pump pumping blood throughout the physical body.

In the 1970s physiologists John and Beatrice Lacey of the Fels Research Institute made exciting discoveries concerning the nervous system connecting the heart and brain. The Laceys found that sometimes the instructions sent to the heart from the brain were not followed. Instead, it appeared as though the response from the heart was following its own logic. Further research by the Lacey’s showed that in some situations the heart appeared to be sending messages to the brain and not only did the heart understand these messages it followed them (Lacey & Lacey, 1970, pp. 205-227).

The Institute of HeartMath wanted to build on this research and try “to understand how the heart formulates its logic and influences behavior” (Childre & Martin, 1999, p. 11).



**HeartMath's definition of heart-mind coherence.** The HeartMath Institute has developed several heart-based techniques focused on helping people to “self-induce and sustain states of appreciation and other positive emotions” (McCraty & Childre, 2003, p. 1).

In recent years researchers have explored the psychology of positive emotions. The HeartMath techniques focus on appreciation, not gratitude. Many times gratitude carries a sense of owing something to someone or something. Appreciation, on the other hand, is free of this indebtedness. Sara Paddison (1998) offers the following definition for appreciation: “The word appreciation means to be thankful and express admiration, approval (p. 211). HeartMath refers to appreciation as “an active feeling of thankfulness, which has an energetic quality that uplifts one’s energy and spirit” (McCraty & Childre, 2003, p. 2).

HeartMath research “has identified distinct physiological correlates of heartfelt positive emotional states” (McCraty & Childre, 2003, p. 5). HeartMath defines physiological coherence as a state of being where several physiological phenomena associated with feelings of appreciation are expressed (McCraty & Childre).

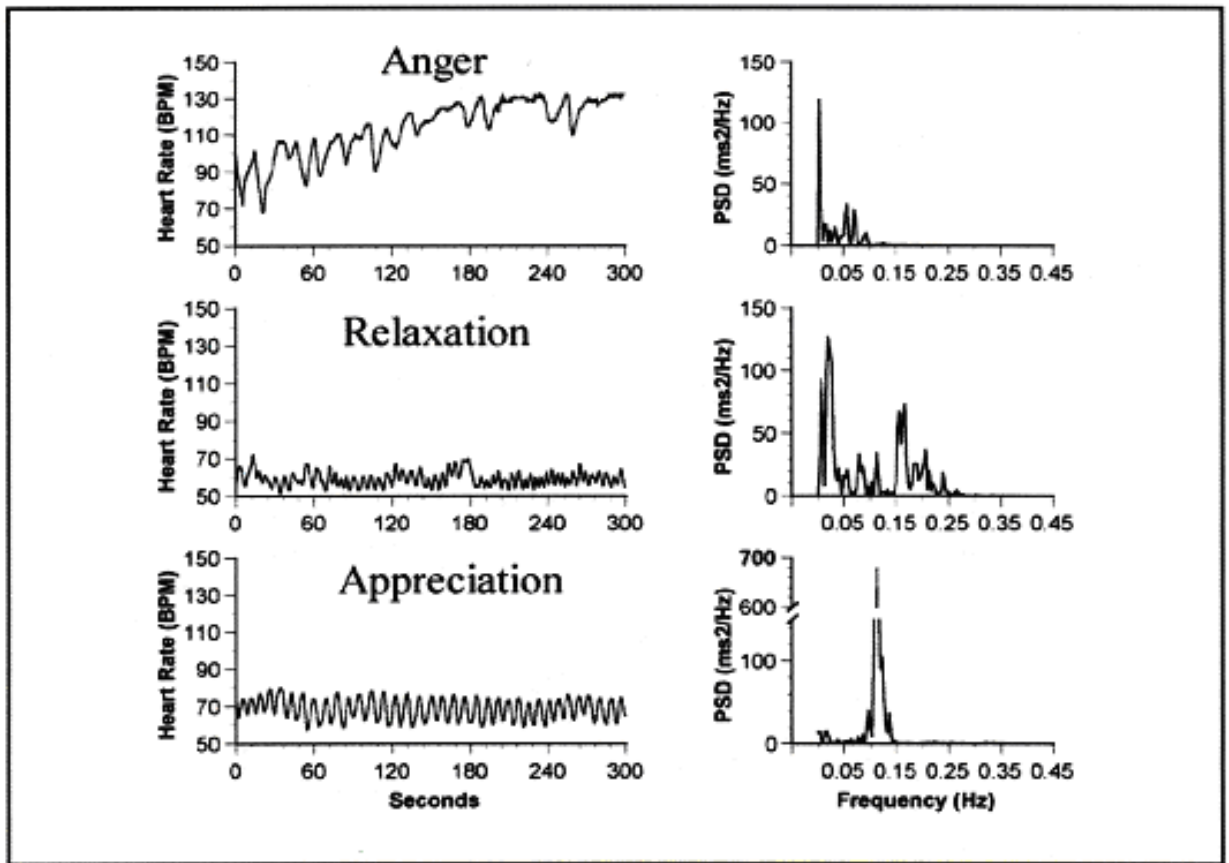
HeartMath describes coherence as

a physiological mode that encompasses entrainment, resonance, and synchronization—distinct but related phenomena, all of which emerge from the harmonious interactions of the body’s sub-systems. Correlates of physiological coherence include: increased synchronization between the two branches of the autonomic nervous system [ANS], a shift in autonomic balance toward increased parasympathetic activity, increased

heart-brain synchronization, increased vascular resonance, and entrainment between diverse physiological oscillatory systems. The coherent mode is reflected by a smooth, sine wave-like pattern in the heart rhythms (heart rhythm coherence) and a narrow-band, high-amplitude peak in the low frequency range of the [heart rate variability] HRV power spectrum, at a frequency of about 0.1 hertz. (pp. 8-9)

These are the conditions that define heart-mind coherence.

One of the conditions of physiological coherence mentioned above that is measured by the HeartMath software called “Freeze Frame” can be defined as the frequency of vibration when an individual is in a state of physiological coherence. When individuals are in these coherent states there is an increased synchronization between the sympathetic and parasympathetic branches of the autonomic nervous system and increased entrainment between respiration, blood pressure oscillations, and the heart rhythms (McCraty & Childre, 2003, p. 6). This state of coherence “occurs because these oscillatory subsystems are all vibrating at the resonant frequency of the system (~0.1 hertz). Thus in the coherent mode, the power spectrum [PSD] of the heart rhythm displays an unusually large peak around 0.1 hertz” (p. 6). Figure 2 shows what the heart rate variability and power spectrum look like during various emotional states.



Heart rhythm patterns during different psychophysiological states.

Heart rate tachograms, showing beat-to-beat changes in heart rate, (left) and heart rate variability power spectra (right) typical of different emotional/psychophysiological states. Anger (top) is characterized by a lower frequency, disordered heart rhythm pattern and increasing mean heart rate. As can be seen in the power spectrum, the rhythm is primarily in the very low frequency band, which is associated with sympathetic nervous system activity. Relaxation (center) results in a higher frequency, lower-amplitude rhythm, indicating reduced autonomic outflow. In this case, increased power in the high frequency band of the power spectrum is observed, reflecting increased parasympathetic activity (the relaxation response). In contrast, sustained positive emotions such as appreciation (bottom) are associated with a highly ordered, smooth, sine wave-like heart rhythm pattern (coherence). As can be seen in the power spectrum, this physiological mode is associated with a large, narrow peak in the low frequency band centered around 0.1 Hz. This indicates system-wide resonance, increased synchronization between the sympathetic and parasympathetic branches of the nervous system, and entrainment between the heart rhythm pattern, respiration, and blood pressure rhythms. The coherent mode is also associated with increased

parasympathetic activity, thus encompassing a key element of the relaxation response, yet it is physiologically distinct from relaxation because the system is oscillating at its resonant frequency and there is increased harmony and synchronization in nervous system and heart-brain dynamics. In addition, the coherent mode does not necessarily involve a lowering of heart rate per se, or a change in the amount of variability, but rather, a change in heart rhythm pattern. Also note the scale difference in the amplitude of the spectral peak during the coherent mode.

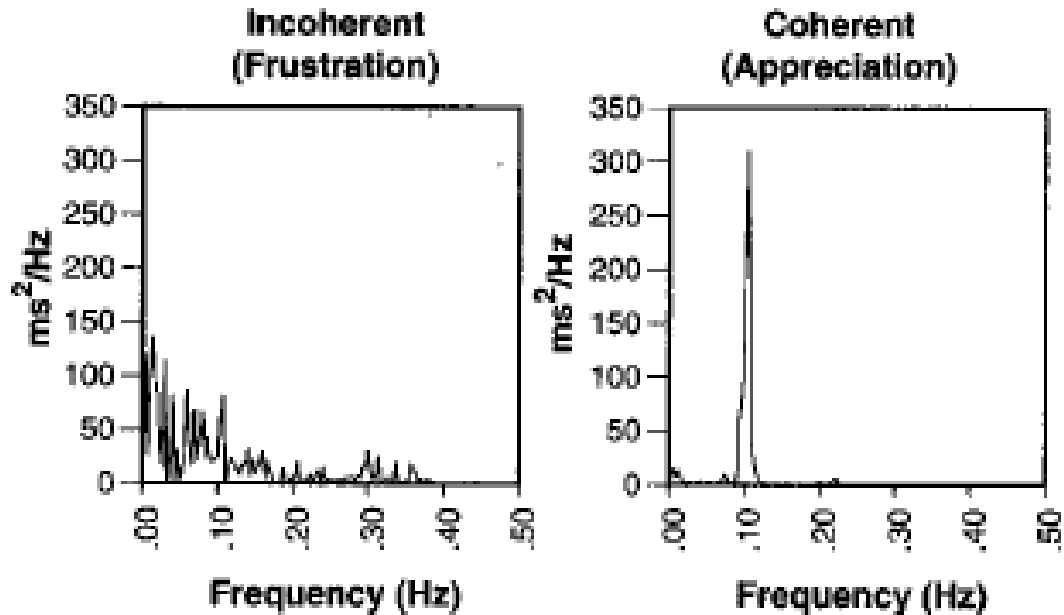
*Figure 2.* Heart rhythm patterns during different physiological states.

Reprinted from *The Appreciative Heart: The Psychophysiology of Positive Emotions and Optimal Functioning* (p. 6), by R. McCraty and D. Childre, 2003, Boulder Creek, CA: Institute of HeartMath. Copyright © 2003 The HeartMath Institute. Reprinted with permission.

**Basic elements of HeartMath's heart-mind coherence.** One of the primary goals of the HeartMath Institute's work is to increase coherence, to help individuals to achieve a state of optimal efficiency (Childre & Martin, 1999, p. 47). The HeartMath approach in reducing stress, fatigue and tension has been scientifically validated through many studies. These studies have demonstrated the stress reduction benefits of using the HeartMath programs in various companies, government agencies, schools and for individuals (Childre & Rozman, 2005).

One way of measuring the stress levels individuals are experiencing is the use of electrocardiograms (ECGs). This electromagnetic signal permeates every cell of the body. Recently scientists have begun to use a spectral analysis of the ECG and to observe heart rhythms (heart rate variability patterns, HRV). They

have found that the HRV is influenced by emotions. It changes dramatically in response to emotional states.



Incoherent and Coherent Heart Rhythms: Frequency Spectra

This figure shows the *frequency spectra* of a person's heart rhythms during different emotional states. These graphs result from the spectral analysis of heart rate variability patterns. Spectral analysis breaks down the overall heart rhythm pattern into the different individual frequencies that make it up. The left-hand graph shows the frequency spectrum of the heart rhythms generated by a person feeling frustration. This is called an *incoherent* spectrum, because the frequencies are scattered and disordered. In this state, there's disorder in the autonomic nervous system and in the electromagnetic field broadcast by the heart. The right-hand graph shows the frequency spectrum of the heart rhythms produced by a person feeling sincere appreciation. This is called a *coherent* spectrum, because the frequency structure of the heart's rhythms is ordered and harmonious. In this state there's increased harmony in the autonomic nervous system, and the heart's electromagnetic field also becomes more coherent.

*Figure 3.* Incoherent and coherent heart rhythms. Reprinted from *The*

*HeartMath Solution* (p. 60), by D. Childre and H. Martin, 1999, San

Francisco, CA: Harper. Copyright © 1999 The HeartMath Institute.

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Figure 3 shows the HRV spectrum generated by a person feeling frustration and one for a person feeling appreciation. The HeartMath Institute utilized this information and other research findings to develop tools and techniques so that individuals could intentionally shift the HRV spectral analysis signal to the coherent signal, the spectral signal of appreciation. HeartMath

techniques utilize the heart as a point of entry into the psychophysiological networks that underlie emotional experience. . . . In essence, because the heart is a primary generator of rhythmic patterns in the body—influencing brain processes that control the ANS [autonomic nervous system], cognitive function, and emotion—it provides an access point from which system-wide dynamics can be quickly and profoundly affected. (McCraty & Childre, 2003, p. 11)

HeartMath techniques are designed to utilize a shift in the focus of attention to the area of the heart with an intentional self-induction of a positive emotional feeling such as appreciation, compassion or love.

Shifting our focus of attention allows the coherence of the heart's rhythm to increase. This shift results in a change in the pattern of afferent cardiac input that is being sent to the emotional and cognitive areas of the brain. Combining this more organized afferent pattern with an intentionally generated feeling of appreciation reinforces an inherent response between our body's physiology and a positive emotion. This action subsequently strengthens the ability of these positive feelings to impact a physiological shift or a physiological shift to facilitate experiencing a positive emotion (McCraty & Childre, 2003).

These techniques that are taught by the HeartMath Institute have been reported as enabling individuals to replace stressful feelings and thought patterns with more positive emotions in the present moment.

There are three basic tools or techniques taught by HeartMath to facilitate heart-mind coherence: Freeze-Frame, Cut-Thru, and Heart Lock-In.

**Freeze-Frame.** Freeze-Frame is a self-management technique where individuals focus on their heart and re-experience a feeling of love or compassion; it allows individuals to disengage from disruptive mental or emotional states.

One of the most basic of the HeartMath tools and techniques is Freeze-Frame. This name, Freeze-Frame, originated from the concept utilized in the movie industry. When you look at a single frame in movie film, you are freezing the movie to a single frame. This idea represents the concept HeartMath is trying to utilize with this technique. How you *choose* to respond each moment to the movie of life determines how you see the next frame, and the next, and eventually how you feel when the movie ends. When you are mentally or emotionally reacting to life—you are releasing self-poisoning stress hormones into your system, draining your energy and distorting perspective. Consequently, your next choice may not be an intelligent one. (Childre, 1994, p. 21)

The participants in my study have been trained in the IHM Freeze-Frame technique, a tool than an individual can use at any moment, to call a “time-out” and obtain a clearer perspective on how to adapt to what’s happening in one’s life at that moment.

Freeze-Frame has five basic steps:

4. Take a time-out so that you can temporarily disengage from your thoughts and feelings—especially stressful ones.
5. Shift your focus of attention to the area around your heart—now feel your breath coming in through your heart and out through your solar plexus. (Practice breathing this way a few times to ease into the technique.)

6. Make a sincere effort to activate a positive feeling. (This can be a genuine feeling of appreciation or care for someone, some place or something in your life.)
7. Ask yourself what would be an efficient, effective attitude or action that would balance and de-stress your system.
8. Quietly sense any change in perception or feeling and sustain it as long as you can. (Heart perceptions are often subtle. They gently suggest effective solutions that would be best for you and all concerned.)  
(McCraty & Childre, 2003, p. 12)

Let's look at each one of these steps in more detail.

*Step 1. Take a time-out so that you can temporarily disengage from your thoughts and feelings—especially stressful ones.* This is like pressing the pause button while playing a DVD. Take a time-out. This is the part of the process where you're recognizing you're in a stressful or emotionally charged situation. Many times people will process negative thoughts and feelings for hours, days, months, or longer. This step is designed to shorten the length of time one experiences this unnecessary stress.

*Step 2. Shift your focus of attention to the area around your heart—now feel your breath coming in through your heart and out through your solar plexus. Keep your focus there for 10 seconds or more. This step entails shifting your focus from the mind to the heart.* This action helps you shift away from your perceptions of the problem to a calm, objective look at the situation at hand. A heart focus you can access guidance and make decisions based on a more balanced awareness. By shifting your attention to the heart, there are also physical benefits to the heart. There is less stress and strain on the heart that may have resulted if your focus was still centered in the “racing” mind. “Calming the heart



rhythm in this way also helps activate a neuro-chemical communication pathway from the heart to the brain, reducing chaos in the mind and emotions. This causes the heart, mind/brain to work in a joint venture producing economy in energy expenditures” (Childre, 1994, p. 29).

This step can be described as follows: Shift out of the head, and focus on the area around your heart. Keep your attention there for at least 10 seconds. Continue to breathe normally.

*Step 3. Make a sincere effort to activate a positive feeling.* The process of recalling a positive feeling like appreciation, care, compassion, or love helps neutralize any stressful or negative reaction you might be experiencing. By re-experiencing a positive feeling you bring your awareness to a more objective state.

In this step the individual recalls a positive time or feeling they had in their life, and they attempt to re-experience it. They try not simply to visualize or remember the event, but rather to re-experience the feeling fully.

*Step 4. Ask yourself what would be an efficient, effective attitude or action that would balance and de-stress your system.* By repeatedly utilizing the Freeze-Frame process your intuition and common sense will become more readily available. This will help you develop your capacity to arrive at objective, intuitive solutions to the events life brings your way.

This step involves asking a question from the heart: What can I do in this situation to make it different? or What can I do to minimize stress?

*Step 5. Quietly sense any change in perception or feeling and sustain it as long as you can.* The Freeze-Frame process can be a practice. It will become automatic as you practice it on a regular basis. When you experience the results you will realize the practice is not an effort, it's something that works.

Now let's look at the scientific basis of Freeze-Frame. Over the last several years there have been several important discoveries concerning the heart. The heart is not merely a pump pumping blood throughout our bodies. Some of the earliest work looking at attributes of the heart beyond the pumping of blood was done by Walter Cannon (1927). Cannon's research indicated that changes in our emotional nature are associated with predictable changes in blood pressure, heart rate, respiration, and digestion. Cannon's findings are what are commonly called the "fight or flight" syndrome. When we are "excited" the sympathetic nervous system stimulates us for action. When we are in a calm and restive state the parasympathetic or calming part of our nervous system becomes predominant and our entire system relaxes. Cannon's assumption was that the autonomic nervous system, along with all of the physiological responses, worked together with the brain's response to a given stimuli. The idea was that our inner systems become "excited" when we are stimulated and then "calm down" when we are in a more restful state; with the brain in control of the entire process (Cannon).

During the 1960s and 70s John and Beatrice Lacey (1978) examined the "conversations" between the heart and brain. They observed that this communication between the heart and the brain significantly affects our perceptions. They found the heart appeared to have its own logic, separate from

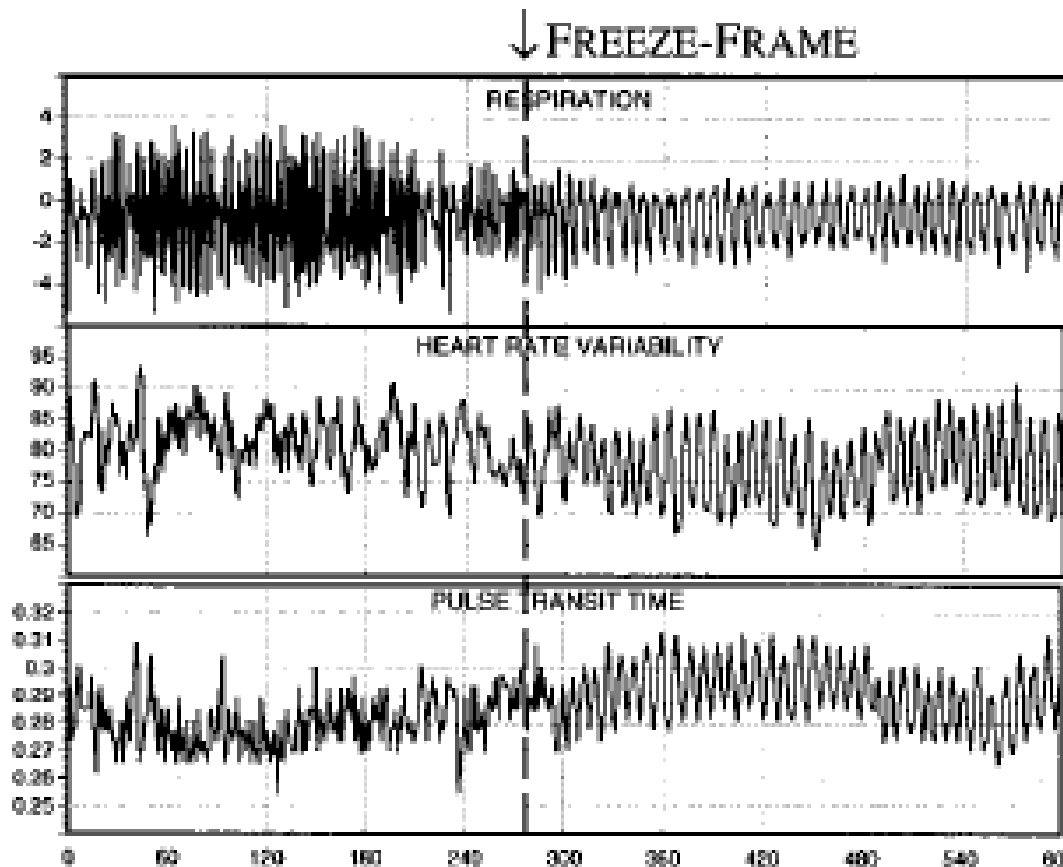
the autonomic nervous system. The heart appeared to be sending messages to the brain that the brain interpreted and obeyed.

“Neurophysiologists [then] discovered a neural pathway and a mechanism whereby input from the heart to the brain could either ‘inhibit’ or ‘facilitate’ the brain’s electrical activity” (McCraty, 2001, p. 4). This research indicated that Canon’s assumptions that only the brain was providing directions to the body was in fact not the case. More recent research has revealed that “Electrically [the heart’s electrical signal] . . . is 40 to 60 times more powerful than the brain, supplying 2.5 watts of electrical power” (Childre, 1994, p. 39) This electrical signal, produced by the heart, can be measured on any part of the body using electrodes that monitor the electrocardiogram (ECG) signal. It is this electrical signal that can be utilized to monitor how well an individual is executing the Freeze-Frame technique.

“Many of the Institute of HeartMath’s research studies have examined the influence of emotions on the autonomic nervous system utilizing the analysis of *heart rate variability*, or *heart rhythms*, which serves as a dynamic window into autonomic function and balance” (McCraty, 2001, p. 13). While the average heart rate may have a certain diagnostic value, the actual heart rate varies moment-to-moment. Heart rate variability (HRV), which is derived from the electrocardiogram (ECG), is a measurement of these naturally occurring, beat-to-beat changes in heart rate.

Institute of HeartMath research has shown that assessing heart rhythm patterns can be a useful measurement of *physiological coherence*. HeartMath uses

this term to describe a high-performance state characterized by a high degree of order and harmony in the functioning of the body's diverse oscillatory systems. HeartMath research has shown that the heart rate variability patterns are extremely responsive to emotions, and heart rhythms tend to become more ordered or coherent during positive emotional states. HeartMath therefore defines psychophysiological coherence as a state in which a high degree of order and harmony in the emotional domain translates as increased coherence in physiological patterns and processes (McCraty, 2001).



This figure illustrates the change in respiration, heart rate and blood pressure (pulse transit time) when this person Freeze-Framed, which occurred near the 300 sec. mark on the graph. Pulse transit time is a way of measuring blood pressure on a (heart) beat-to-beat basis. Notice how all three variables have nearly identical

patterns – they have “entrained” and are in harmony with each other. (The bottom graph is inverted, meaning higher time values equal lower blood pressure.)

*Figure 4. Physiological benefits of Freeze-Frame. Reprinted from Freeze-Frame: A Scientifically Proven Technique for Clear Decision Making and Improved Health (p. 55), by D. Childre, 1994, p. 44, Boulder Creek, CA: Planetary. Copyright © 1994 The HeartMath Institute. Reprinted with permission.*

In Figure 4 we can see the physiological coherence that occurs when the test subject starts using the Freeze-Frame technique.

The Institute of HeartMath has developed and promotes the Freeze-Framer Interactive Learning system that allows users to monitor their heart rhythms and confirm that they have achieved autonomic nervous system balance. This tool allows users to look into their emotional state and provides real-time feedback that assists in managing stress and negative emotions. This tool is used when training individuals in the Freeze-Frame technique. By providing real-time feedback during the training process individuals will have reinforcement that they have achieved physiological coherence.

**Cut-Thru.** Cut-Thru is the second emotional self-management technique taught by HeartMath I would like to describe. “The Cut-Thru technique is intended to help individuals recognize and re-program the subconscious emotional memory traces that have led to stereotypic repetitive ‘thought loops,’ negative affect states and detrimental neuroendocrine, autonomic and

immunological changes” (McCraty, Barrios-Choplin, Rozman, Atkinson, & Watkins 1998, p. 151).

*Step 1. Be aware of how you feel about the issue at hand.* This step describes the process of when an issue (a stressful feeling or negative emotion) arises, to learn to observe your feelings about it more closely and honestly acknowledge what they are.

*Step 2. Focus in the heart and solar plexus—Breathe love and appreciation through this area for 30 seconds or more to help anchor your attention there.* This step helps make an internal adjustment by shifting your feelings to bring the solar plexus and heart into “alignment.”

Since the heart is the strongest rhythmic oscillator in the body, it can pull the body’s other rhythms into entrainment with its own. Step 2 is designed to create this harmonizing effect. By focusing on your heart and solar plexus as you breathe and re-experience the feelings of compassion or appreciation, you synchronize the brain in the gut with the brain in the heart. The heart will automatically harmonize the energy between them, increasing internal coherence and clarity (Childre & Rozman, 2002, p. 84).

*Step 3. Assume objectivity about the feeling or issue—as if it were someone else’s problem.* The intent of Step 3 is to bring objectivity to the issue. When we are in an emotionally charged or highly stressed state, it is difficult to see clearly. In this state, the emotions influence our perceptions and thus our evaluation of the issue.

Step 3 assists in helping to step back from an issue, to let the emotions disengage from the issue and come back to balance (Childre & Rozman, 2002, p. 85). This process can be thought of as looking at this as if it was someone else going through the experience. This approach allows the individual to handle the issue in a much more objective manner.

*Step 4. Rest in neutral—in your rational, mature heart.* The purpose of this step is to move your thoughts and feelings to your heart. By holding the thought or feeling in your heart, you allow the heart's intelligence to “envelop” them. This heart intelligence is more balanced in its attitude. According to the IHM, this is what allows the heart to transform incoherent emotional energy (Childre & Rozman, 2002).

Most therapeutic approaches to redirecting one's thoughts to interpreting life's events in a more positive way are called “cognitive restructuring.” HeartMath research has shown that the heart needs to be engaged in this process for a cognitive shift to occur; otherwise the cognitive restructuring tends to be little more than an intellectual exercise with little power to shift one's emotions (Childre, & Martin, 1999).

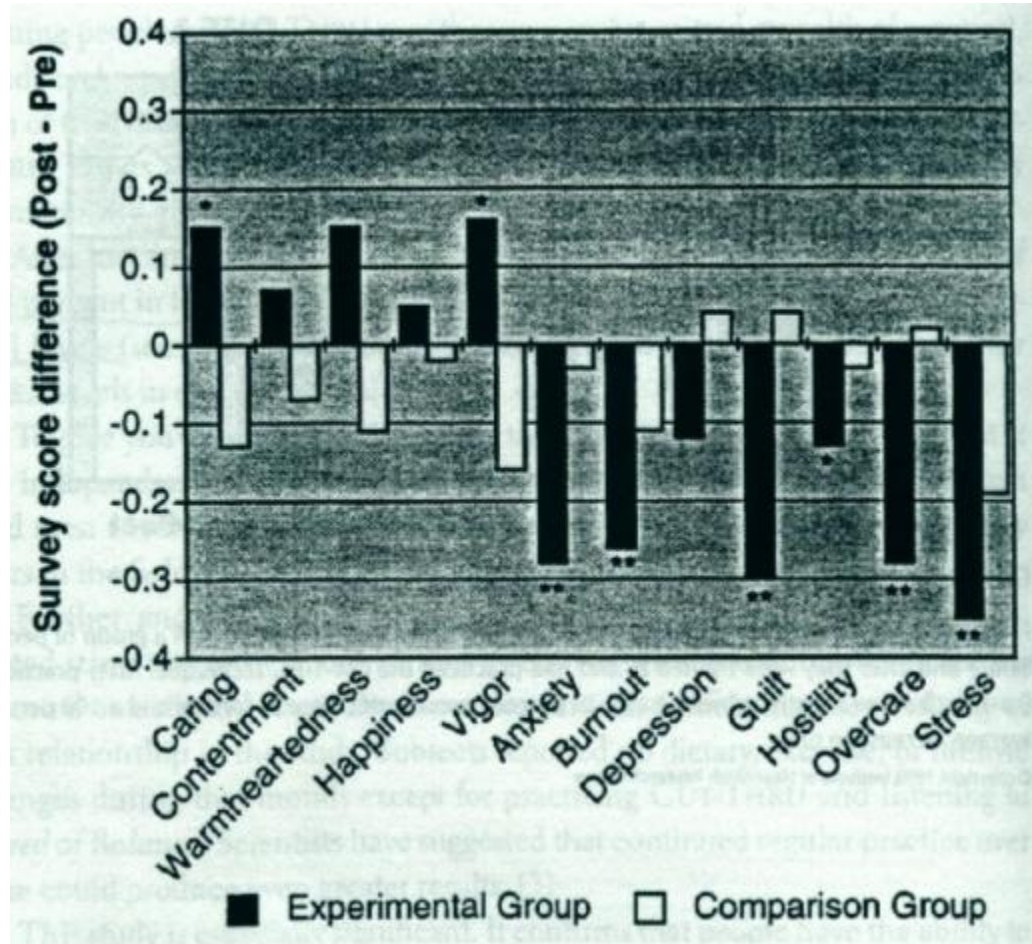
*Step 5. Soak and relax any disturbed or perplexing feelings in the compassion of the heart. Dissolve the significance a little at a time. Remember it's not the problem that causes energy drain as much as the significance you assign to the problem.* The significance that we assign to the problem results in an altered perspective. As Nietzsche said, “There are not facts, only interpretations” (Nietzsche, 1968, p. 267). Step 5 utilizes “the coherent power of the heart to take

out the weight or energy you've invested in the issue, thereby reducing its significance. By doing Steps 1 through 4 you've accessed your deeper heart and are now prepared to clean out the emotional residue. Let the power of the heart do the rest of the work for you (Childre & Martin, 1999, p. 193).

This step is focusing "on taking the significance out of a pattern and transforming the energy locked up there, you release the incoherence, resulting in more peace and satisfaction." (Childre & Rozman, 2002, p. 90)

*Step 6. After taking out as much significance as you can, from your deep heart sincerely ask for appropriate guidance or insight. If you don't get an answer, find something to appreciate for a while. Through the process of releasing old negative feelings, it will be easier to hear the intuitive voice of your heart intelligence. Asking your heart for new understanding and direction opens yourself to new insights surrounding the issue (Childre & Martin, 1999, p. 194). Answers may come immediately, hours later, or maybe even days later. And the heart answers may be loud and clear or more intuitive feelings. It's important to just be open to the answers. And if the answer does not come right away, continue to work the issue through the Steps 1 through 6, as some of the issues in our lives may have built up over quite some time. Find something you have a great deal of appreciation for and bring that feeling to your heart to assist in releasing the issue you are currently engaging. This action may assist you in obtaining clear direction from your heart.*





#### Cut-Thru's Impact on Emotional Balance

After practicing the Cut-Thru technique for one month, study subjects experienced significant reductions in stress, overcare, and negative emotions and increased vigor and positive emotions (black bars). A comparison group that didn't use Cut-Thru showed no significant psychological changes (white bars).

*Figure 5.* Cut-Thru's impact on emotional balance. Reprinted from *The HeartMath Solution* (p. 206), by D. Childre and H. Martin, 1999, San Francisco, CA: Harper. Copyright © 1999 The HeartMath Institute.

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**Heart Lock-In.** Heart Lock-In has five basic steps:

1. Gently shift your attention to the area around your heart.
2. Shift your breathing so that you are breathing in through the heart and out through the solar plexus.
3. Activate a genuine feeling of appreciation or care for someone or something in your life.
4. Make a sincere effort to sustain feelings of appreciation, care or love while radiating them to yourself and others.
5. When you catch your mind wandering, gently focus your breathing back through the heart and solar plexus and reconnect with feelings of care or appreciation. (After you've finished, sincerely sustain your feelings of care and appreciation as long as you can. This will act as a cushion against recurring stress or anxiety.) (McCraty & Childre, 2003, p. 14)

The Heart Lock-In technique is designed to reinforce or “lock in” the coherent psychophysiological patterns associated with appreciation and other positive affective states. It is claimed that, with practice, those coherent patterns will become increasingly familiar, thus promoting increased physiological efficiency, mental acuity, and emotional stability as the new, familiar baseline or norm. Once this is accomplished, the system then attempts to maintain this state automatically (p. 13).

## **Issues in the Study of the Experience of HeartMath's Heart-mind Coherence**

I have already carried out an extensive literature review while researching this topic. As a part of my literature review process I searched academic databases and online catalogs to obtain current information during all phases of data collection, analysis, and interpretation.

Key words in my search included (but were not limited to):

- “HeartMath”
- “Mind heart”
- “Integrative,” “worldview,” and “consciousness theorists”:

*Sri Aurobindo*’s Integral Yoga is so-called because it involves the synthesis of the three yogas—bhakti, karma, and jnana—of the Bhagavad Gita. It is also called "Integral" because it embodies and integrates all aspects of life. I would like to investigate if living the HeartMath tools helps individuals in this integration process.

*Teilhard de Chardin* wrote “One day, after we have mastered the winds and the waves, gravity and the tides, we will harness for God the energies of love. And then, for the second time in human history, mankind will have discovered fire.” (de Chardin, 1985, p. 86) Practicing HeartMath’s Freeze-Framer technique involves re-experiencing the feelings of love or caring. I want see if the research discovers this power of love.

*Jean Gebser*’s (a relatively unknown Polish cultural philosopher great contribution to the “grand integral vision” was his attempt to conceptualize the dominant patterns of experience that have emerged during human history in his

model of five major structures of consciousness—archaic, magic, mythic, mental, and integral. I would like to see if HeartMath contributes to any of these five major structures of consciousness. (Gebser, Barstad, & Mickunas, 1986)

Alan Combs (2002) wrote “each of us must find our own unique integral path. This must be a path that reflects our own needs and aspirations, which will change throughout our lives as our circumstances, opportunities, growth and aspirations also change.” (p. 12)

My question: Do the HeartMath tools and techniques contribute to an individual’s integral path?

### **Limitations**

This study is not attempting to be a comprehensive analysis of all tools that may be helpful in creating environments that might facilitate an individual’s becoming. This research uses only the HeartMath tools and techniques to investigate the role, if any, of HeartMath tools and techniques in developing consciousness. I do not make any claims that individuals who practice the HeartMath techniques will develop in consciousness through use of the tools and techniques.

This study is bound in time, as the individual research participants’ data was collected over a specific time frame. The data collected was limited to this time period and to the data collected in the blog created for this study.

This study includes the effects, if any, of the HeartMath experience and within the context of the research conducted during the established timeline. This study focuses on individuals' HeartMath experiences provided by the research participants.

## **Chapter 4**

### **Case Study—The Experience of HeartMath Tools and Techniques**

Chapter 4 provides the findings from data collected during my study. I organize and present this chapter by first reiterating the purpose of this study and theoretical perspectives used to guide my study. I present the methodology, research questions, analysis of data, and the summary of my findings. I continue with rich and deep descriptions of the participants' experiences. I follow with a discussion of my findings and conclude with a summary of the chapter.

#### **Purpose of the Study**

My purpose has been to add to the body of knowledge concerning how heart-mind coherence techniques can be used for stress relief and mental and emotional self-management. This study was designed to investigate the experience of individuals who specifically used the HeartMath tools and techniques. Previous research clearly identified how the HeartMath tools affect various quantifiable psychological and physiological measures such as stress, emotions, heart rate variability, DHEA, cortisol, hypertension, and arrhythmias (Childre & Cryer, 1998; McCraty, 2001; Paddison, 1998, Pearsall, 1998; Tiller, 1997). However, little research was available that revealed how the quality of these individuals' lives might be affected by using the HeartMath tools. An extensive search for qualitative studies on the HeartMath tools was carried out; no pertinent references were found.

The purpose of this study was to investigate the qualitative effects of using the HeartMath tools. This study focused on the quality of life of the individuals who used the HeartMath tools on a regular basis. My primary interest was in finding out what the research participants revealed about the benefits and effects that they experienced that they believed resulted from using the HeartMath tools. Through my research, my hope was to identify aspects of research participants' lives that may be affected in such areas as health, consciousness, relationships, and value systems.

### **Theoretical Perspectives**

At the core of narrative analysis are “the ways humans experience the world” (Connelly & Clandinin, 1990, p. 2). The study of individuals' stories is the study of their experience. “First-person accounts of experience form the narrative 'text' of this research approach. Whether the account is in the form of autobiography, life history, interview, journal, letters, or other materials that we collect 'as we compose our lives' (Merriam, 1998, pp. 157–159)

The individual research participant's experience with the HeartMath tools yielded the data for my research. The participants journaled every day on a blog created specifically for this research. They wrote about how they used HeartMath that day, what the effects in their life were that day, and any benefits that they experienced from using the HeartMath tools and techniques.

The data generated from the blog was then transcribed into text files that were then analyzed using NVivo.

## **Methodology**

A case study research design was chosen for this study to use “qualitative data to enrich and explain the quantitative results in the words of the participants” (Creswell & Plano Clark, 2007, p. 34). The data collection method was to have the participant’s journal for 30 days on a secure blog that was created specifically for this research. The participants were expected to journal every day primarily on the three research questions listed below under Research Questions.

This study originally intended to utilize a total of 10 certified HeartMath trainers as research participants. These participants required the following attributes: have training in the HeartMath techniques and tools, be committed to practicing the HeartMath tools on a regular basis, have utilized the HeartMath tools for over 2 years so that they had the ability to articulate their experience with the HeartMath tools and they had to be willing to volunteer for this study and agree to the conditions of the study. I proceeded to work with the HeartMath Research Institute in selecting the research participants. Through this process it was determined that the best population to select participants from was the network of certified HeartMath trainers. These individuals would definitely have been trained in the HeartMath tools, they would most likely be using the tools every day and they would have the ability to articulate their experiences well. Since this study was not intended to validate benefits or value of the HeartMath tools selecting research participants from this group would not present any biases



in the results. This research is looking at what their experience of utilizing the HeartMath tools and as such their experiences were authentic and individual.

Ten research participants were selected randomly to participate in this study. This list of volunteers was obtained via an invitation sent out by the HeartMath Institute. After these 10 individuals were selected and they committed to participate in the study they were given a URL for the secure blog, a user id and password. After the 30-day research period started 2 of the research participants failed to journal on the blog. I contacted these individuals and they failed to continue with the research project. Therefore, the research data used in the study resulted from 8 subjects, not the original 10 that had been selected.

The data was then transcribed from the secure blog to Word documents. These documents were then entered into the NVivo application. NVivo is an application that allows a deep level of analysis on rich sources of information. It removes many of the manual tasks associated with analysis like classifying, sorting and arranging information, so that the researcher can concentrate on exploring trends and finding themes in the data.

## **Research Questions**

The major question for this study was: How do individuals perceive the effects of using the HeartMath techniques for stress relief and mental and emotional self-management? Specific research questions guiding this study were:

1. How did you apply the HeartMath tools in your life today?
2. What effects did you experience as a result of utilizing the HeartMath tools?

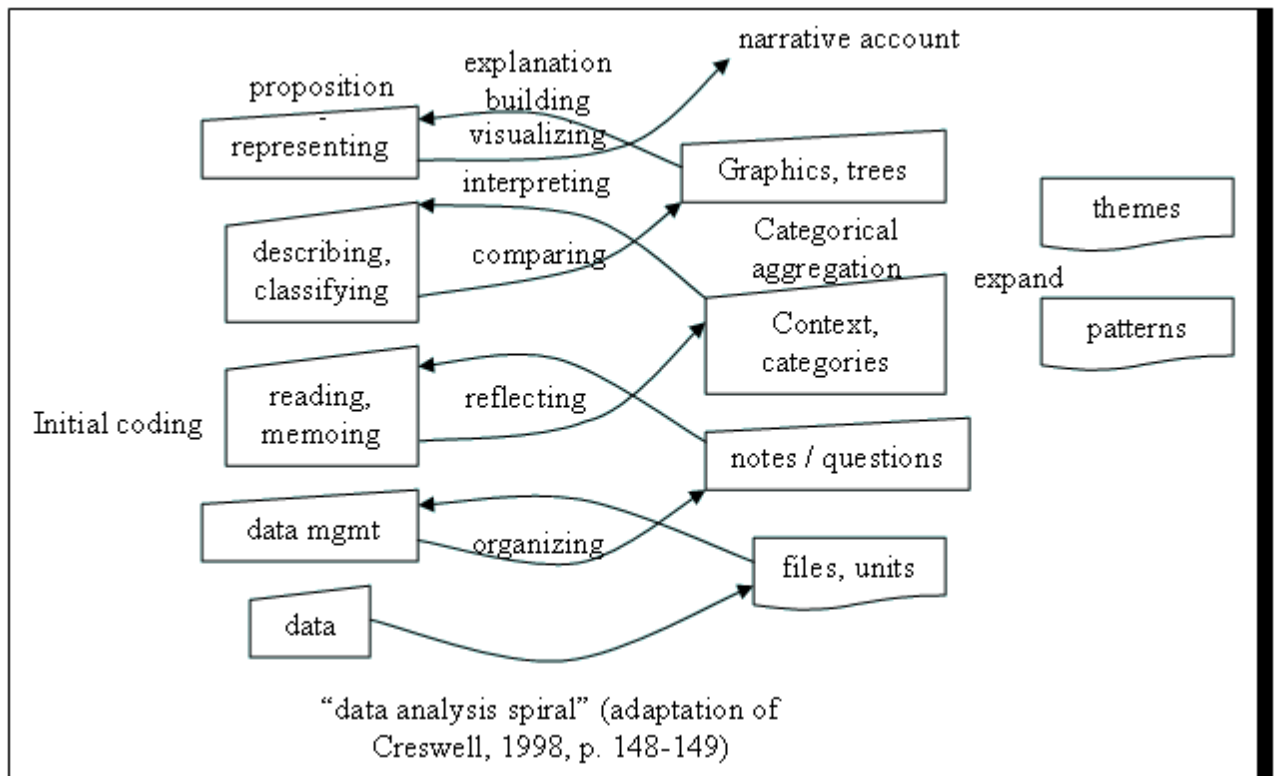
3. What aspects of your life were touched or impacted by your use of the HeartMath tools?

### **Data Management Using NVivo**

The importance of a good storage and retrieval system for keeping track of data is stressed by every methodology textbook on qualitative research. For this study, Qualitative Software for Data Analysis (NVivo 8), a qualitative data management and analysis tool, was used to manage and code the journal transcripts from the blog. The program allowed for the collection and organization of the data, the electronic storage of all transcribed material, methods for coding data and the ability to execute search and retrieval functions.

### **Data Analysis Using NVivo**

The research design strategy that I employed accommodated and continually supported a “data analysis spiral” process (Bogdan & Biklen, 1992; Creswell, 1998; Huberman & Miles, 1994) is shown in Figure 6.



*Figure 6. Data analysis spiral. Adapted from *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (p. 148-149), by John W. Creswell, 1998, London, UK: SAGE. Copyright © 1998 SAGE. Adapted with permission.*

The data analysis spiral methodology allowed me to monitor the progress and direction along the continuum at any point in time (Tesch, 1990). The spiral allowed me to begin with a general analytic strategy to under gird my choices for the dominant and lesser modes of analysis; this combination strengthened my analysis (Yin, 1994).

For the general analytic strategy, I initially developed a descriptive framework for organizing the case study analysis (Yin, 1994). The descriptive

framework generally entailed a process of continual reading, review, representation, description, comparison, and interpretation of the data. My aim was to draw out the perspectives and views of the participants in order to answer my research questions. For example, after reading and reviewing, I developed a pre-sort, coded by categories, themes, and/or patterns, classified, and then worked back and forth over the aggregates. This method of “winnowing” was integrated to better manage the data (Creswell, 1998).

I realized and respected the fact that the case study methodology was inherently open and flexible, so that my effective analysis was not preceded by any lockstep, simple coding, and generalized categorization method. I developed my own style by utilizing the data analysis spiral. For example, I needed to draw out the themes of the data, but I also read for “voice” (Brown, 1988) to gain perspective and retain the context.

A structural analysis found patterns; a reflective analysis evaluated the parts and the whole; a narrative structure analysis connected the contextual relationships; and they came together to bring about the inductive, inferential impressions and interpretations to illuminate a description of the phenomena (Gall, Borg, Gall, & Borg, 2002).

### **Data Analysis and Findings: Applying NVivo to a Narrative Case Study**

Initially I setup NVivo in preparation for a case study analysis. I now describe the steps in setting up NVivo in support of my data analysis. This data

analysis is based on the journaling of eight participants as two of the participants did not enter enough data to be included in my data analysis.

The first step was to create a new project within NVivo. Sources were then created for the project and separate distinct sources for each of the research participants.



The screenshot shows the NVivo interface. On the left, the 'Sources' pane is expanded to show 'Internals' > 'Blog Entries'. Below this are 'Externals' and 'Memos'. The main area displays a table of 'Blog Entries' with columns for Name, Nodes, and References. The table lists ten bloggers with their respective node and reference counts.

Name	Nodes	References
Blogger1	36	150
blogger10	23	112
blogger2	34	237
blogger3	21	105
blogger4	32	175
blogger6	18	34
blogger7	16	43
blogger9	27	81

*Figure 7.* NVivo source material identifying participants. (Author's image)

Once the data was entered into the NVivo database, nodes or “containers” were then created. A node was created for each topic or concept stored in the NVivo database.

Look for:  Search In:  Find Now Clear

**Cases**

Name	Sources	References	Created On	Created By	Modified On
Blogger1	1	1	4/23/2009 9:45 P	HR	4/23/2009
blogger10	1	1	4/23/2009 9:45 P	HR	4/23/2009
blogger2	1	1	4/23/2009 9:45 P	HR	4/23/2009
blogger3	1	1	4/23/2009 9:45 P	HR	4/23/2009
blogger4	1	1	4/23/2009 9:45 P	HR	4/23/2009
blogger6	1	1	4/23/2009 9:45 P	HR	4/23/2009
blogger7	1	1	4/23/2009 9:45 P	HR	4/23/2009

**blogger10**

<Internals\Blog\_Entries\blogger10> - § 1 reference coded [100.00% Coverage]

Reference 1 - 100.00% Coverage

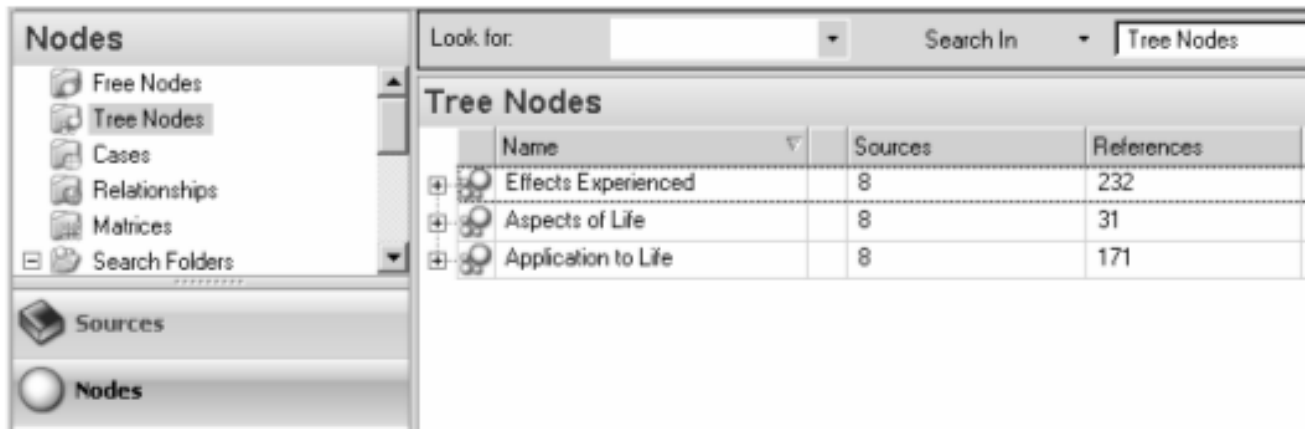
March 13  
 Well today, I began much like I do everyday with some nice deep breaths aka "the neutral tool". I use this several times every day and very specifically in the morning. I found this morning when I used it I was able to get grounded and focus on what was going to be happening in my day. I always notice when using Neutral and I get an overwhelming sense of calm that runs through my veins and I relax.

Figure 8. NVivo case nodes information. (Author's image)

In-vivo coding (coding with the key words identified within the text) was then conducted in an attempt to reveal possible themes, patterns, or other attributes found in multiple nodes. Coding within NVivo is done “by placing at the node not segments of data but references to the data about that topic” (Bazeley & Richards, 2000, p. 24).

Coding was done as an iterative process through out the data analysis phase. In the process of performing the data analysis other constructs were discovered and were then also coded in the NVivo database.

Through the data analysis spiral process and the coding I was able to define Tree nodes and Free nodes. Tree nodes can be used to represent the concepts and categories in the project that are logically related as they can be organized in a hierarchical structure (that is by category, subcategory).



Nodes			
Free Nodes	Tree Nodes	Cases	Relationships
Matrices	Search Folders	Sources	Nodes

Tree Nodes			
	Name	Sources	References
+	Effects Experienced	8	232
+	Aspects of Life	8	31
+	Application to Life	8	171

*Figure 9.* Tree nodes relating to research questions. (Author's image)

I created three categories or Tree nodes that corresponded to the three research questions. I then applied a data analysis spiral process. The first category I) called the “Application to Life.” It addressed the research question “How did you apply the HeartMath tools in your life today?”

Tree Nodes			
	Name	Sources	References
[-]	Application to Life	8	171
[-]	Stress Management	6	39
[-]	Sports Performance	1	6
[-]	Sleep	5	6
[-]	Sense of Appreciation and	4	11
[-]	Reaching out to others	4	7
[-]	Personal Feedback	1	6
[-]	No Longer Needed	1	1
[-]	Increase Motivation	1	1
[-]	Increase Awareness	1	1
[-]	Improve Focus and Ground	6	21
[-]	Grief Separation or Loss Is	2	6
[-]	Energy Increase	3	5
[-]	Counter Panic Attacks	2	4
[-]	Counter Act Depression	2	5
[-]	Controlling Physiology	2	3
[-]	Communications	5	7
[-]	Clear the mind and or body	3	11
[-]	Attitude Adjustment	4	4
[-]	Anger Management	4	15
[-]	Achieving Balance	1	1
[-]	Achieve Coherent State	7	22

Figure 10. NVivo coding: Application to life. (Author's image)

The second category or Tree node I called the “Effects Experienced.” It addressed the research question “What effects did you experience as a result of utilizing the HeartMath tools?”



Tree Nodes			
	Name	Sources	References
[-]	Effects Experienced	8	232
	Stronger Connection	4	13
	Reduced Stress	6	19
	Increased Productivity	3	6
	increased joy and or happi	3	3
	Increased Groundedness	2	5
	Increased Energy	4	24
	Increased Balance	4	10
	Increased Appreciation	3	12
	Improved Quality of Life	1	1
	Improved Performance	6	23
	Improved confidence	1	1
	Greater Insight	3	6
	Feelings of Success	2	3
	Feelings of Liberation or Fr	1	1
	Decreased Tension	5	14
	Decreased Reactionary Be	7	17
	Decreased Anger	3	5
	Control Over Physiological	5	16
	Better Sleep	6	16
	Better Focus	7	23
	Better Communication	4	19
	Acheiving an increased lev	6	42

Figure 11. NVivo coding: Effects experienced. (Author's image)

The third category I termed "Aspect of Life." It encompassed how the participant's use of the HeartMath tools and techniques could be "applied" to their

lives. It addressed the research question “What aspects of your life were touched or impacted by your use of the HeartMath tools?”

Tree Nodes			
	Name	Sources	References
+	Effects Experienced	8	232
-	Aspects of Life	8	31
	Work	2	3
	Relationships	3	5
	Life View	2	2
	Healing	1	1
	Empowerment	4	4
	Daily Living	5	11
	Connections	2	3
	Communication	2	2
+	Application to Life	8	171

Figure 12. NVivo coding: Aspects of life. (Author's image)

Free nodes can be used as containers for "loose" ideas that are not conceptually related to the other nodes in the project. These may represent

concepts outside the boundary of a study or project.

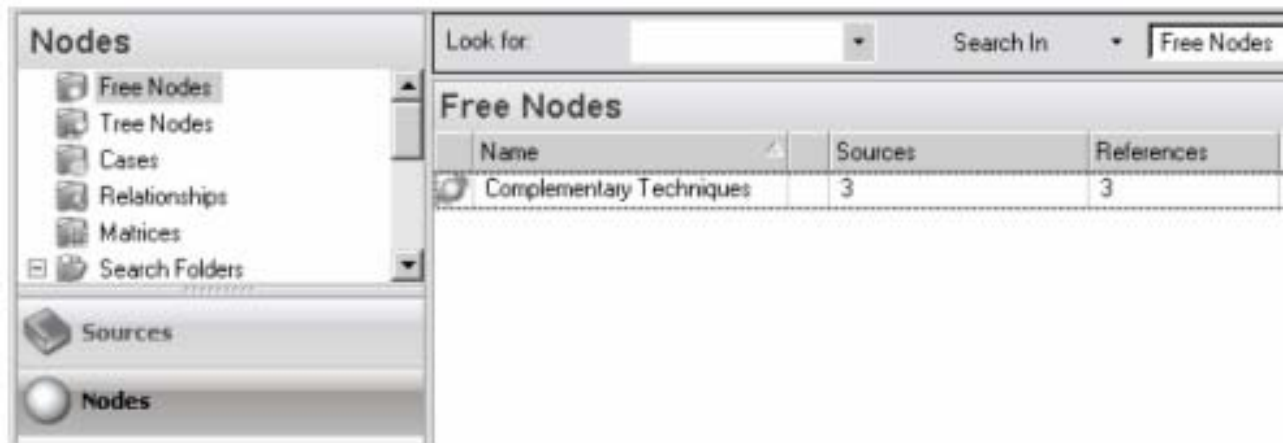


Figure 13. NVivo: Complementary techniques. (Author's image)

When coding data in NVivo you need to determine how you are going to define the cases. Typically when coding in NVivo a case is defined as “a node with ‘attributes’—gender, age, size, location and so on” (NVivo, 2009, link). In my case, I defined each individual research participant as a case.

I have included figures showing the percentage of coverage for each individual research participant in Appendix G, NVivo Coding by Node. These charts provide a visual representation of the attributes in their journals. Percentage coverage in these charts displays how much of the coding done at the node (each individual research participant) is represented by each *attribute value* shown on the x-axis.



Name	Sources	References
Blogger1	1	1
blogger10	1	1
blogger2	1	1
blogger3	1	1
blogger4	1	1
blogger6	1	1
blogger7	1	1
blogger9	1	1

Figure 14. NVivo: Cases. (Author's image)

After performing the iterative process within NVivo as described in my data analysis spiral Figure 1, I then proceeded to analyze the results as they emerged from the coding process.

The first category that I analyzed was a category that I defined as “Application to Life.” I defined this as reference points that describe how the research participants saw their use of the HeartMath techniques as being directly relevant to their life experiences. These references included: stress management, achieving a coherent state, improved focus and grounding, anger management, etc. (see Appendix F, NVivo Application to Life Data for a complete list of the applications to life reference points coded in NVivo). These applications to life references were coded in the participants' journaling data and I analyzed them within a Tree node defined as “Application to Life.” Figure 15 highlights these results.

The graph clearly indicates that “stress management” had the highest number of references in the data. Individuals felt that the HeartMath tools provided a real benefit in helping them to manage stress in their lives. If we look at references that had an occurrence of 10 or greater we see four other “application to life” reference points (Table 1).

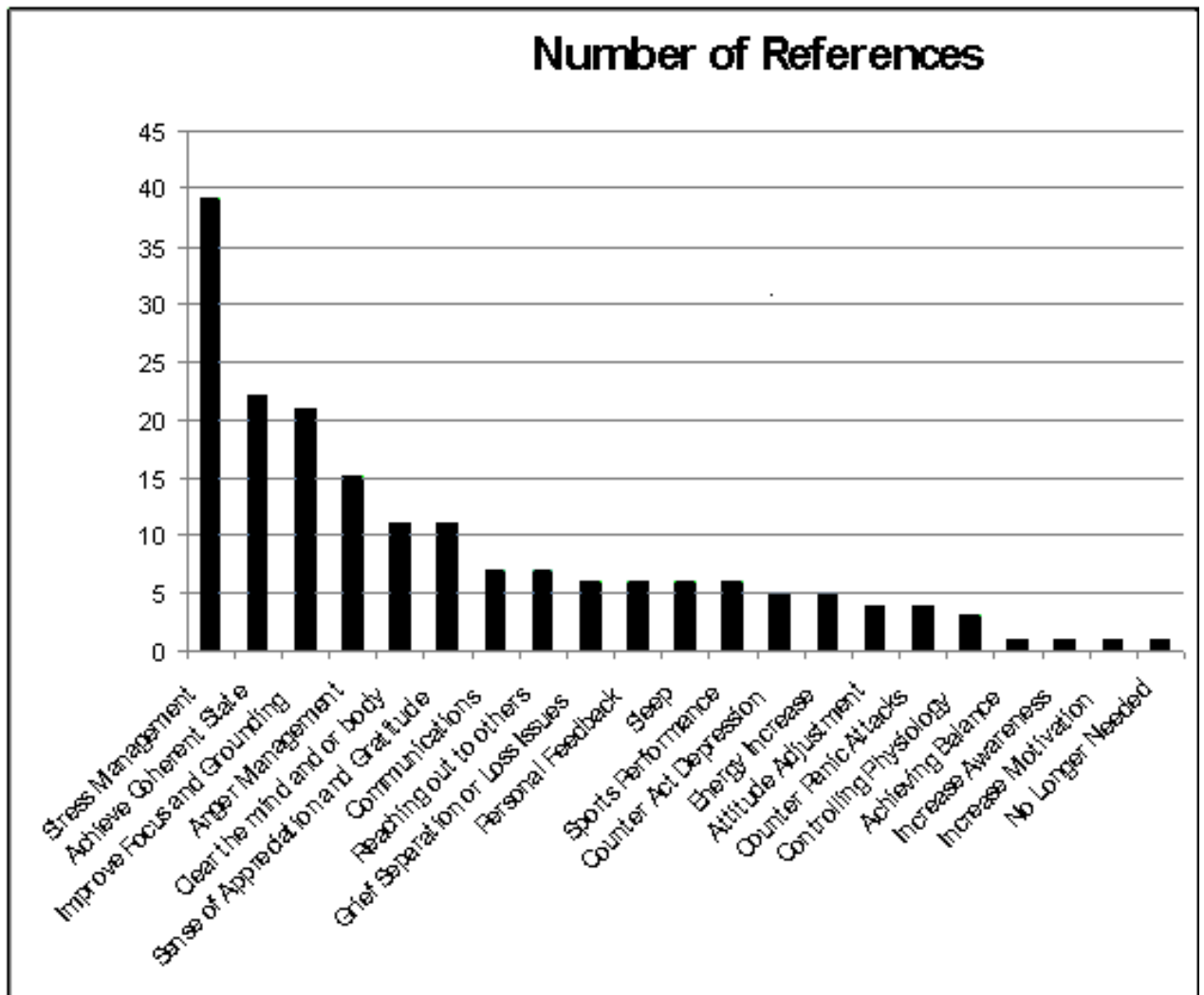


Figure 15. Application to Life: Number of references chart. (Author’s image)

## Summary of Findings

The analysis of data was conducted using qualitative data analysis software NVivo. NVivo, a qualitative data management and analysis tool, was used to manage and code the journal transcripts from the blog. The program allowed for the collection and organization of the data, the electronic storage of all transcribed material, methods for coding data and the ability to execute search and retrieval functions.

Table 1

### *Application to Life: Reference Points*

Application to Life	Number of References
Stress Management	39
Achieve Coherent State	22
Improve Focus and Grounding	21
Anger Management	15
Clear the Mind and or Body	11
Sense of Appreciation and Gratitude	11

(Author's image)

Five salient findings emerged from the data analysis. I list them and then discuss each finding. The five salient findings are:

Finding 1: Increased level of coherence or calmness

Finding 2: Improved stress management

Finding 3: Increased energy

Finding 4: Better focus

Finding 5: Improved performance

**Themes found in the study.** I also sought to find patterns and themes in the transcripts of the participants' journaling through utilizing NVivo. The first analysis focused on the response the participants wrote concerning the three research questions. The themes, similarities, and differences expressed by the participants are described and the research questions are answered. The second level of analysis focuses on answering the overall research question, how do individuals perceive the effects of using the HeartMath techniques for stress relief and mental and emotional self-management. Themes were identified that specifically addressed stress relief and mental and emotional self-management.

Several themes emerged on how the study participants experienced the effects of using HeartMath. The primary themes were: achieving an increased level of coherence or calmness, improved stress management, increased energy, better focus and grounding, and improved performance. Table 2 summarizes the predominant themes that emerged from data analysis using the NVivo tools.

Table 2

*Themes*

Themes	Number of References
Achieving an increased level of coherence or calmness	42
Stress Management	39
Increased energy	24
Better focus	23
Improved performance	23

(Author's image)

The data had three primary results in response to the question “How did you apply the HeartMath tools in your life today?” The research participant’s themes, with the highest numbers of references, in how they applied the HeartMath tools in their lives were stress management, achieving a coherent state and improved focus and grounding.

The first finding was how applying the HeartMath tools helped the participants to achieve an increased level of coherence or calmness.

*Achieving an increased level of coherence or calmness.* Comments provided by the research participants clearly stated that they felt that the HeartMath tools increased their level of coherence or calmness. The NVivo analysis revealed over 42 reference points for this theme and it was discussed by every participant (100% response). One participant’s comment about the effect of using the HeartMath tools encapsulated what many of the others wrote: “being in



a state of coherence and appreciation for all around me.” Another stated, “Keeping myself in a state of coherence enables me to focus on the people I work with and increase my level of understanding and awareness about what enables and what hinders performance.” One research participant wrote that using the HeartMath tools to achieve a higher level of coherence “helped me to feel energized and overcome the fatigue that was starting to set in. I also noticed that I felt more intuitive and sensed some struggles between two [individual in the meeting].”

Another participant wrote on how using the HeartMath tools helped them achieve a coherent state when preparing for a trip. “Packing for trip. Got into an intense discussion with someone unexpected in the night before the trip. . . . Rattled the system. Used the neutral tool again to stop the drain of the tension. Stopped the thoughts and cycle while using the tool for 20 minutes during the discussion, decreased the wear and tear in the moment and allowed a clear response and decreased reactionary process. Remained coherent and calm in my body and not hooked to the energy coming at me in a negative way. Then shifted to the quick coherence tool to up the level of my vibration through appreciation/love that increased the heart connection to change the communication and ability to engage with the person and hear the meaning behind the effort. Maintained connection and balance during a difficult interchange. Other person softened their agenda and related from the heart as well.”

This individual was confronted with a situation that was clearly creating tension and anxiety. They utilized the HeartMath Neutral and Quick Coherence tools and they remained “coherent and calm” through the experience.

Another participant is an organizational behaviorist for a hospital. She wrote “I like to start my day with a Quick Coherence—usually right after breakfast. This seems to help me think clearly. Keeping myself in a state of coherence enables me to focus on the people I work with and increase my level of understanding and awareness about what enables and what hinders performance.” This individual uses the HeartMath tools to create a coherent state within her own mental and emotional nature and relates how that improves her performance in her work with organizations at the hospital. This individual’s experience with using the HeartMath tools to maintain a coherent state also shows the benefits that can be achieved that can be achieved.

The second finding was how applying the HeartMath tools assisted in stress management.

*Improved stress management.* One of the primary themes that emerged from the study was how using the HeartMath tools assisted the participants in stress management. More than 85% of the participants reported that the HeartMath tools helped them to manage stress. One participant reported “I needed to use my heart focus, heart breathing and heart feeling tools today to keep me grounded, focused and de-stressed.” Another participant wrote the following about how they used the HeartMath tools in an extremely stressful situation. “I found it interesting that when the high stress level became heightened by the

national downfall of our economy, loss of income, sharing my home with a stranger, finding new ways to make new income, and needing to spend money I didn't have in order to try and make it all happen. . . . well, I found the quick coherence tool, the EmWave sessions and my PSR to be invaluable! I was able to stay emotionally balanced and calm, mentally aware and alert of choices to make in my life, and physically, I needed to slow down my heart palpitations and keep from having panic attacks!!” Another participant wrote how they used the HeartMath tools to deal with stress. “Today was an exceptionally stressful day in my life. I used HeartMath techniques to calm myself and I must say I think I did pretty good. Before HeartMath, [I might] have reacted to today's e-mail with negativity.”

One of the participants, a professional golfer, wrote how the HeartMath tools helped her deal with stress. “HeartMath tools aren't just for sitting quietly or lying down in a comfortable position. I mainly use HeartMath techniques for stressful activities: competition, sports, anything that involves the need for detailed and complete focus. Today I got to do that again. That is my comfort zone. I found it interesting that when the high stress level became heightened by the national downfall of our economy. Loss of income, sharing my home with a stranger, finding new ways to make new income and needing to spend money I didn't have to try and make it all happen . . . well, I found the quick coherence tool, EmWave sessions and my PSR [Personal Stress Reliever] to be invaluable! I was able to stay emotionally balance and calm, mentally aware and alert of choices to make in my life, and physically, I needed to slow down my heart

palpitations and keep from having panic attacks!!” She was able to use the HeartMath tools to mitigate the stress and anxiety that coming at her from several different areas of her life. Her experience from using the HeartMath tools was reduced stress, increased calmness and being focused.

Stress isn’t always an “in your face” kind of experience. One of the research study participants wrote about another perspective on stress and how HeartMath tools were of assistance. “Sometimes the low level stress is like a constant hum and I feel as though I am unaware of it. The EmWave helps me to see the stress and remember to shift to heart-focus and heart-breathing.” This individual recognized that it’s just as important to deal with low level stress as it is for dealing with short term stressful situations.

Stress can also occur from day-to-day experiences. One study participant was attempted to refinance his house due to the economic environment and he wrote “We are trying to refinance our house and the whole process is in a holding pattern waiting on one final document. I am frustrated and concerned that the person handling our account is not doing his job. So, while at the bank, I asked to speak to a personal banker. He told me he would look into things for us. I must have used HeartMath while talking to him because I did not feel stressed and this is a time when I could easily get stressed.” By utilizing the HeartMath tools he was able to take care of his personal business without being bogged down by the additional weight of stress experienced due to the difficulties he was experiencing in trying to refinance his house.

Another participant was experiencing stress in communicating with another individual. They wrote “Today was an exceptionally stressful day in my life. I used HM techniques to calm myself and I must say I think I did pretty well. Before HeartMath, I may have reacted to today's e-mail with negativity, today I did a HeartMath technique again before re reading the letter and before hitting the send button. I believe the content of my letter was less negative; however the biggest achievement is I did not give in to my urge to retaliate.” Being able to shift one’s perspective, in the moment, and release the stress one is experience can be a huge accomplishment. Instead of getting caught up in a negative situation, this individual used HeartMath to release their stress before responding to a note that might have elicited a negative response.

Using the HeartMath tools to deal with stress was definitely one of the most frequently reported benefits of using the tools. It was a predominant theme contained within the participants' transcripts.

*Increased energy.* The next theme that was revealed through the NVivo analysis was posted by over 85% of the participants and referenced 24 times. One participant wrote that using the HeartMath tools “boosted up my buoyancy and energy.” Another participant described the effects as “this feeling that I have after these sessions give me so much clarity and energy. It makes the small challenges that pop up each day seem so much smaller and more manageable.” Another participant stated that they “could reenergize with using the Neutral tool.” It is significant that all the participants except for one described the energizing effects of using the HeartMath tools.

A good night's sleep can have a profound impact on the energy level experienced during the day. One research participant wrote the following about how they used the HeartMath tools when they had trouble sleeping. "Did not sleep. Used the neutral tool to deepen my state and quiet the mind for 20 minutes. Brought energy and focus to center of my body and felt more balanced. Breathing came to a flow; heart beats slowed down and were steady. Felt the spaces between the breath where the silence and deep neutral space where there is only the wide existence of love. Felt the oneness of all things and fell asleep in a deep neutral vibration." By using the neutral tool this individual calmed themselves so that they had a good night's sleep that resulted in energizing their body. Restful sleep can help us to feel energized and ready for whatever the day may bring.

The HeartMath tools can also be used to re-energize after we feel somewhat depleted of energy. One participant wrote "I felt drained and tired when I got home. After a short Heart Lock-In, I felt my energy come back and was able to relax and enjoy a quiet evening with my husband." They were able to release that de-energized feeling by using the HeartMath Lock-In tool and be fully present in their life.

Another participant explained how the HeartMath tools affected his energy this way. "I just need to feel grounded. I wanted/needed to focus on something positive to give me energy. And I did. After the short session, I felt calmer, more relaxed, and I felt energized." Being able to increase one's energy level, when we might be experiencing a low level of energy was a common thread

among the participants. As I mentioned earlier, this energizing effect of using the HeartMath tools was mentioned 24 times in the participant's writings.

The fourth finding was how applying the HeartMath tools assisted the participants in achieving better focus and grounding.

*Better focus and grounding.* The next most observed effect of using the HeartMath tools was that of achieving better focus. Again over 85% of the participants wrote in their blogs that they achieved better focus through using the HeartMath techniques. Better focus can be described as having your attention centered on a single point. One participant wrote "I notice today as I do everyday with using the HeartMath tools that I can get grounded very quickly and more focused on the task at hand." One participant described the effects as "today, the tools helped me stay neutral, calm, focused, joyful, and clear-headed." Another participant described the effect of using the HeartMath tools as follows: "Getting coherent seems to help me. This helps me think clearly and stay focused on enjoying the moment." Having better focus in one's life indeed emerged as a prevalent theme for the participants. Again every participant but one wrote in their journal as having achieved better focus through the use of the HeartMath tools.

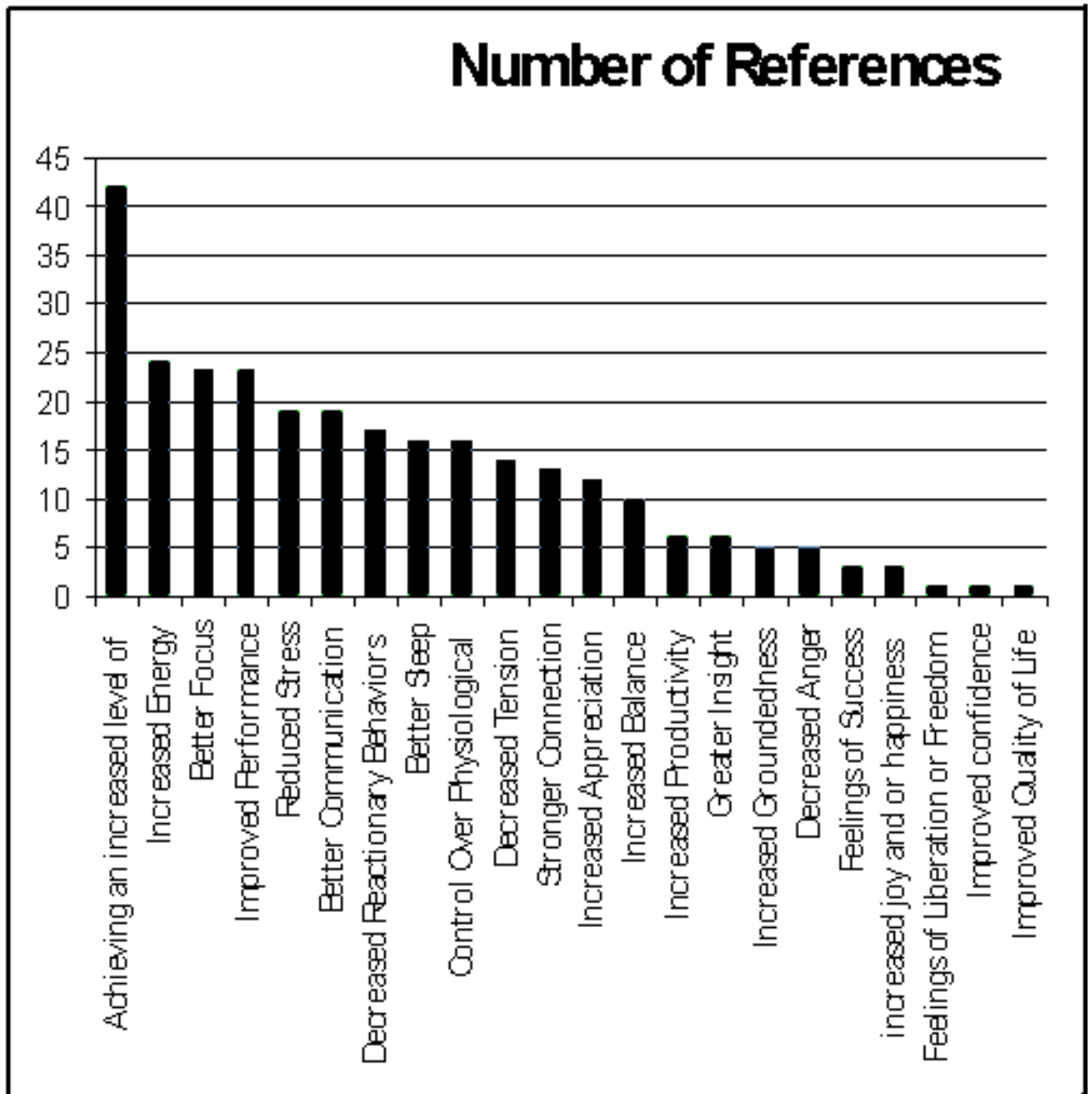
One participant used the HeartMath tool to become focused before a meeting where they needed to assist in the ongoing process of a major move for the medical facility that she supported as an organization behaviorist. "Today, I used Quick Coherence to help me regain my focus during a somewhat boring meeting. As the organization behaviorist who is supporting multiple groups

planning for an organization wide move into a new facility, my purpose for being in some of the planning meetings is to be on alert for potential problems and communication gaps.” She was able to maintain her focus by using the HeartMath tools and contribute in a positive manner to the other members of the organization responsible for making the changes as seamlessly as possible.

The research data strongly indicates that by applying the HeartMath tools the research participants were able to reduce stress, achieve a more coherent state and achieve better focus in their lives. By using NVivo to code the research data these themes emerged with a high number of reference points.

The second research question was “What effects did you experience as a result of utilizing the HeartMath tools in your life today?” I analyzed the responses to this question with NVivo by creating a Tree node or category that I defined as effects experienced. I defined these effects as any experience that was the result or consequence of practicing the HeartMath tools and techniques. These effects were coded in all of the participants' journaling data and I analyzed them within a Tree node defined as “Effects Experienced.” Figure 16 highlights these results.





*Figure 16.* Effects experienced: Number of references chart. (Author's image)

The data for this chart is provided in detail as Appendix D, NVivo Effects Experienced Data. Each of these data points represents the number of times or references that the effect was mentioned in the participants' journaling.

The graph clearly indicates one effect that had a higher number of references in the data than any of the other effects. "Achieving an increased level of coherence or calmness" was referenced 42 times.

Looking at effects that have a number of occurrences greater than 10, there are 12 other effects that meet these criteria (see Table 3).

Table 3

*Effects Experienced with 10 or More Occurrences (Author's image)*

Effects Experienced	Number of References
Achieving an increased level of coherence or calmness	42
Increased Energy	24
Better Focus	23
Improved Performance	23
Reduced Stress	19
Better Communication	19
Decreased Reactionary Behaviors	17
Better Sleep	16
Control Over Physiological Processes	16
Decreased Tension	14
Stronger Connection	13
Increased Appreciation	12
Increased Balance	10

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(Author's image)

The data had four primary results in response to the question "What effects did you experience as a result of utilizing the HeartMath tools?" The

participants had a high number of postings stating that achieving a coherent state, increased energy, better focus and improved performance were the effect of using HeartMath tools.

Two of these findings, increased coherence and better focus, were previously discussed in answer to applying the HeartMath tools. But there are two new findings: increased energy and improved performance.

*Improved performance.* The last major theme with a high number of reference points was improved performance. Improved performance was viewed by over 35% of the participants as being quite beneficial. Performance seems to be something that our culture has been focused on for a number of years. Several of the effects of using the HeartMath tools can contribute to increased performance. Better communication, decreased reactionary behaviors, decreased tension, increased productivity, and greater insight can all be seen as contributors to increased performance. Performance is sometimes viewed as an individual's accomplishments or deeds and we can indeed see that many of the observed effects of utilizing the HeartMath tools contribute to increased performance.

Improved performance might be physical, mental, emotional, or any area of one's life where we desire to have a high level of achievement. One participant wrote about using the HeartMath tools to improve their performance in the gym. "Today, I am feeling back in control, and it felt good to once again, use the breathing tools for what I enjoy best about them. For better performance. Working out and using my breathing techniques really help my stay focused and get me through a rather boring workout. After my workout in the gym, I felt better. I felt

healthier and refreshed.” Using the HeartMath breathing techniques can be used for physical performance enhancements as well as mental or emotional performance improvements.

The research data strongly indicates several primary effects that were experienced as the result of utilizing the HeartMath tools. Increased coherence, increased energy, better focus and improved performance were effects that stood out in the results. The data shows a high number of references for these effects,

The third category that I analyzed on the research data was a Tree node or category that I defined as "Aspects of Life." I defined these aspects as any experience that the participants described as affecting their life experience such as daily living, relationships, and work (see Appendix E, Aspects of Life Data for a complete list of aspects coded in NVivo.) These aspects were coded in all of the participants' journaling data and I analyzed them within a Tree node defined as “Aspects of Life." Figure 17 highlights these results.

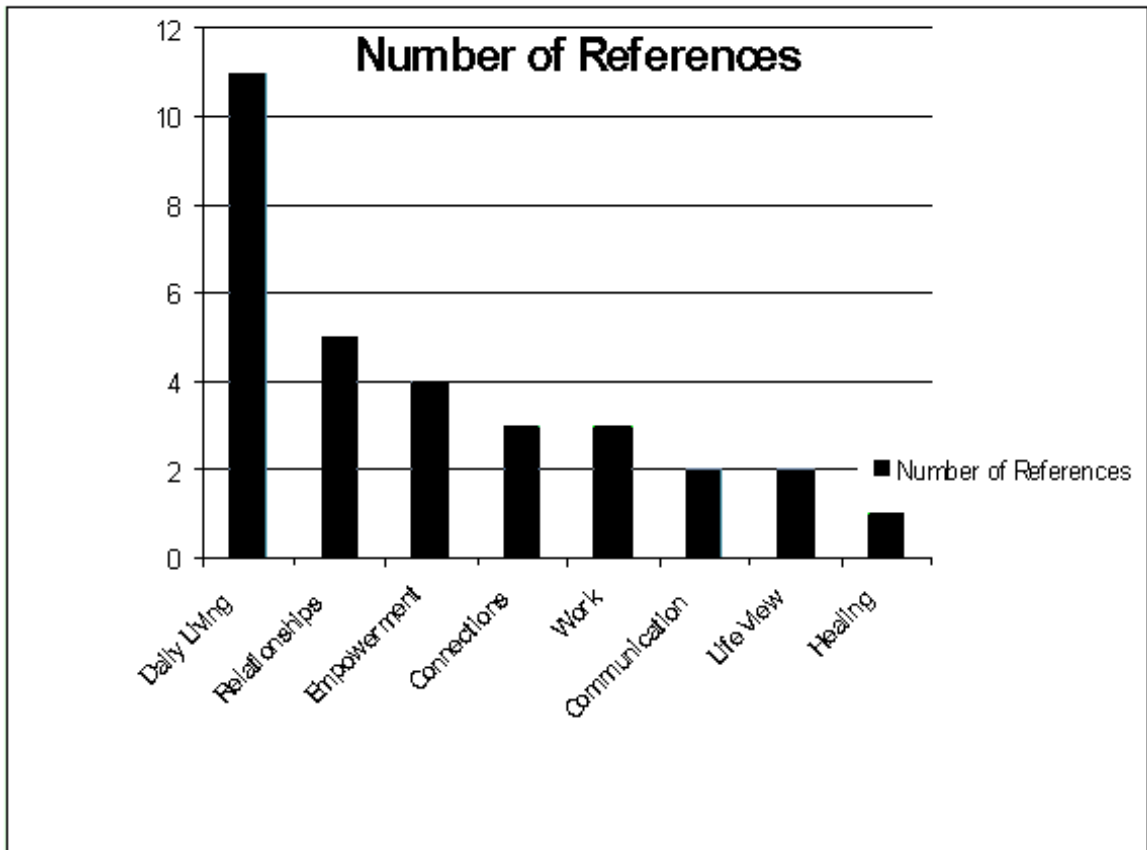


Figure 17. Aspects of Life: Number of references chart. (Author's image)

The graph clearly indicates that the aspect “Daily Living” was referenced in the data the greatest number of times; “Daily Living” occurred 11 times whereas the next highest occurring aspect was “Relationships” with only five occurrences.

Table 4

*Aspects of Life: Reference*

Aspects of Life	Number of References

Daily Living	11
Relationships	5
Empowerment	4
Connections	3
Work	3
Communication	2
Life View	2
Healing	1

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(Author's image)

The data only had one result with a higher degree of occurrence in response to the question “What aspects of your life were touched or impacted by your use of the HeartMath tools?” “Daily Living” was viewed as having the most impact through using the HeartMath tools. This result does not seem to be significant, as there were only 11 reference points in the data. The other themes that emerged from the data had much higher rates of occurrence. One might speculate that the other themes—stress management, increased coherence, better focus, increased energy, and improved performance—might all apply to “daily living” but additional research is needed to test that hypothesis.

### **Discussion of Findings**

One purpose of case study research, when concentrating on a single phenomenon or entity (the case), is to uncover the interaction of significant

factors characteristic of the phenomenon. The case study focuses on holistic description and explanation (Merriam, 1998, p. 29). The data described in the current research answers the research questions and provides insight into the ways in which individuals observed stress in their lives and then applied the HeartMath tools to improve their ability to cope with their present experience. In this section, links between the study's findings and pertinent research were made to outline the role of the HeartMath tools for effective stress relief, and mental and emotional self-management.

**Finding 1: Increased level of coherence or calmness.** The research data revealed that the research participants' had a high number of references indicating the experience of an increased level of coherence or calmness. Every participant wrote about increasing their coherence through the use of the HeartMath tools. An increase in coherence can have profoundly positive effects on the individual. Antonovsky describes this as the 'sense of coherence'.

The sense of coherence is a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable; (2) the resources are available to one to meet the demands posed by the stimuli; and (3) these demands are challenges, worthy of investment and engagement. (Antonovsky, 1987, p. 19)

This finding that using the HeartMath tools increased one's level of coherence or calmness was observed in several different areas of the participants' experiences. The participants attribute their calmness to better communication, getting a better night's sleep, preventing panic attacks, improved listening abilities, improved emotional self-management, reduced anxiety, and not getting upset.

One of the participants, an organization behaviorist, wrote about using the HeartMath tools to maintain coherence in an extremely "fearful" situation. "Today is fly home day and I am excited to have just one flight and sad yet feeling good for a short trip. Got on the plane and 1 ½ hours into the trip we smell smoke and make an emergency landing in Idaho. Feeling was a bit fearful yet shifted constantly through attitudinal breathing to appreciation that there were no flames yet and that we had a place to go. The tool helped tremendously not to go into fear about the unknown. Later we were stuck on the ground without knowing anything or if we would get home. Kept going to my favorite neutral to get into a deeper space and out of frustration was successful. Also very helpful to be in Neutral . . . when talking to [my] husband about the fact that our plane caught on fire. This helped to lay aside any disturbance with [my] family. Communicated with coherence . . . makes all the difference." This individual used the HeartMath Neutral tool to change her experience of a very fearful and stressful event. This is an example of how the tools can be used to change one's perspective about an experience in the moment.



Another participant who lives in Chicago wrote how he uses the HeartMath tools to deal with anxiety and achieve a state of calmness or coherence. “Today was a tense day, Monday at work was crazy and I felt stressed. I had a job to do that I was uncomfortable with. This made me feel anxious. I could feel anxiety and I immediately went into Neutral. Previous to HeartMath I would not know how to handle this situation.” He was able to recognize the feeling of anxiety and responded by using the HeartMath Neutral tool. This immediately shifted how he responded to the experience that confronted him.

Every participant reported some benefit from the increased level of coherence or calmness that they experienced from using the HeartMath tools. This data would indicate that this benefit alone would be reason enough to practice using the HeartMath tools on a daily basis. Since all of the participants expressed benefits from their increased level of coherence or calmness it would appear that this benefit would be experienced by a great number of people who had the HeartMath training and then used these tools on a daily basis. This finding is important as every participant indicated this increased level of coherence or calmness. It is important to recognize that the study participants were all certified HeartMath trainers, so there is a high likelihood that they would be using the HeartMath tools on a regular basis.

**Finding 2: Improved stress management.** The impact of stress management cannot be overstated. “Occupational stress is pervasive and invasive. In a 1992 United Nations Report, job stress was cited as the 20th century disease.

A recent survey revealed that 75% of Americans describe their jobs as stressful, with more than one in four reporting experiencing high levels of stress “nearly every day.” It is currently estimated that 60% of absenteeism from work is caused by stress, resulting in roughly 1 million persons absent each workday. Moreover, “nearly one-fifth of employed adults now acknowledge that workplace stress has caused them to quit a job” (McCraty, 2001, p. 33).

The second finding, that the HeartMath tools helped individuals with stress management, was again recorded by several participants. Over 85% of the research participants reported that the HeartMath tools helped them to manage the stress that they were experiencing in their lives. The data collected indicated that participants used the HeartMath tools in preparation for stressful situations: meetings at work, dealing with relationship issues, competitive sports events, children, job related stress, assisting friends with personal problems, and physical health concerns.

One study by the HeartMath institute showed that “caring, contentment, job satisfaction, and communication significantly increased after the training, while tension, nervousness, anxiety and physical symptoms of stress significantly decreased” (McCraty, 2001, p. 35).

Stress management programs such as HeartMath training hold great promise in helping to bring about some of the changes that could greatly benefit individuals who are experiencing stress in various areas of their lives. And there may be benefits to individuals who use these tools even if they are not currently experiencing stress in their lives. The finding that the HeartMath training provides

a high degree of stress management has a very broad base insofar as how individuals would benefit from using these tools. Stress seems to be such a prevalent experience for so many people that any tools that provide some relief could provide a wide range of benefits to a large number of people.

**Finding 3: Increased energy.** Another key finding of this study was how the practice of the HeartMath tools increased an individual's energy levels and why. To understand this relationship between energy level and stress, let's look at some of the main contributors to stress. Stress can be defined as

pressure, strain, or a sense of inner turmoil resulting from our perceptions and reactions to events or conditions. A state of negative emotional arousal usually associated with feelings of discomfort or anxiety that we attribute to our circumstances or situation. (Childre & Martin, 1999, p. 270)

Stress appears to be endemic in our society and this background of stress is a constant drain on our energy levels. In a Mayo Clinic article titled "Figuring Out the Cause of Fatigue" the writer states "Most often, fatigue is a result of lifestyle factors such as poor sleep, stress or a schedule that's too full" (Mayo Clinic, 2005, p. 1). Over 85% of the research participants stated that the use of the HeartMath tools increased their energy levels. One wrote that "after a short Heart Lock-In, I felt my energy come back and was able to relax and enjoy a quiet evening." Another subject wrote that using the HeartMath tools affected the energy pattern. "The thoughts I think are actually producing an energy pattern in me that is affecting my future because those vibrations are thoughts that attract more thoughts like themselves every moment I think them." This individual

viewed the use of the HeartMath tool as not only affecting the current state of his energy but as affecting even his future state! Another example of how the participants experienced the effect on their energy levels was described as “I found that whenever my energy would get low I could reenergize with using the Neutral tool.”

One of the research participants works as a HeartMath consultant providing services to various clients wrote about how she used the HeartMath tools to re-energize. “I had to get up early to drive out to a workshop I was taking outside the city. I picked up a friend on the way out of town. Today was filled with lots of Neutral and Quick Coherence. When my energy started to drop at different points I would take deep breaths—Neutral and it would help to re-energize me.” Her ability to shift her energy perspective by using the HeartMath tools enabled her to move through the events of her day and maintain a good energy level so that she to handle the tasks that were hers to handle.

Again this is a key finding as over 85% of the research participants described how using the HeartMath tools increased their energy levels. Studies have shown that using the HeartMath tools modulates or reduces the effects of the various stress contributors that are so prevalent in our lives today (McCraty, 2001). This finding is another confirmation of how energy levels can be increased through the utilization of the HeartMath tools.

**Finding 4: Better focus.** The fourth major finding was that the research participants experienced better focus in their lives as a result of using the

HeartMath tools. One research participant described it as follows: “Today, I began much like I do everyday with some nice deep breaths aka ‘the Neutral tool’. I use this several times every day and very specifically in the morning. I found this morning when I used it I was able to get grounded and focus on what was going to be happening in my day. I always notice when using Neutral and I get an overwhelming sense of calm that runs through my veins and I relax.”

Achieving better focus can be extremely important in many areas of our lives. One study that was performed on police officers during simulated police calls revealed the value of using HeartMath tools in extremely stressful situations. “The majority of the participating officers felt that application of the HeartMath interventions increased their calmness, clarity and focus during the scenarios and facilitated a more rapid and fuller recovery, both physiologically and psychologically, following the acute stress” (McCraty, 2001, p. 38).

Another study that indicates what can be achieved through improvements in one’s focus was a study involving high school seniors in Minnesota. Twenty high school students who needed to retake the state assessment exams in reading and math were given 25 hours of instruction in the HeartMath tools. The students demonstrated a mean gain of 35% in their math test scores and 14% in the reading test scores. Pam Aasen, a clinical psychologist said “Students had the knowledge, but were unable to perform on the tests because of anxiety and stress” (McCraty, Tomasino, Atkinson, Aasen, & Thurik, 2000).

So we can see that achieving better focus through the use of the HeartMath tools helps to reduce the stress that can impact our lives in many different ways.

Every one of the research participants but one wrote about the increase in focus that they observed from using the HeartMath tools, another powerful finding in the benefits in using the HeartMath tools.

**Finding 5: Improved performance.** The final finding that emerged from the data was that the HeartMath tools can contribute to improved performance. This finding emerged from only two of the participants, but actually the other four findings could be viewed as contributing to improved performance, which would increase the number of reference points for improved performance.

One participant wrote “I am feeling back in control, and it felt good to once again use the breathing tools for what I enjoy best about them. For better performance.” This participant clearly attributes using the HeartMath tools to achieving better performance. In this case the participant was referring to achieving better performance with a physical workout.

Another participant wrote about having performance anxiety. “It’s the ‘performance anxiety’ thing—I know it. So, I’ve decided to start carrying my little EmWave PSR (portable) with me so that I can quickly take a reading at moments like these.” This was their way of quickly determining their state of coherence and using the HeartMath tools to move themselves when necessary into a more coherent state to relieve their performance anxiety.

One of the research participants, an organization behaviorist for a hospital, shared her experience with using the HeartMath tools to maintain her focus.

“Today, I used Quick Coherence to help me regain my focus during a somewhat boring meeting. As the organization behaviorist who is supporting multiple groups planning for an organization wide move into a new facility, my purpose for being in some of the planning meetings is to be alert for potential problems and communication gaps. This individual seemed to be very comfortable with using the appropriate HeartMath tools whenever she was confronted with a situation that might benefit from using one of the HeartMath tools.

This same participant wrote about how the HeartMath Neutral technique was used by some of the nursing staff at the hospital. “Later in the afternoon, one of the nurse leaders described to me how she did a Neutral while facilitating a difficult meeting with nurses. We talked about using appreciation during the upcoming moves and to send it to nurses and other staff who start to feel frustrated while moving and dealing with the very significant changes. I suggested to the nurse leaders that they send appreciation to the staff and families both through heart energy and physically by writing notes of thanks and appreciation.”

One of the research participants, a fireman and golf pro, wrote how she used HeartMath tools to improve her performance on the golf course. “The Neutral breathing tools are great for me to just get ready for whatever life throws at me. When I did the Meadow game, I found myself feeling joy just by watching the colors come to life. I played a couple of holes of golf with some PGA players and felt the stress of performing. So I concentrated on my breathing before I

began my swing. I was able to hold my own with them, and after a poor shot, I was able to make a come-back shot. I believe this was because I was able to stay calm and focused.” She was able to calm herself and improve her performance in her game.

Another study of middle school students in Dade County, Florida showed how powerful the HeartMath tools can be in enhancing performance. “Results indicated significant improvements following the HeartMath program in 17 of the 19 areas of psychosocial functioning measured by the inventory, including anger management, teacher comfort, self-reliance, work management ,and focus, perceptions of family support/satisfaction and decreases in risky behavior” (McCraty, 2001, p. 45).

Performance is something we judge ourselves on far too much. So having tools like HeartMath to improve our performance can be a huge stress reducer. This last finding—that the HeartMath tools improve our performance—could be an area for further study. Many different quantitative studies have been published on the effect of the HeartMath tools on various areas of human performance. My interest in this study was how the participants experienced the use of the HeartMath tools and in how they improved performance.

### **Recommendations for Future Study**

The findings of this study were that the utilization of the HeartMath tools contributed to achieving an increased level of coherence or calmness, better stress



management, increased energy, better focus, and improved performance. All of these results clearly emerged from the data collected.

As a follow-up to this study it would be useful to conduct a similar study on a different population of individuals who use the HeartMath tools on a daily basis. I chose to study a population composed of certified HeartMath trainers. I think comparing the results of this study to a study performed on a population composed of individuals who have had the training but are not associated with HeartMath and are not certified trainers could provide important insights. The results might be very similar to the results found in this study or they might diverge in certain aspects. But I think studying another population would provide additional insights as to the effects of the HeartMath tools.

Another research project that evolved from my research is based on the fact that HeartMath researchers have shown that the heart's electrical field is about 60 times greater in amplitude than the electrical signal of the brain (McCraty, 2001). In addition it has been discovered that electromagnetic fields have a key role in modulating the mechanisms involved in switching genes on and off (which affects the differentiation of stem cells into specific organs) (Ahuja, Ghargava, & Ratnakar, 2005). The research idea is to study what the potential effect of the electrical signal of the heart, generated when employing the HeartMath tools, may have at the cellular level. Research looking at the effect of this electrical signal on cell development, cellular differentiation of stem cells, DNA, or other cellular processes would be truly fascinating.

## **Discussion**

The current study was designed as a qualitative study of heart-mind coherence techniques for stress relief and mental and emotional self-management. This study looked at the HeartMath tools and in what ways individuals experienced the effects of using those tools in their lives.

The intent of this study was not to reach any conclusions about quantifying the benefits of using the HeartMath tools but to reveal what the research participants' experience of using the HeartMath tools was.

So what did the research show about how individuals perceive the effects of using the HeartMath techniques for stress relief and mental and emotional self-management? The research results indicate that utilizing the HeartMath tools resulted in a high degree of stress management. Over 85% of the research participants experienced stress management benefits from using the HeartMath tools. The high number of individuals experiencing this benefit would indicate that this finding deserves further qualitative research. A research study that looks specifically at a group of individuals in a known stress environment or job would be an excellent group to look only at the HeartMath tools and stress management.

Using the HeartMath techniques for mental and emotional self-management was also found to be beneficial. The data revealed that an increased level of coherence and calmness and better focus were primary areas of benefit from using the HeartMath tools. The research participants wrote that through increased levels of coherence and calmness they were better equipped to handle their mental and emotional states. One participant wrote that employing the

HeartMath tool Neutral "kept my negative emotions in check when I felt he was taking out his bad mood on me." Another participant wrote "I think mentally and emotionally I am able to stay neutral and positive" through utilizing the HeartMath tools. Another participant put it even more succinctly. "I found the quick coherence tool, the EmWave sessions and my PSR to be invaluable! I was able to stay emotionally balanced and calm, mentally aware of choices to make in my life, and physically, I needed to slow down my heart palpitations and keep from having panic attacks!"

One participant even made it clear that the emWave PSR (personal stress reliever) device was not necessary to benefit from the HeartMath tools. She wrote "HeartMath has only been in the emWave business for a short time. Those wonderful folks as the Institute of HeartMath had been teaching people how to relieve stress for almost 10 years when the computer software with its impressive graphs and charts hit the market. Do you know what they were teaching before the technology showed up? A Simple Three-Step Program:

1. Heart Focus
2. Heart Breathing
3. Heart Feeling

That's it. It IS that simple. No computer needed." I think this is a very important reminder to anyone learning about the HeartMath tools. You don't need a computer or an emWave to experience the benefit of using the HeartMath tools. The computer software and the emWave device are merely tools that provide reinforcement that you are using the tools correctly.

The results of this research clearly indicate some of the benefits that the research participants experienced from using the HeartMath tools on a regular basis. Some of these benefits also were experienced by over 85% of the participants (increased level of coherence or calmness 100%, stress management 85%, increased energy 85%, and better focus 85%).

Finding results with this high a level of occurrence with this group of people would suggest that these benefits of using the HeartMath tools have a broad base. Further research could verify and validate these results.

The experience of this research study has expanded my view as to how using the HeartMath tools might affect my life and in what areas. The Heart Lock-In technique is designed to lock in the coherent psychophysiological state associated with compassion or appreciation. The idea is to condition oneself so that the system “attempts to maintain this state automatically” (McCraty & Childre, 2003, p. 13). The HeartMath Heart Lock-In technique resonated for me as a modern interpretation of the Prayer of the Heart. Carol Ruth Knox and the early monastics that practiced the Prayer of the Heart practiced it as a state of continual internalized prayer consciousness. The idea that the practice of the Heart Lock-In technique could be used to achieve a coherent system that also tries to maintain that state is a powerful image for me.

The next step for me is to take a 30-day period in my life and set it aside for my own personal research study on myself and how I experience the HeartMath tools. I will practice the HeartMath tools daily for 30 days, write in my journal on the same questions that my research participants used, and then do a

quick analysis of the data. I will then compare the present study results and my personal results as an internal reflection.

As a final note I would like to consider how the results of this study can be disseminated and how can the benefits of HeartMath tools and techniques can be more broadly utilized. This seems to me what research is all about.

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## **Appendix A. Research Invitation/Consent**

### **AN INVITATION TO PARTICIPATE IN A RESEARCH STUDY— INDIVIDUAL PARTICIPATION**

I would like to invite you to participate in a study that I am conducting that explores your experience of learning and using the HeartMath tools and techniques in your daily life. I am a doctoral student in the Department of Integral Studies at the California Institute of Integral Studies in San Francisco, CA.

The purpose of this study is to explore and understand the experience of living the HeartMath tools. I am seeking to uncover the nature of the HeartMath experience through a qualitative research study.

Your participation with me will entail sharing lived experiences about your HeartMath experiences through journaling via a blog. The blogs will be transcribed into written text in order that the underlying themes might be identified, explored, and understood. All conversations and written transcripts will be cared for with strictest confidence. Your identity and that of any persons that you mention will remain anonymous.

In turn, I will share with each participant my interpretations of understandings that emerge through this study. This sharing will offer possibilities for deeper exploration of the phenomenon that I am studying—that of heart-mind coherence techniques as taught by Heart Math.

Each participant's experience is, indeed, unique and personal; there are perhaps some similarities as well. By sharing your experiences through this research study, you will be contributing to a deeper understanding of the heart-mind coherence techniques, and perhaps to the possibility of offering new insights in heart-mind coherence techniques and how they might affect the 'whole' person. There are no known risks, and no intended benefit to participants in this research project with me.

If you wish to participate in this study, please sign the required consent form on the following page.

Participants will be chosen randomly from the responses to this invitation. I will then contact each of the participants who have been chosen to discuss what would be involved in the study so that the participant has a good understanding of what would be involved.

If you have any questions at any time, please contact me by telephone or e-mail.

Thank you.

Harold Reich  
402-489-3927  
[harold@purjava.com](mailto:harold@purjava.com)

CONSENT TO PARTICIPATE IN RESEARCH STUDY—  
INDIVIDUAL PARTICIPATION

1. I have discussed the nature of this research study with the researcher, Harold Reich, and I understand that I will be having journaling about my experience of utilizing the HeartMath tools and techniques.
2. I agree to have my journal entries on the research blog transcribed for purposes of the study.
3. I understand that the time demands of the study will require blogging every day for 30 days.
4. I agree to blog about my lived experience of utilizing the HeartMath tools and techniques.
5. I understand that my identity, and that of persons named by me, will remain anonymous.
6. I understand that I will be permitted and encouraged to read the researcher's interpretation of themes and to engage in further conversation after that time.
7. I understand that my participation is purely voluntary and that I may ask questions and/or withdraw from this study at any time.

---

Participant's Signature

Date

---

Researcher's Signature

Date

## **Appendix B. Letter to Participants**

Letter to HeartMath professionals—Request for research participants

Dear HeartMath professionals,

I am in the process of recruiting research participants for a doctoral research project. I want to investigate the experience of using the HeartMath techniques and their possible effects in the development of consciousness. Does the practice of the HeartMath tools and techniques affect the integral person, the whole person? What is the experience of using the HeartMath tools and techniques?

The main purpose of my research is to study the experience of using the HeartMath tools and techniques; but I am also going to look for any indications that these tools and techniques can facilitate development in consciousness. This study will utilize a qualitative case study methodology. There has been very limited qualitative research done on HeartMath, so this would be an opportunity to contribute to an entirely different perspective on the effects of HeartMath.

This letter is being sent to you to request your assistance in selecting 10 research participants for this study. My research design calls for each participant to journal every day for 30 days on a blog that has been created for this research study. I will then transcribe the material and analyze it using NVivo software. I will then determine if there are any themes or similar experiences in the participant's journal entries.

I would request your assistance in 'recruiting' participants for this study. I believe this research will be a significant contribution to the body of research on HeartMath. Due to the limited qualitative research done on HeartMath, this research study will add to the body of work on HeartMath from an entirely different perspective. I would very much appreciate your consideration in locating research participants to study the benefits of living the HeartMath experience.

## Appendix C. HRRC Review Approval

### California Institute of Integral Studies Human Research Review Committee

February 26, 2009

Dear Harold Reich,

Congratulations, the Human Research Review Committee (HRRC) has approved your research proposal.

This approval is in effect for one year from the date of this letter. Any changes to your proposal from this point forward must be approved by the Committee in advance. It is understood that HRRC approval of your research does not imply endorsement by CIIS of any treatments, products, or theories associated with your research.

If you need more than one year to complete your research, you will need to apply for an extension to the HRRC before your one year expiration date. If this is needed, please submit in writing a statement of your request for extension and the reasons. You must also include a statement that no changes to your research have been made since this initial approval.

We wish you success with your research.

Sincerely,



Robert Duchmann  
HRRC Member

cc: A. Montuori



## Appendix D. NVivo Effects Experienced Data

Table 5

### *NVivo Effects Experienced Data*

Effect Experienced	Number of References
Achieving an increased level of coherence or calmness	42
Increased Energy	24
Better Focus	23
Improved Performance	23
Reduced Stress	19
Better Communication	19
Decreased Reactionary Behaviors	17
Better Sleep	16
Control Over Physiological Processes	16
Decreased Tension	14
Stronger Connection	13
Increased Appreciation	12
Increased Balance	10
Increased Productivity	6
Greater Insight	6
Increased Groundedness	5
Decreased Anger	5
Feelings of Success	3
increased joy and or happiness	3
Feelings of Liberation or Freedom	1
Improved confidence	1
Improved Quality of Life	1

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(Author's image)

**Appendix E. Aspects of Life Data**

Table 6

*Aspects of Life Data*

Aspects of Life	Number of References
Daily Living	11
Relationships	5
Empowerment	4
Connections	3
Work	3
Communication	2
Life View	2
Healing	1

---

(Author's image)

## Appendix F. NVivo Application to Life Data

Table 7

*NVivo Application to Life Data (Author's image)*

Application to Life	Number of References
Stress Management	39
Achieve Coherent State	22
Improve Focus and Grounding	21
Anger Management	15
Clear the mind and or body	11
Sense of Appreciation and Gratitude	11
Communications	7
Reaching out to others	7
Grief Separation or Loss Issues	6
Personal Feedback	6
Sleep	6
Sports Performance	6
Counter Act Depression	5
Energy Increase	5
Attitude Adjustment	4
Counter Panic Attacks	4
Controlling Physiology	3
Achieving Balance	1
Increase Awareness	1
Increase Motivation	1
No Longer Needed	1

---

(Author's image)

## Appendix G. NVivo Coding by Node

Percentage coverage displays how much of the coding done at the node is represented by each *attribute value* shown on the x-axis.

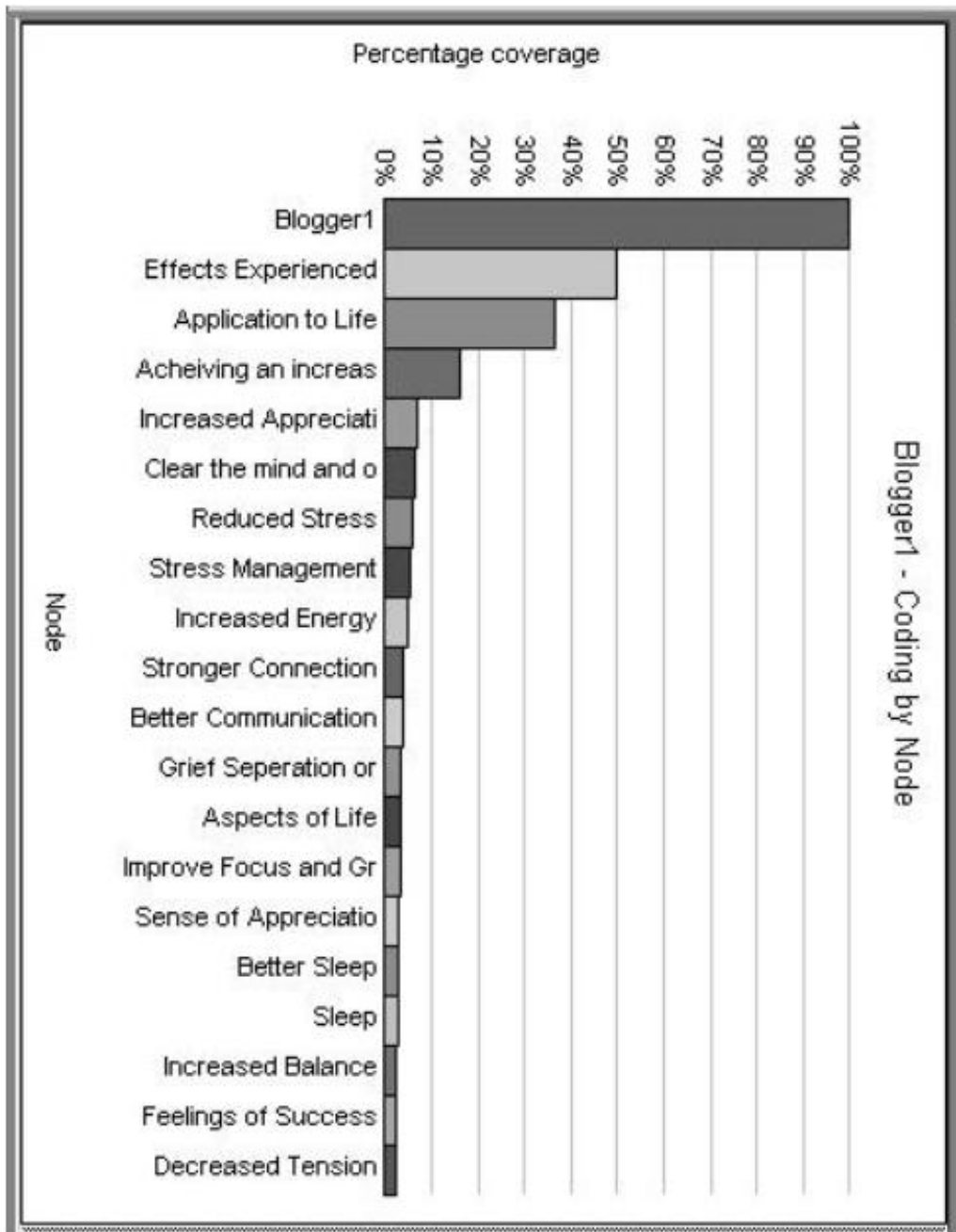


Figure 18. NVivo coding by node, Blogger 1. (Author's image)

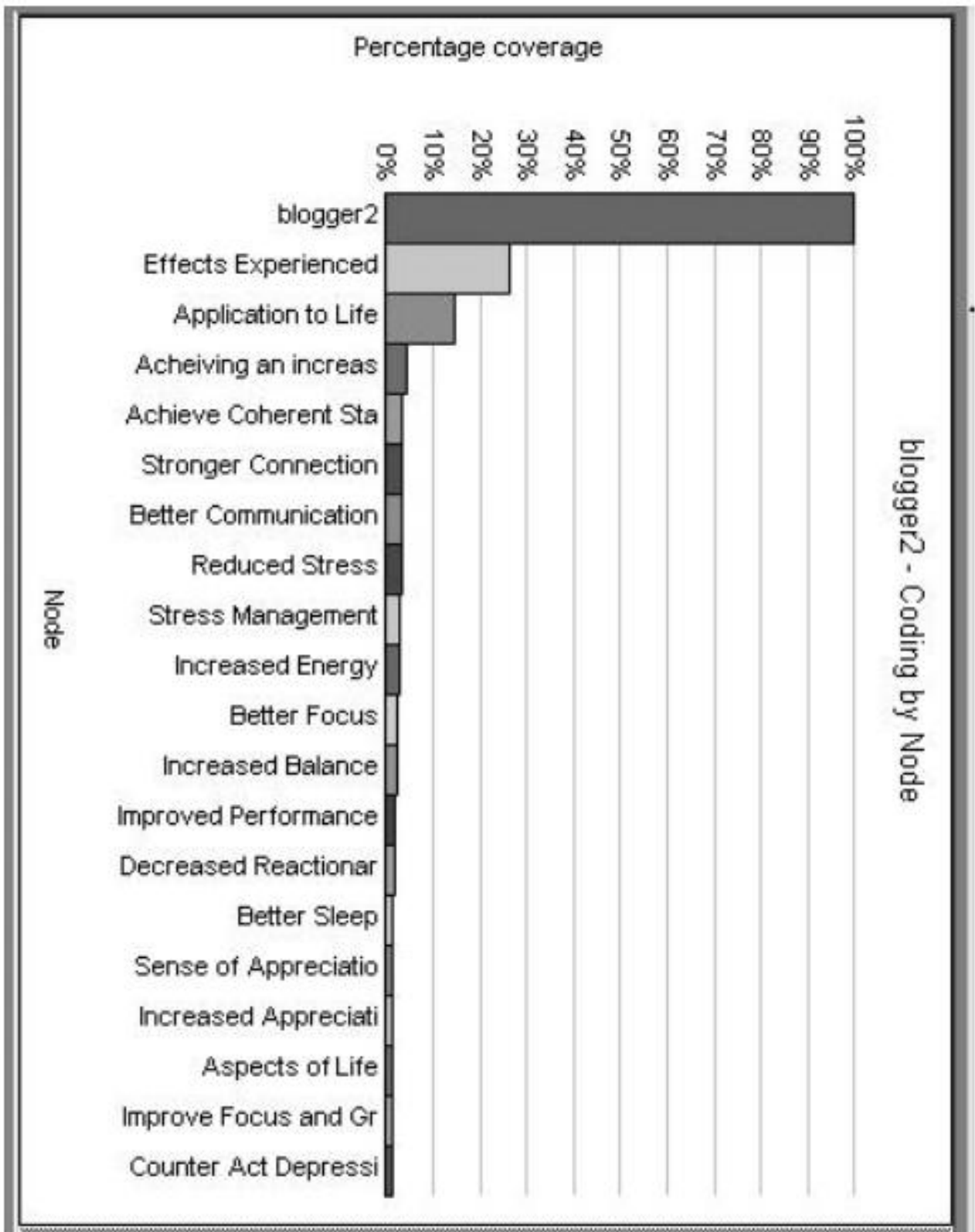


Figure 19. NVivo coding by node, Blogger 2. (Author's image)

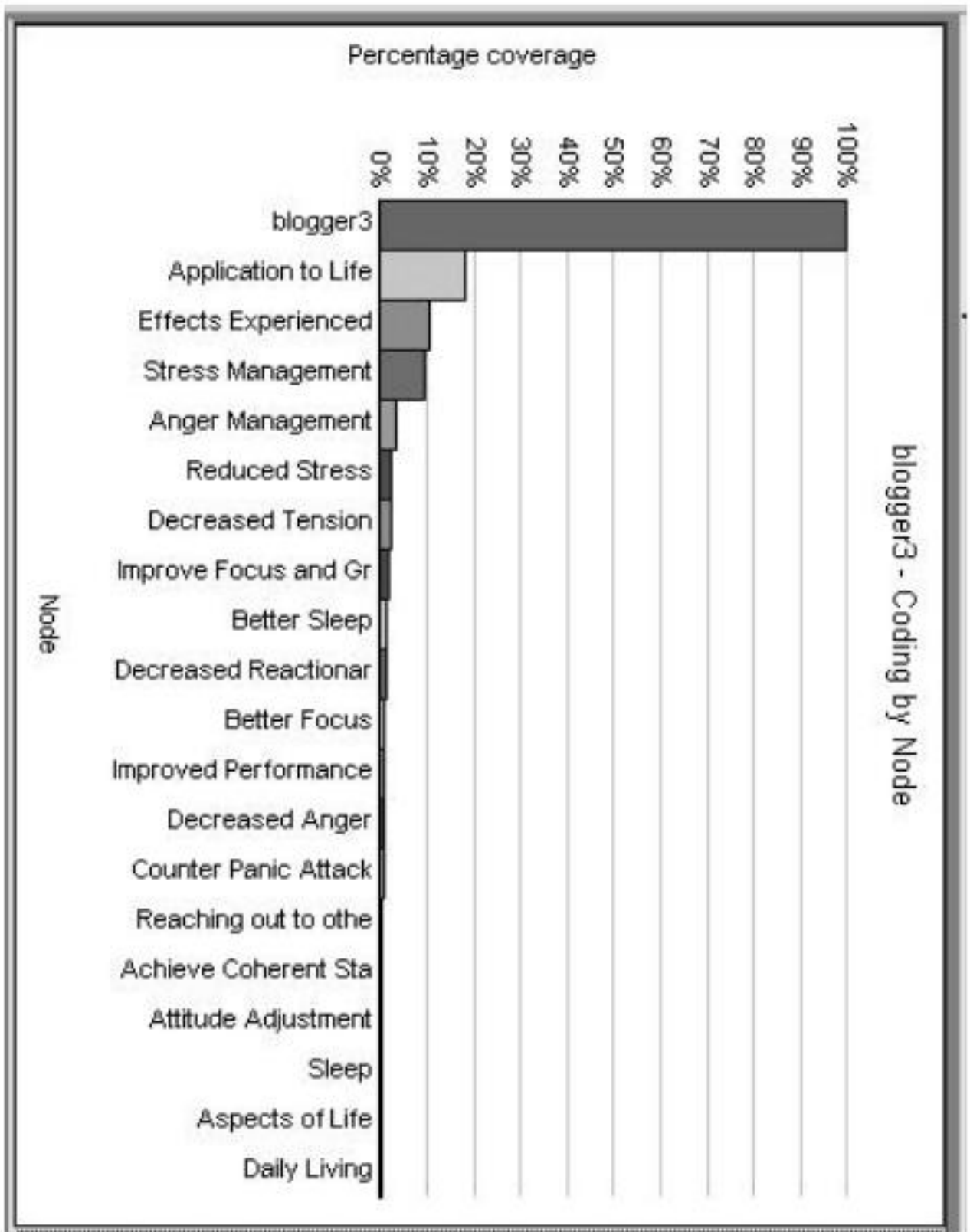


Figure 20. NVivo coding by node, Blogger 3. (Author's image)

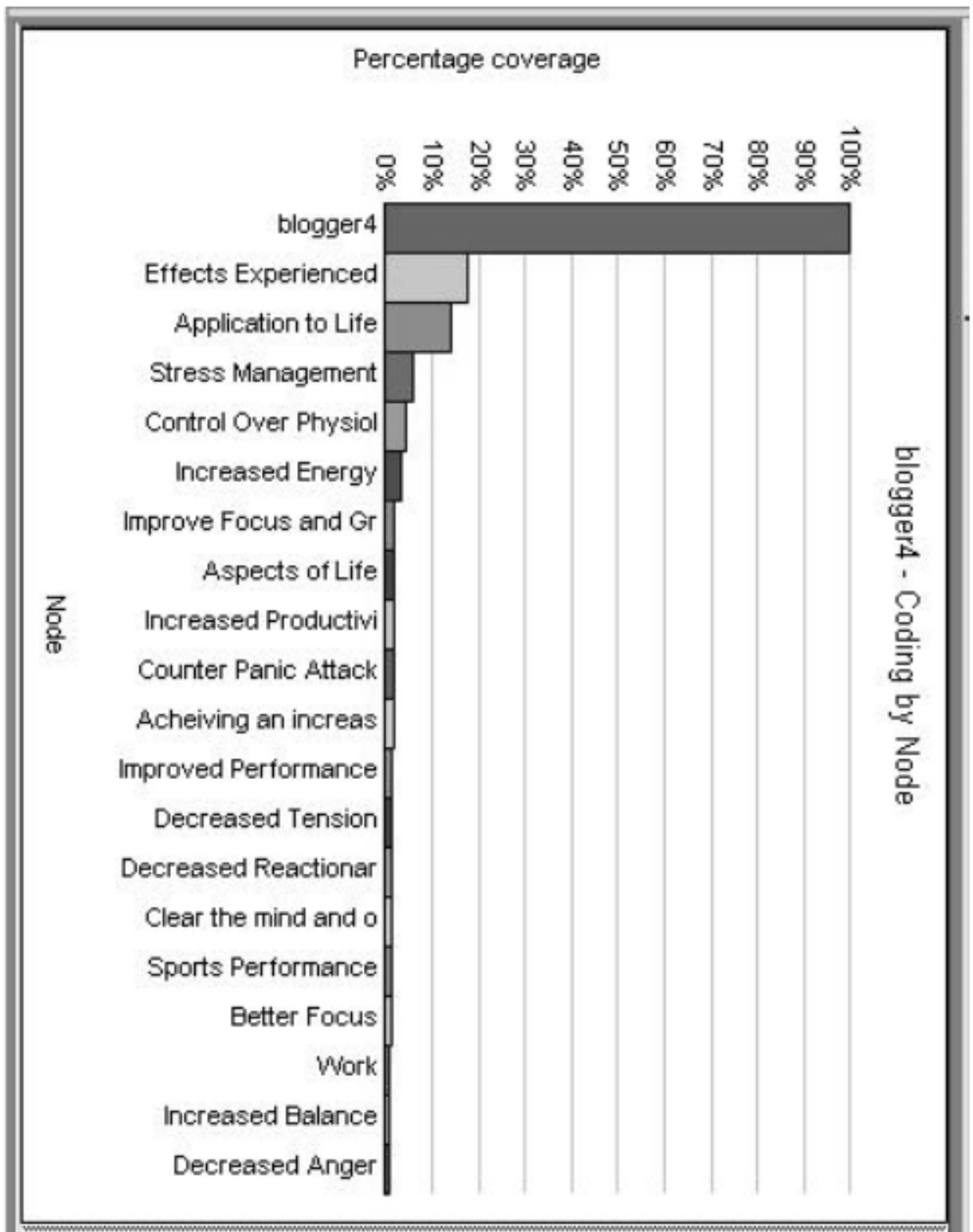


Figure 21. NVivo coding by node, Blogger 4. (Author's image)

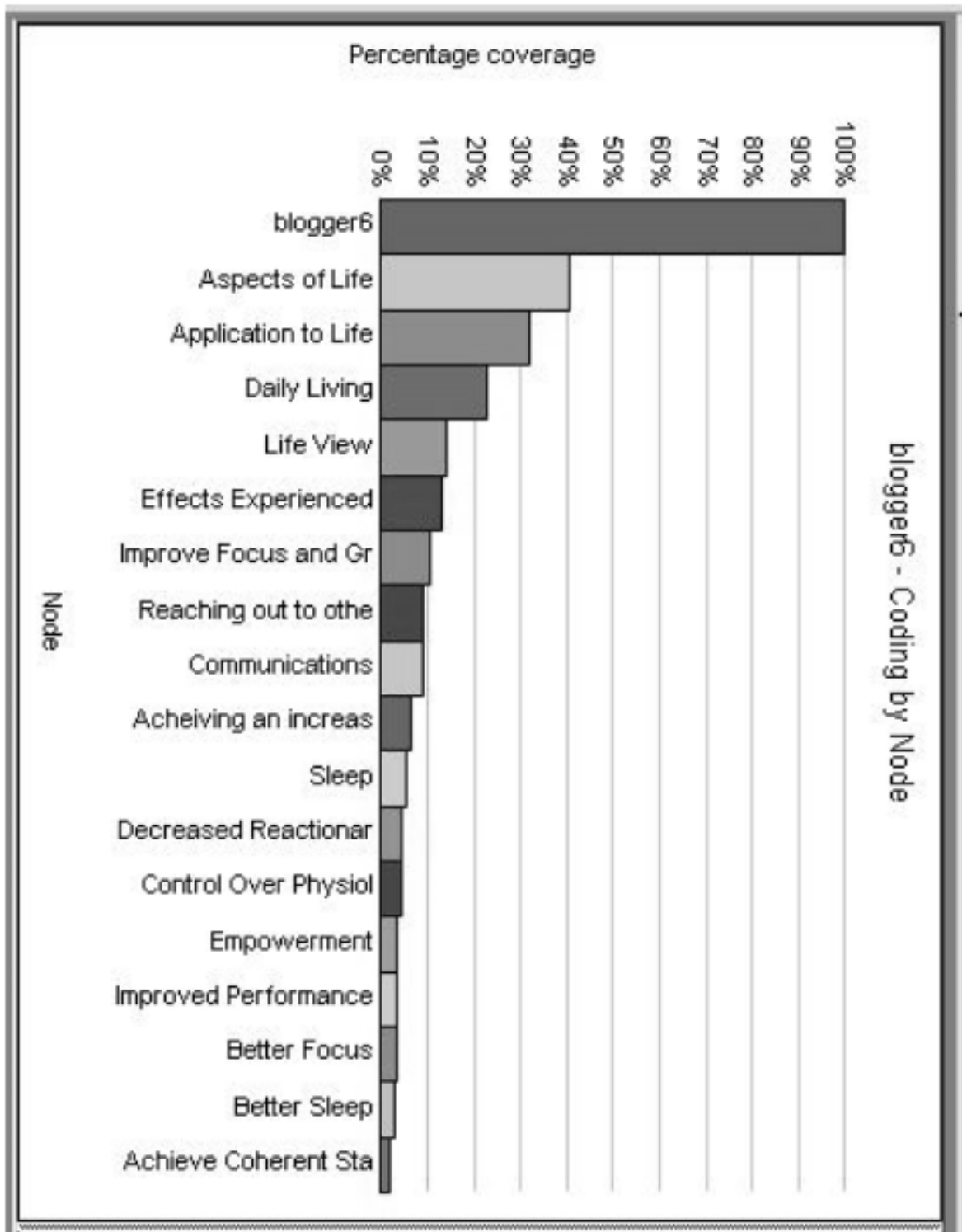


Figure 22. NVivo coding by node, Blogger 6. (Author's image)



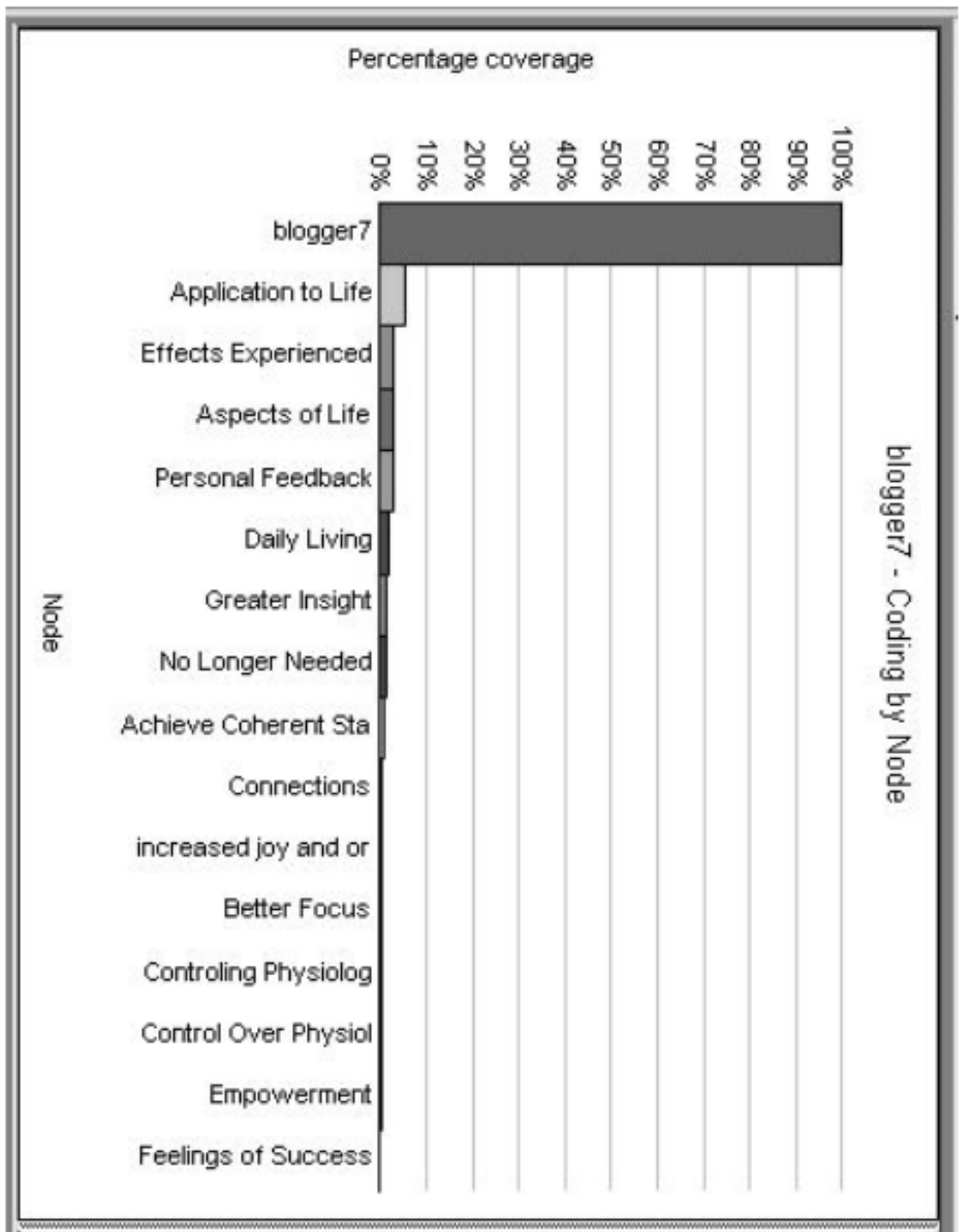


Figure 23. NVivo coding by node, Blogger 7. (Author's image)

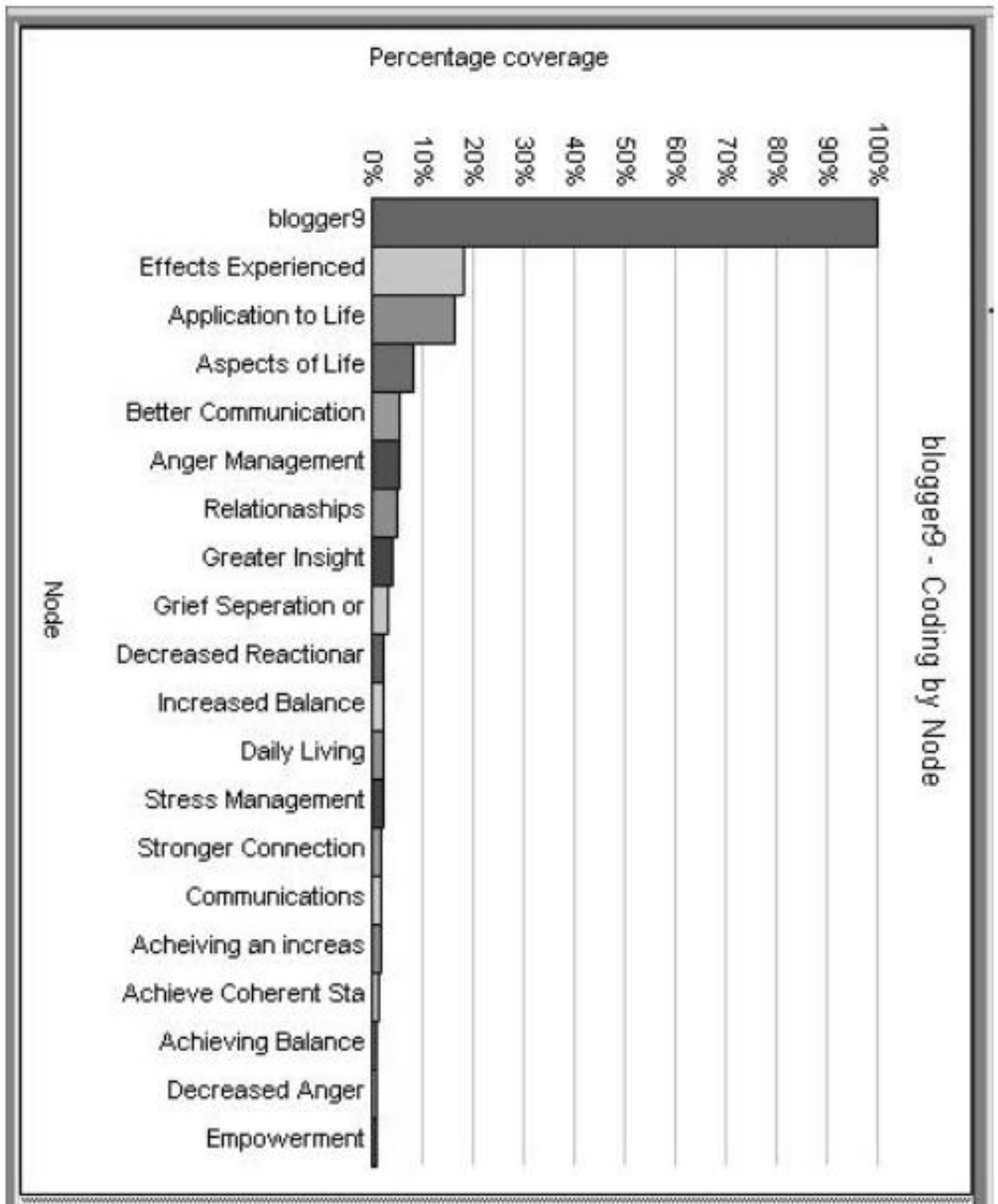


Figure 24. NVivo coding by node, Blogger 9. (Author's image)

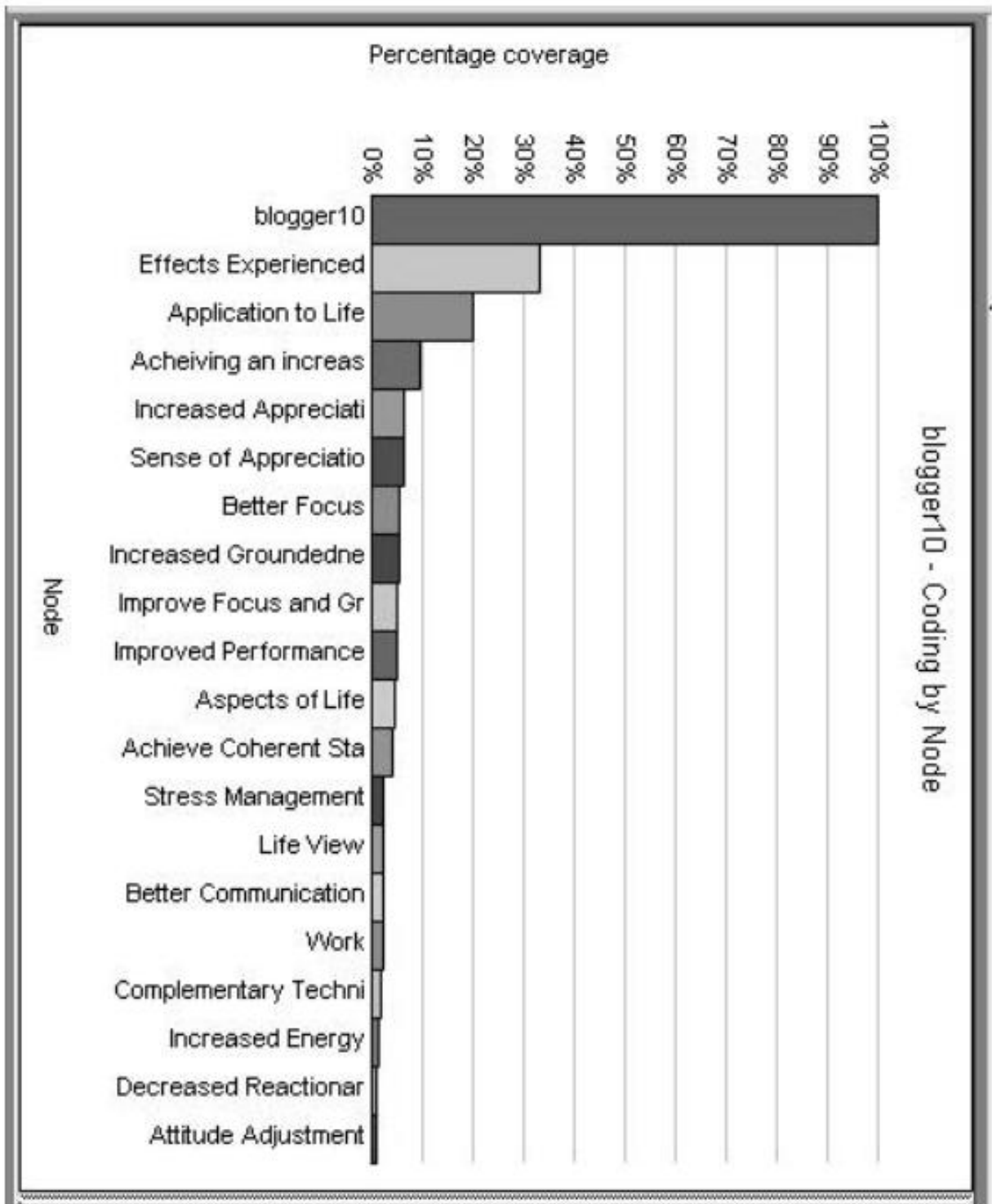


Figure 25. NVivo coding by node, Blogger 10. (Author's image)