

**The Effects of the Creative Holistic Integration (CHI) Process™
on Physiological Coherence and Perceptions of Wellbeing
in Trauma-Exposed Sri Lankan Youth.**

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The work reported in this thesis is original and carried out by me solely, except for the acknowledged direction and assistance gratefully received from colleagues and mentors.

Suchinta Abhayaratna Wijesooriya

DEDICATION AND ACKNOWLEDGEMENTS

Dedication

This research is dedicated, with gratitude, to the lineage of healers and teachers who came before me, and those who will come after me – especially each wave of adolescents, who hold the keys to the future of our species and our planet.

I project the vision of wholeness and the energy of love, compassion and hope that fuels this work, through my heart and breath to theirs and into our world.

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ABSTRACT

This study examined the effects of the *Creative Holistic Integration (CHI)*TM process on physiological coherence and perceptions of wellbeing in trauma-exposed Sri Lankan youth.

The five-minute intervention had two components: 1) A scripted guided visualization using the *Wholeness Mandala* and, 2) heart-centered deep breathing combined with a breath mantra. The intervention was intended to facilitate centering in the heart and breath, and to create an awareness of connection and interaction between the individual and the whole universal energy system, in order to observe effects on the individual.

A randomized experimental design with repeated measures was utilized with male (n = 23) and female (n = 35) volunteers between the ages of 12 and 24, randomly assigned to an intervention group (n = 29) and a control group (n = 29).

The protocol was carried out individually with each participant, and included one, thirty-minute session divided into three, ten-minute segments of activity and data collection. During each segment, Coherence Ratio (CR) data were recorded for five minutes on the emWavePC computer program. After each segment, participants recorded perceptions of their own physical, emotional, mental and spiritual wellbeing on the Subjective Units of Distress (SUD) scale, and verbally answered two qualitative questions on physical sensations and thoughts.

The intervention group showed statistically significant improvements in physiological coherence ($P = .001$), and perceptions of wellbeing, SUD scale ($P = .003$) while the control group showed little or no change in the repeated measures. Qualitative data provided information on participants' inner experience related to the quantitative data.

The findings of this study support the hypothesis that the Creative Holistic Integration (CHI)TM process can significantly improve physiological coherence, and perceptions of wellbeing in a population of trauma-exposed Sri Lankan youth.

Keywords: creative, holistic, integration, chi, wholeness, mandala, universal energy, physiological coherence, Sri Lanka, youth, trauma, stress, Subjective Units of Distress Scale, SUDS, emWavePC.

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CHAPTER 1: INTRODUCTION

The goal of life is to make your heartbeat match the beat of the universe, to match your nature with Nature.

Joseph Campbell

This dissertation documents the study of the effects of the Creative Holistic Integration (CHI) Process™ on physiological coherence and perceptions of wellbeing of trauma-exposed Sri Lankan youth.

This chapter is an overview and introduction to this study, presenting a statement of need, the purpose of this study, the hypothesis and null hypothesis, a brief description of the intervention, methodology, purpose, importance and scope of this study. The Principal Investigator's (PI) background and preparation for carrying out this research are also described, and a glossary of key terms used in this dissertation is provided.

The second chapter reviews literature pertaining to the concepts upon which this study was based. It has been presented in ten sections. The first section gives an overview of Sri Lanka. The second section describes the challenges faced by trauma-exposed Sri Lankan youth. The third section presents an overview of stress and trauma, focusing on how it affects youth. The fourth section describes the “fourfold brain” and the special relevance it has for youth. The fifth section is about the heart and the sixth is about breath. The seventh section presents the CHI Process™ and all its components. The eighth section describes the use of imagery in healing. Sections

nine and ten cover theological and theoretical perspectives on wholeness, citing the work of others who paved the way and did the groundwork that supports this study.

The third chapter describes the methodology, including descriptions of the settings in which this research was done, details pertaining to the volunteers who participated, the instruments used and procedures followed in this study.

The fourth chapter presents the results of the study, including statistical information based on the quantitative data, and qualitative data gathered verbally from participants, presented in a table side by side with raw quantitative data to show correlation.

The fifth chapter reviews the study, summarizes the results and discusses the findings, presents correlations between quantitative and qualitative data, discusses the relevance of this study to fields related to health and spirituality, and makes recommendations for future consideration.

The terms “Creative Holistic Integration process,” “CHI process™” and “CHI” are used interchangeably in reference to the intervention that is the focus of this dissertation.

Statement of Need

In 2004, over twenty six percent of Sri Lanka’s population were youth between the ages of 10 and 24, constituting the largest age group in the country.¹ In the rural south, the parents of today’s youth were the Sinhala-educated Buddhists, who in the seventies, revolted against the marginalization, powerlessness, injustice, disillusionment and the political and social status quo of the establishment.²

In the north, they were the militant youth of the Tamil minority who revolted against the same conditions in the eighties.³ Ironically, regardless of ethnicity, 21st century youth expressed the same underlying frustrations and discontent with the social and political status quo created by their parents' generation.⁴ In Sri Lanka, as in other parts of the world in the latter half of the twentieth century, it was the wave of angry, militant youth crashing into an irrelevant, imbalanced and disintegrating social structure that catalyzed the chaos that followed. Sri Lanka's youth are recognized as a powerful group that has played a significant role in the recent turbulent history of the country, and their needs and concerns are a priority that calls for an effective response.

Despite their political power, youth are among the most vulnerable groups in Sri Lankan society, and have been exposed to trauma, as victims, perpetrators and witnesses of violence and abuse in their homes and in a society torn apart by civil war for almost thirty years. Hundreds of thousands have also been subject to the tragic effects of the almost three decades of violent ethnic conflict as well as natural disasters, of which the most devastating was the tsunami of 2004. [[Appendix B](#)] Many lost parents, close relatives and friends, and were displaced from their homes and communities, due to the heavy casualties of both man-made and natural disasters and challenging psychosocial conditions. Further details on traumatic realities facing Sri Lankan youth are presented in Chapter Two.

A national survey conducted by the United Nations Children's Fund (UNICEF) on emerging issues among Sri Lankan youth between the ages of 10 and 19 noted that a significant number of adolescents lacked sound life skills to mitigate

the realities they face in a society that requires these skills.⁵ The study suggests that innovative, rapid, effective and feasible strategies be used to reach adolescents in all walks of life over a relatively short period of time.⁶

Large numbers of Sri Lankan youth, along with their families and communities, have been exposed to traumatic experiences, and appear to be in need of more effective tools that can help them move forward from a sense of fragmentation to wholeness, coherence and a greater sense of wellbeing. The effects of trauma include disempowerment and loss of connection with self, others and one's environment.⁷ Larger collectives such as families and communities that form the support systems that youth usually depend on. When adults are also exposed to trauma, regardless of the cause, adolescents and young adults often find themselves more vulnerable to exploitation, and are forced to take on greater responsibility with little or no support.⁸

In a collectivist society such as Sri Lanka, Dr. Daya Somasundaram, a psychiatrist working with traumatized communities in North Sri Lanka, suggests integrated multi-level approaches to address the problems of collective trauma. He believes these healing strategies need to involve not only individuals, but families and communities as well.⁹ Self-empowerment, re-connection with self, others and the environment are essential to recovery, and re-education is an important part of the healing process.¹⁰

Between the ages of twelve and twenty-four, powerful brain development is taking place in the neocortex and the prefrontal lobes.¹¹ Physiological coherence may be particularly important during this phase of life, to allow the brain to receive

adequate nutrition, through the blood, to support this brain development. Because youth have an important evolutionary role to play in society, whatever happens at this stage of life could have lasting effects, not only on their lives as individuals, but also on the future of the collectives that they are part of through trans-generational transmission of trauma as described in the second chapter. Despite their wounding, trauma-exposed youth may have a window of opportunity to create lasting patterns of physiological coherence, and create improved wellbeing within themselves and thereby also in the collectives that they are part of. Therefore, there is an urgent need to develop appropriate, affordable, holistic interventions that can enable trauma-exposed youth to move beyond fragmentation to wholeness, and be empowered to create coherence within themselves, in their families and their communities.¹²

Purpose of the Study

The purpose of the study was to investigate the effects of Creative Holistic Integration CHI Process™ on the physiological coherence and perceptions of wellbeing of trauma-exposed Sri Lankan youth.

The CHI Process™ has two components: 1) Scripted visualization [[Appendix D](#)] of the Wholeness Mandala, [[Appendix C](#)] and 2) The heart centered slow deep breathing coordinated with the ancient “*So-Ham*” breath *mantra* (focus phrase).

The CHI Process™ was developed by the PI as an intervention to create connection with the heart and the breath, awareness of the heart as the center of one’s being, and breath and mind as connectors of the individual with the whole universal energy system that she/he is part of. Considering that re-connection to self, others

and one's environment is essential to trauma recovery,¹³ the CHI Process™ seemed to be an appropriate intervention to facilitate de-stress, and restore connectedness, wholeness and a sense of wellbeing for those who have been exposed to the fragmenting effects of traumatic stress.

Physiological coherence, an indicator of parasympathetic nervous system (PNS) activity, was monitored and recorded as Coherence Ratio (CR) using the *emWavePC* computer program while subjects practiced the intervention in a setting familiar to them, to show physiological effects of the holistic intervention.

Hypotheses

1. Practicing the CHI Process™ will improve physiological coherence as measured by *emWavePC* in trauma-exposed youth.
2. Practicing the CHI Process™ will improve perceptions of physical, emotional, mental and spiritual wellbeing measured by Subjective Units of Distress (SUD) scale in trauma-exposed youth.

Null Hypotheses

1. Practicing the CHI Process™ will not improve physiological coherence, measured as CR by *emWavePC* in trauma-exposed youth.
2. Practicing the CHI Process™ will not improve perceptions of physical, emotional, mental and spiritual distress measured by Subjective Units of Distress scale (SUDS) in trauma-exposed youth.

Importance and Relevance of the Study

All across the globe, natural and man-made disasters have been occurring with increased frequency, and large numbers of individuals and communities are exposed to unprecedented traumatic stress. There is an urgent need for evidence-based holistic interventions for individuals as well as communities. It is imperative that these interventions are low-cost, simple to replicate, easily taught and learned, and have the potential of being disseminated to large numbers of people, and adaptable to various settings and cultures. The CHI Process™ is an intervention that is consciously intended to be a response to this need.

This study showed that in five minutes of practicing the CHI Process™ combining heart-centered breathing, imagination and a focus phrase intended to create conscious connection with the universal energy system, trauma-exposed youth significantly improved physiological coherence and their sense of physical, emotional, mental and spiritual wellbeing. High physiological coherence indicates strong and prolonged parasympathetic nervous system response that reduces stress and optimizes entrainment and function of body systems, improves heart-brain interaction and activates healing.

Although this study was conducted in Sri Lanka, with a population of youth who lost parents and loved ones in the tsunami, it can potentially be replicated, with appropriate adaptations, for use in various settings and cultures, with individuals or groups of all ages.

Existing studies on interventions to improve physiological coherence have involved techniques that combined “heart breathing” with changing emotional states

to affect changes in physiological coherence.¹⁴ Rather than focusing on the effects of changing emotions, this study focused on creating awareness of oneself as an integral part of the whole universal energy system, using imagination and breath to create connection, and observed effects on physiological coherence using emWavePC technology, and perceptions of physical, emotional, mental and spiritual wellbeing using the SUD scale. This intervention seemed more appropriate for emotionally fragile youth dealing with the trauma of unresolved grief and loss of loved ones, in more traditional cultures in which personal emotions are downplayed. This study demonstrated significant improvements in physiological coherence, and physical, emotional, mental and spiritual wellbeing, without needing to focus on emotions.

One of the effects of traumatic stress is a sense of disempowerment and disconnection.¹⁵ Self-empowerment and restoration of a sense of connection with oneself, others and ones environment is essential to healing trauma.¹⁶ Being a self-care intervention, the CHI Process™ empowered participants to create an improved state of physiological coherence and wellbeing within themselves. It is quick, easily taught, costs almost nothing, and can be used anywhere, at any time, as often as one chooses. Its effects of enhanced physiological coherence and reduced feelings of distress are felt almost immediately, and results can be self-evaluated on the SUD scale. In addition, the progress relates to levels of physical, emotional, mental and spiritual distress.

An important feature of this study was the collection and correlation of both quantitative as well as qualitative data, presenting participants' narratives of their

experiences of the intervention beside the quantitative data, demonstrating a more holistic method of data collection that gives a personal face to the numbers.

The use of the highly portable emWavePC technology loaded onto a laptop computer enabled the PI to carry out this study in settings that were familiar to participants rather than in a contrived setting that did not reflect their day-to-day realities. It also enabled the PI to share data with individual participants at the end of their session after all their data had been collected and recorded. The graphics made it easy for them to comprehend the meaning of what they saw on the screen.

The use of the SUD scale and the verbal qualitative reporting gave participants an opportunity to connect with all aspects of their being in order to observe the effects of the intervention.

During adolescence important brain development takes place, as described in Chapter Two, and any kind of stress, especially traumatic and post-traumatic stress can inhibit blood flow to the brain, restricting the nourishment necessary to support optimum brain development. Improving physiological coherence can greatly benefit brain development at this stage of life. Providing trauma-exposed youth with a simple self-care tool such as the CHI Process™ that so significantly improves physiological coherence and thereby supports their brain development will make a difference not only at this stage of their lives, but will affect them for the rest of their lives.

This study was built on research done by many, most notably the HeartMath Institute, and could be yet another stepping stone in the continued study of physiological coherence, and holistic, subtle energy-based approaches to healing

trauma. It could, hopefully, make a humble contribution to the study of evidence-based, holistic, educational, self-care approaches to adolescent health and development, and mitigating the effects of traumatic stress and adolescent health and development.

Relevance to the field of Holistic Healthcare and Spirituality

This study is relevant to a broad spectrum of branches of holistic health and spirituality since the CHI Process™ is grounded in ancient traditions that do not distinguish between health and the balance that comes from integrating body and mind with Spirit. Because this study was focused on a trauma exposed population it is particularly relevant to holistic approaches to stress and trauma. The following fields, defined in the [Glossary of Terms](#) (page 33), are areas in holistic healthcare and spirituality the PI considers to be particularly relevant to this study: Energy Medicine, Energy Psychology, Integrative Medicine, Transformational Psychology, Transpersonal Psychology, and Spiritual Healing.

Since the CHI Process™ is essentially a holistic self-care practice, designed especially for individuals to create coherence within themselves through connection to the whole universal energy system. It is based on the concept that the healing of one is the healing of all. Since the individual is connected to the whole, any attention and care one gives oneself with consciousness and intention could potentially affect not only oneself but all the collectives that one is part of – family, community and the whole world and everything and everyone in it. Therefore it could have relevance to all the above healing approaches in which the patient or client is actively involved in their own healing process.

Scope of the Study

Delimitations

This study monitored and correlated quantitative and qualitative data pertaining to physiological coherence, perceptions of physical, mental emotional and spiritual wellbeing, and self-reports of physical sensations and thoughts of participants. It compared the data from the intervention group who practiced the CHI Process™ and the control group who sat with the eyes closed, breathing normally for three segments of 5 minutes each. All participants carried out their procedures individually.

The sample was a population of fifty-eight youths between the ages of 12 and 24, who had lost parents and family members in the 2004 tsunami and met all inclusion criteria, recruited for convenience and accessibility from three different groups in different locations within the same geographical area.

Limitations

The sample was drawn from populations conveniently accessible to the PI. No attempt was made to recruit from the entire population of 12 – 24 year olds who lost family members in the tsunami in the Hambantota area or in all of Sri Lanka, therefore generalizations about 12 to 24 year olds who lost parents in the tsunami cannot be made from this study.

As the PI was involved in all aspects of this study, it is possible that the results could be due to a “Researcher Effect” or the influence of intentionality. It is not known, through this study, whether other researchers with different backgrounds and experiences could replicate this study and achieve similar results.

Principal Investigator’s Background and Preparation

The PI was born and raised in Sri Lanka and lived there for twenty years prior to emigrating to the United States (U.S.). Since then, she has lived almost twenty years in the U.S. and almost another 20 years living and working internationally.

In the course of her doctoral studies, her research on the traditional healing practices of Sri Lanka led her to discover that her paternal ancestors were *vedamahattayas* (traditional Ayurvedic healers) and astrologers, who kept these traditions alive throughout the five centuries of colonization. This link to the lineage was broken with the conversion of her paternal grandmother to Christianity, cutting off a branch of the family tree to which the PI belonged. This discovery added perspective and meaning to doing her doctoral research project in Sri Lanka. She believes that intentionally connecting to her own energetic roots and branches through the CHI Process™ enabled her to connect to ancestral knowledge that, along with her exposure to other energy healing methods, presented her with a tool to care for herself and share with others.

The PI observes and experiences Sri Lankan culture from the dual perspective of both an insider and outsider. She perceives herself as a point of connection

between East and West, past and future. All of the above factors have helped prepare her indirectly to carry out this study.

Personal Preparation

Direct preparation for this project began in January 2005, shortly after the tsunami, with an overwhelming desire to contribute in whatever way she could to the healing of trauma resulting from the tsunami as well as from the devastating ethnic conflict that had raged in Sri Lanka for over 30 years. Although she did not personally experience either the tsunami or the war, she felt deeply troubled by the effects on the people of the island that was her country of origin, particularly the youth who lost family members.

When the tsunami hit, she resonated deeply with the grief felt by the mothers who were taken by the wave at having to leave their children, as well as the feelings of abandonment of the children who lost their parents. Interestingly, all attempts to go to Sri Lanka as a volunteer in tsunami relief work were thwarted until after she had attended to healing her own issues of grief and loss due to the sudden deaths of her father and brother during her own adolescence.

She arrived in Sri Lanka on the second anniversary of the tsunami, with the intention of working with children who had lost parents in the tsunami. Although, prior to arrival, she had no idea where she would find the children with whom she would work, she was serendipitously guided to the after-school program at which she ultimately conducted her pilot project.

Exploratory Project

Over a period of four weeks, the PI tested the receptivity of the children and adolescents to three self-healing energy modalities: Laying on of Hands for Energizing *Chakras*¹⁷, Finger Holds for Emotional Healing¹⁸ and Mandala Healing¹⁹. The grounding exercise, an earlier version of the CHI Process™ that the children referred to as *Ruksha Bhavanava* (Tree Meditation), preceded each of the modalities. Although the participants in the project liked all the modalities, they seemed to relate and respond to the *Ruksha Bhavanava* most favorably. The PI did not consider this exercise as a healing modality in and of itself, until one of the teenagers reported how profoundly comforting and peaceful it had been in her experience of it over a period of three weeks when she practiced it on her own.

The PI had not previously considered consciously connecting to the energies of Earth, Universe and All-That-Is, as a possible self-healing approach for Sri Lankan children and adolescents to mitigate the stressors of their young lives, and she decided to empirically study this intervention in the light of what had been revealed to her in the exploratory project.

PI's Practice and Development of the CHI Process™

The CHI Process™ is a tool that the PI has used in her own healing work, and shared with others to support their self-healing. Shortly after she completed her first level of Reiki in 1995, a friend taught her a grounding exercise in which she was asked to lean on a tree with her spine against the trunk, and imagine that she was

breathing with the tree. It was a profound and unexpectedly mystical and beautiful out of body experience in which she felt that she was looking at the whole earth from space. Later, when grounding and centering before and after Reiki sessions, she imagined herself first with her back against a tree, breathing with it, and then imagined herself inside the tree as part of the trunk, breathing as if she were part of the tree. As a Reiki Master, she taught this exercise to her students and clients. Over the years, the healing that she experienced and observed in herself encouraged her to scientifically explore the effects of the individual's conscious connection to wholeness that is the living matrix that includes the energies of Earth, Universe and All-That-Is. An example has been the significant decrease of chronic pain, in the neck, lower back and hip that she had experienced for decades.

From 2004 through 2007, courses of study at Holos University, including Inner Counselor,²⁰ Body Harmonization,²¹ Spiritual Contracts,²² Emotions and Intuition²³ and Mandala Healing²⁴ enabled the PI to systematically heal physical, emotional, mental and spiritual issues including grief, loss and abandonment issues in her own life. During this time, she continued to practice and teach the grounding and centering exercise as a prelude to all forms of energy healing she practiced and taught.

Since returning from Sri Lanka in 2007, the PI looked for ways to present the intervention in the simplest, most easily replicable way. While consciously connecting to the energies of Earth and Universe, she asked for guidance on how to simplify and clarify the procedure for presentation, especially to children and adolescents as an experiential rather than an intellectual exercise. There were long

periods when, unable to write, the PI worked in the garden, directly experiencing contact and consciously communicating with Earth, interacting with the elements and feeling the effects of universal forces through the cycles and seasons of the Earth, Moon and Sun. It was a personal and physical experience of what she was experiencing energetically and spiritually – a sense of wholeness or oneness with Earth and Universe and All-That-Is.

Following a Mandala Facilitator Training Retreat with Judith Cornell,²⁵ in meditation, the PI asked to create a mandala that would be symbolic of the healing work she was to do at this stage of her life. The Wholeness Mandala was revealed, and created. At first she called it The Hearts Mandala because of the three hearts at the center of the human, the earth and the universe, and the centering in the heart. In time, it became clear that this mandala was about being part of the wholeness of universal energy within and all around, and was an appropriate symbol of the wholeness trinity of Universe, Self, and Earth as one unit.

The colored pencil mandala on black paper was converted into the electronic image used in the intervention. It is literally and metaphorically the heart of the CHI Process™, and a portal for instant connection with wholeness of being. Further description and discussion of the Wholeness Mandala and the mandala process will be presented in Chapter 2.

With regular practice of the CHI Process™ the PI observed qualitative effects in her own life as well as in the lives of students and clients with whom she shared this procedure. These observations led her to the empirical exploration of CHI.

During the months preceding her return to Sri Lanka in 2008, the PI practiced the CHI Process™ regularly, several times a day for three to fifteen minutes at a time. During the six weeks in which she carried out the project, she practiced CHI daily, for ten to fifteen minutes each morning on the beach, and continued the heart-centered So-Ham breathing during her 30-minute walk on the beach.

Despite challenges of recruiting participants and time constraints that affected the progress of the project, she felt peaceful, calm and relaxed, and deeply connected to the forces of Nature and a sense of connection with herself and with Earth, Universe and All-That-Is. On most days, she rated herself at 0 or 1 on every aspect of being - physical, emotional, mental and spiritual on the SUD scale, and felt deep gratitude for the ability to do this work within the time constraints.

Glossary of Terms

Autonomic Nervous System (ANS). A part of the nervous system located in the Brain Stem (see Reptilian Brain or R-Complex in Chapter 2, Section 1) that is charged with survival and maintenance of body systems. It manages the stress and de-stress responses of the body – including heart beat. It has two expressions:

Parasympathetic Nervous System (PNS). This is the part of the ANS responsible for the maintenance, growth, development and repair and restoration of the body systems. It is inhibited by the SNS in times of stress and trauma in order to focus energy on survival.

Sympathetic Nervous System (SNS). The part of the ANS that manages constriction in the oscillatory function in the body – including the stress response.

coherence. Integration of diverse elements, relationships, or values. A logical, orderly, and aesthetically consistent relationship of parts.

coherence, physiological. Synchronized interactions among multiple body systems, indicative of Parasympathetic Nervous System (PNS) activity.

coherence, high. Indicates parasympathetic nervous system activity, in which all the body systems are in de-stress mode, conducive to optimum entrainment and functioning of all body systems.

coherence, low. Indicates sympathetic nervous system activity and low HRV.

coherence, medium. Indicates that the body is in transition between sympathetic and parasympathetic nervous system activity.

Coherence Ratio (CR). The percentage of time during a timed HRV monitoring period in which the body is in high coherence.

Creative Holistic Integration (CHI). A holistic self-care protocol for stress relief combining visualization, imagination, heart breathing, and a mantra /focus phrase.

emWavePC. A computer program designed as a heart rhythm coherence feedback system that monitors and displays HRV, CR, Coherence Score and Heart Rate created by HeartMath. It was originally called Freeze Framer. emWavePC monitors HRV using a plethysmographic finger sensor or ear sensor plugged into a USB port on the computer.

guided visualization. Facilitated mental imagery.

heart rate variability. (HRV): The inter-beat heart rhythms that reflect Autonomic Nervous System (ANS) activity. High heart rate variability appears as an orderly, harmonious sine wave like pattern on an electro-cardiograph (ECG) and emWavePC screen, while low HRV appears jagged and disorderly.

heart-breathing. Imagining inhaling and exhaling through the heart instead of the nose.

holistic. Pertaining to wholes or complete systems consisting of parts that are smaller but whole systems.

Holistic Approaches:

Energy Medicine. This is a form of healing in which energy itself is the medicine. Veritable energy treatments use measurable wavelengths and frequencies such as sound vibrations, electromagnetic phenomena such as magnets, laser beams and a variety of rays from the electromagnetic spectrum.²⁶ Putative energy refers to biofield or life-force energy that has not been measured to date, but has been used for healing since antiquity in

traditional healing cultures all over the world.²⁷ It is known as *chi* in China, *Ki* or *Qi* in Japan and Korea and *Prana* in India. Laying-on-of Hands (LOH), acupuncture, Reiki, Chi Gong, Therapeutic Touch, Quantum Touch, and Healing Touch are some examples of more popular forms of energy medicine practiced today. Existing research have most often focused on healer-healee rather than self-healing processes.

Energy Psychology (EP). EP is an emerging field in psychology that focuses on the “treatment and relief of those suffering from emotional challenges such as addictions & compulsions, anxiety, depression, limiting beliefs, personality disorders, phobias, stress, and trauma.”²⁸ Interventions involve “the human vibrational matrix of three major interacting systems” derived from ancient Eastern healing traditions of China and India involving Energy Pathways (meridians & related acupoints), Energy Centers (chakras) and Energy Systems – the human biofields that envelop the body.²⁹

Integrative Medicine. Combines holistic and naturopathic with conventional treatments, it could potentially benefit from the CHI Process™ by having patients practice it as a preliminary or adjunct to treatments, since physiological coherence supports healing and optimum functioning of all body systems.

Spiritual Healing. Refers to “healing systems based on the principle of spirituality and its effect on well-being and recovery.”³⁰ It has also been defined as a “systematic, purposeful intervention by one or more persons aiming to help another living being (person, animal, plant or other living

system) by means of focused intention, hand contact, or *passes* to improve their condition.”³¹ Spiritual healing may be attributed to divine beings, saints, angels, “higher powers,” spirits and/or universal and cosmic forces, energies channeled through the healer, or self-healing powers innate in the healee,³² intention, or interactions of all of the above.

Transformational Psychology. The study of spiritual and psychological approaches integrating ancient spiritual wisdom, contemporary psychology and subtle energy methodologies to bring about intentional change and self-integration.

Transpersonal Psychology. The study of self-transcendent and spiritual states of consciousness and human experience, and humanity’s highest potential. Transpersonal Psychology emphasizes characteristics of and the interactions between the Super Conscious / Spiritual / Transcendent and the physical, emotional and mental aspects of being. The transpersonal can be compared to a vast ocean and the personal to a small stream. Since the stream is a part of the same system as the ocean, it feeds and is fed by the ocean, constantly interacting as a whole system.

mandala. Sanskrit word meaning circle, used as a symbol of wholeness in sacred art. It is commonly used in Sri Lanka and India to describe a circular image.

mantra. A Sanskrit word for a repetitive word or phrase meant to focus the mind in the meditative process. The subtle sound vibrations created by repetition are intended to expand awareness or consciousness.

Morphic Resonance. A process proposed and researched by Rupert, in which the forms and behaviors of the past shape living organisms in the present. For example, behaviors or knowledge learned previously by an individual or group can enable others to learn those behaviors or knowledge more easily.

Perceptions of Wellbeing. An individual's assessment of their own state of wellness.

Reiki. Japanese for "Energy of Spirit" or Universal Energy - a form of energy healing introduced by Mikao Usui of Japan that uses healing symbols and laying-on of hands to facilitate healing in oneself or others.

So-Ham. An ancient breath mantra meaning "I Am That" or "I am Other," used in the ancient Siddha tradition. It is also known as "Ham-Sa". It is coordinated with the rhythm of inhalation and exhalation, inhaling "Ham" and exhaling "So" or "Sa." The vibrations are said to create an awareness of the individual's relationship and connection to the Universal Self.

Sri Lanka. The tear drop shaped island off the Southern tip of India.

Subjective Units of Distress (SUD) scale. A quantitative assessment of one's level of discomfort /comfort on a scale of 0 to 10, zero being the best possible, and 10 being the worst possible and 5 being neutral – neither good nor bad.

Wholeness Mandala. A circular symbol representing the human as part of the universal energy system, depicting the energetic whole of the human organism.

Three-wheeler. Motorized three wheeled vehicles, also known as Auto Rickshaws. Tuk-Tuks or Bajaj, commonly hired to transport people and goods over short distances in Sri Lanka.

torus. A three-dimensional shape that looks like a donut, actually a circle that has been rotated around an axis.

tsunami. A very large ocean wave caused by an underwater earthquake or volcanic eruption.

wholeness. All aspects of being, including past, present, future, Earth, Universe and All-That-Is, the entire energy system that supports all of life that each individual is part of. In the context of this study, humans and Earth are considered to be whole parts of greater, whole universal systems.

CHAPTER 2: REVIEW OF LITERATURE AND CONCEPTS

Yeah, we all shine on, like the moon, and the stars, and the sun.
John Lennon

This chapter reviews and cites the work of those who paved the way and guided this study and in the process provided the rationale for carrying out this research. It is arranged in ten sections, covering topics that are key aspects pertaining to this study.

Section One presents background information on Sri Lanka and Section Two opens a window to the world of trauma-exposed youth in general and Sri Lankan youth in particular, revealing some of the harsh realities they face in their lives. Section Three reviews physiological and psychological effects of stress and trauma on youth, collective trauma, and trans-generational effects of trauma. Section Four takes a look at the Quadrune Brain, and the fascinating brain of the adolescent and its evolutionary importance. Section Five explores the heart - its close relationship with the brain, as well as its connection to physiological, global and universal coherence. Section Six focuses on the breath. Section Seven focuses on the use of imagery and the mandala in healing. Section Eight describes the CHI Process™ in all its aspects and components. Section Nine discusses the theological and philosophical perspectives on Wholeness, and Section Ten the theoretical framework on which this study was developed, and its relationship and relevance to holistic approaches.

Section 1: Background Information on Sri Lanka

Sri Lanka is the tear-drop shaped tropical island in the Indian Ocean, off the southern tip of India. [[Appendix A](#)] Of its population of over 20 million, 74% are Sinhalese, 18% are Tamil, 7% are Muslim (of Indian, Pakistani, Arab and Malay origin), and 1% of other ethnicities.³³ Most of the Sinhalese majority is Buddhist³⁴ and most of the Tamil minority Hindu.³⁵ A small minority of Sinhalese and Tamils practice various forms of Christianity, brought to the island by the European colonizers – the Portuguese, Dutch and the British who ruled Sri Lanka from 1505 A.D. until 1948 A.D.³⁶

During the colonial period, the Sinhalese Buddhists were marginalized, and the minority who spoke the languages of the colonizers, who converted to Christianity or who were educated in the European schools became the upper class of Sri Lanka. When the British left Sri Lanka in 1948, a new social order had been created in which the English-educated minority living in city centers, regardless of caste and ethnicity formed a new upper class. Traditional communities were marginalized.

Since independence, Sri Lanka has been a democracy, using a parliamentary system and duly elected governments. The Sinhalese Buddhist minority, led by the Buddhist clergy, began to agitate, demanding recognition and a re-instatement of Sinhala rather than English as the official language.

In the past 50 years, Sri Lanka has experienced social unrest, political upheaval, ethnic violence, bombings, landmines, internal and external displacement, emigration, failed peace talks and ceasefires, globalization, environmental disasters

from monsoon floods and mudslides to a devastating tsunami., and most recently, a fierce and bloody resurgence of ethnic violence. For almost three decades, Sri Lankan society has experienced unprecedented social and military violence that has claimed the lives of over 100,000³⁷ and internally displaced over 300,000 since 1983.³⁸

In the late 1960's through the 1970's the Sinhala-educated Buddhist youth began to agitate against what they considered to be an unjust system run by the urban English-speaking upper class minority, that limited their access to higher education and jobs. Over the years, the leaders of this militant youth movement have taken their place in the political arena, and emerged as the governing political party.

Since 1983, ethnic violence between Tamil separatists and Government forces has ripped Sri Lanka apart. Between January and May 2009, a massive violent offensive by the military forces defeated the Tamil separatists and ended the fighting, UN agencies estimated that a further 7,500 civilians were killed and over 15,000 wounded.³⁹ Almost 300,000 civilians, wounded, malnourished and traumatized without access to medical care or adequate supplies, after months of being caught in the crossfire continue to be interned in overcrowded government-run camps in the Northern Province for over six months.⁴⁰ As of the end of February 2010, about 100,000 still remain in camps.⁴¹

While the effects of the one-time natural disaster of the tsunami were traumatic, and continue to affect the lives of those who were directly touched by it, even five years after the event.⁴² However, almost three decades of civil war have

had far more significant effects on communities who lived with ongoing violence in their environment.⁴³

It is important to note that due to the diversity that exists within Sri Lankan society, the levels of trauma exposure varies from high in the North – the hub of the civil war, affected also by the tsunami, to areas in the South Coast that were affected by the tsunami, to the major cities which were on high alert due to the threat of terrorism. Taking a holistic perspective, it can be surmised, that the trauma affecting any group or area would also affect society and the country as a whole.

Section 2: Trauma-exposed Youth

*You are a child of the universe, no less than the trees and the stars:
You have a right to be here. And whether or not it is clear to you,
no doubt the universe is unfolding as it should.*

Max Ehrmann, *from Desiderata*

In the best of times and circumstances, adolescence is a chaotic and confusing stage of life. For those who have been exposed to trauma, or who live in conflicted communities where continued violence, abuse, armed conflict, substance abuse, human trafficking, and sexual exploitation, is a way of life, and presents far greater challenges to youth. Often robbed of their childhood, they are in a critical period of life on the threshold of adulthood and parenthood, developing attitudes, values and behavior that will affect their lives as well as the lives of the collectives they are part of – family, community and society as a whole.

International Concerns for Trauma-Exposed youth

A special United Nations report on children and youth living in areas of armed conflict notes that prolonged violence directly affects the lives of adolescents, significantly interfering with their development, causing severe distress and depression, and in the worst cases suicide.⁴⁴ With adult populations also traumatized by the realities they face, youth are left with no role models, guidance or support.⁴⁵ In the absence or incapacitation of adults, adolescents become the heads of families,

bearing responsibility for younger siblings.⁴⁶ Youth are also often directly involved in the violence as combatants, finding community and identity in the armed forces and militia groups.⁴⁷

The U.N. report recommends that adolescent “education, training and health care needs be given priority attention to assist their well-being and to discourage their participation in armed conflict, and the trafficking, prostitution and drug abuse that often exploits youth. This cannot be achieved without the participation of youth in their own personal and community development.” It also states, “It is vital that all forms of external help be given in such a way that they enhance people’s ability to help themselves.”⁴⁸ One way in which programs have succeeded in giving adolescents a sense of meaning and purpose is to involve them in developing and implementing programs for younger children.”⁴⁹

Trauma-exposure of Sri Lankan Youth

Many children and adolescents have witnessed or experienced deaths or disappearances of family members and friends. Those who are most vulnerable have been exploited as prostitutes⁵⁰ and as child soldiers.⁵¹ These statistics are symptoms of the deep distress and chaos that is affecting Sri Lankan society, especially its adolescent population.

Harendra De Silva exposes historical and current practices of child abuse in Sri Lanka.⁵² He reveals widespread sexual abuses of children and adolescents by teachers, adult family members and friends, organized sex tourism for male homosexuals and heterosexuals, neglect, child labor in domestic and agricultural settings, and conscription in armed conflict.⁵³ The United Nations Children Fund

(UNICEF) reports that domestic and sexual violence perpetrated against children and adolescents remains a largely unreported crime in Sri Lanka, and that the country's judicial system is not adequately equipped to provide the special protection children require.⁵⁴

Over a million Sri Lankans, sixty to 80% of whom are economically challenged women from rural areas, have migrated to the oil rich Gulf and Middle Eastern countries as domestic workers.⁵⁵ Many of them are mothers who leave their children in the care of husbands and extended family to provide financial support for their families. Since Sri Lankan men do not traditionally attend to the running of the home and caring for the family, this situation creates tension and stress on the children, particularly adolescent females, who often take on the responsibility of caring for younger siblings and housework in the absence of the mother. In all parts of the country, a high rate of alcoholism, substance abuse and domestic violence have been observed among male single parents,⁵⁶ including those whose wives are working abroad. The limited data on sexual violence against adolescents shows that many rape victims who seek medical attention were violated by family members when their mothers were employed abroad.⁵⁷

WHO reports that in 2005, Sri Lankan males between the ages of fifteen and thirty-four had the second highest male suicide rate in the world at 49.6/100,000 population, and the highest female suicide rate at 19 per 100,000. This could indicate a lack of hope and an inability to cope with the stressors of life.⁵⁸ A cross sectional study in the south coast town of Galle showed that 50% of adolescents had elevated symptoms of depression that the researchers associate with alcohol use, smoking and

low physical activity.⁵⁹ This study does not take into consideration other environmental, psycho-social factors that may have lead to the desperate choices made by these youth. The World Health Organization (WHO) reports that while the officially reported suicide rate has dropped, the suicide rate is still over 20 suicides per 100,000 population.⁶⁰ These statistics exclude data from the internally displaced and war-ravaged populations of the north and north east, where suicide is known to be much higher than in other parts of the island.⁶¹

In December 2004, a tsunami of unprecedented proportions claimed the lives of over 35,000 Sri Lankans in north, east and south coasts of the island, injured over 21,000,⁶² and initially displaced approximately 1 million persons.⁶³ [[Appendix B](#)] Based on surveys of camps for the internally displaced, UNICEF estimated that almost 4000 children lost one parent, and over 950 children lost both parents.⁶⁴ A year later, it was estimated that all but twelve of these children were living with extended family.⁶⁵ In these reports, unless stated, unmarried adolescents and youth are counted as children. For Sri Lankan youth who are economically dependent on their parents and extended family well into their twenties,⁶⁶ the loss of close family takes on yet another dimension.

A study conducted with adolescents in South Sri Lanka shows that tsunami-exposure and psychosocial losses such as loss of close family, loss of homes and extended periods of displacement produced symptoms of depression and Post-Traumatic Stress Disorder (PTSD).⁶⁷ The study also showed that the mental-emotional states of their mothers affected that of the adolescents.⁶⁸ Findings of the

pilot study emphasized the need for more systematic study of adolescent mental health following exposure to disasters. Another study, conducted almost two years after the tsunami in a southern coast Sri Lankan town, found that a large minority of adults reported significant somatic and psychiatric symptoms and impairment.⁶⁹

Within a month after the tsunami, 264 school-age children (including adolescents) in three tsunami affected coastal communities were assessed for PTSD symptoms.⁷⁰ The study found a prevalence rate of 14% and 39% of PTSD symptoms related to the tsunami caused by trauma exposure and family loss. Between 5% and 8% of PTSD symptoms were found to be unrelated to the tsunami, but were due to previous traumatic events.⁷¹

A sample of 971 male (38.7%) and female (61.3%) high school students, 6% of the target population in the south coast of Sri Lanka, severely affected by the tsunami, were surveyed using an anonymous questionnaire.⁷² 17.5% females and 16.5% males reported that they had been sexually abused at least once during their lifetime.⁷³ Although the economically disadvantaged people in the south coastal areas who were further devastated by the tsunami have been relocated to new housing, and are receiving various handouts and financial aid from the government and private donors, they still struggle with loss of livelihood, and the physical, mental and emotional effects that are part of their day to day reality.⁷⁴

Dr. Daya Somasunderam⁷⁵ notes that in the immediate aftermath of the tsunami, teenage boys and young men living in Internally Displaced Persons (IDP)

camps had been heroic in saving many lives and actively participating in the rescue efforts, and organizing post-tsunami programs and services.⁷⁶ Many of them lost parents and family members, and in the aftermath of the tsunami rescue operations were overcome by grief.⁷⁷ However, in some families, they were blamed for having rescued only some family members and not others.⁷⁸

Guilt compounded their grief.⁷⁹ Alienated and disillusioned by family, at loose ends due to interruption of the education system, unemployed and unsupported, many youths found support in street gangs and in violent militant groups.⁸⁰ Others abused alcohol, and were perpetrators of sexual violence in the IDP camps.⁸¹

Greater than the problems created by the tsunami are those created by ethnic conflict and civil war. In a qualitative study conducted in northern Sri Lanka based on participatory observation, key informant interviews and focus group discussion at the community level, Somasundaram observed that in the north and north east, over three decades of violent conditions of war and resulting internal displacement, families and communities changed significantly.⁸²

Changes included single parent families, lack of trust among family members, changes in significant relationships and childrearing practices.⁸³ Other observations included the breakdown of traditions and institutions, lifestyles, social norms and ethics. Fundamental social changes were observed more due to the war than due to the tsunami.⁸⁴ Communities were found to be more dependent, mistrustful, passive, silent, and lacking leadership.⁸⁵ These changes occurred more due to the long-term war conditions than the one-time tsunami.⁸⁶

Section 3: Effects of Stress and Trauma

Physiological effects of stress and trauma

Stress causes instinctive psycho-physiological responses of fight or flight as a natural reaction to any kind of stressful or traumatic situation.⁸⁷ When the brain perceives a threat of any kind, it sends out a body-wide alarm through the sympathetic nervous system (SNS).⁸⁸ The adrenal glands release adrenaline, the stress hormone, and the heart pumps harder and faster to send blood to the arms and legs to support fight or flight action.⁸⁹

All parasympathetic activity is suppressed, so that no energy goes to growth, digestion, healing and immune system function or mental or intellectual activity, in favor of survival.⁹⁰ For if the body does not survive the threat, there is no need for the other functions.⁹¹ All energies are focused on survival. This would be appropriate if humans were still living in caves and were dealing with attacks from wild animals. However, most everyday stressors faced by humans do not require physical fighting or fleeing, and therefore the body prepares for fight or flight, but cannot act on the impulse.

When the expanded energy supply is suddenly arrested during the fight or flight response, and the available energy supply cannot be fully utilized, the energy freezes, and creates energy blocks.⁹² When the frozen residue of energy is not released or resolved, it remains trapped in the nervous system, wreaking havoc,⁹³ and changing the normal patterns of energy flow in the body. Prolonged or continued

experience of traumatic stress creates new abnormal energy patterns and blockages that, if not released, can be somatized in the body, and finds expression as mental, emotional and physical disease.⁹⁴ One of the psychological effects of traumatic stress is a sense of disempowerment and disconnection.⁹⁵ Self-empowerment and restoration of a sense of connection with oneself, others and the greater environment is essential to healing.⁹⁶

Psychological effects of stress and trauma

The National Institute of Mental Health (NIMH) lists the following psychological signs and symptoms of traumatic stress in adolescents:⁹⁷

- Flashbacks to the event (flashbacks are the mind reliving the event)
- Avoiding reminders of the event
- Drug, alcohol, tobacco use and abuse
- Antisocial behavior i.e. disruptive, disrespectful, or destructive behavior
- Physical complaints
- Nightmares or other sleep problems
- Isolation or confusion
- Depression
- Suicidal thoughts

Adolescents may feel guilty for not preventing injury or deaths. They also may have thoughts of revenge. Prolonged problems after a traumatic event may include grief, depression, anxiety and PTSD, and possibly display a range of symptoms that include:

- Re-experiencing the event
 - Through play
 - Through trauma-specific nightmares/ dreams
 - In flashbacks and unwanted memories
 - By distress over events that remind them of the trauma
- Avoidance of reminders of the event
- Lack of responsiveness
- Lack of interest in things that used to interest them
- A sense of having “no future”
- Increased sleep disturbances
- Irritability

- Poor concentration
- Be easily startled
- Regress to behavior from earlier life stages.

Traumatized people tend to get stuck at the mental and emotional level at which they were traumatized, and may continue to behave, even years later, as though they were at the same stage of development they were in when the trauma occurred.⁹⁸ When trauma is not addressed or resolved, it could have consequences for the future, not only for those who were directly traumatized, but also for their progeny, generations after the original trauma occurred.

Collective and Trans-generational Effects of Trauma

Vamik Volkan, having studied the effects of ethnic wars and natural disasters in a number of countries, theorized that when a large group of people experience trauma, the disempowerment, shame and humiliation are imprinted on their psyches.⁹⁹ Perennial mourning over the loss of group identity, dignity and self-esteem is one by-product. In an attempt to mourn the collective losses and release the group's perceptions of victimization, conscious and unconscious communications are transmitted from generation to generation.¹⁰⁰ He proposes that as these transmissions occur, the emotional impact of the trauma is transmitted and in some way re-experienced by the subsequent generations.¹⁰¹ Eventually, a collective identity is created and the progeny are affected by subconscious "memories" of the disempowerment and traumatic stress of their ancestors.¹⁰²

Although little, if any literature exists at this time on trans-generational effects of war and natural disasters in Sri Lanka, studies have been conducted in relation to progeny of Holocaust survivors,^{103,104} families of torture victims¹⁰⁵ and successive

generations of Australian Aboriginal families¹⁰⁶ that reflect this phenomenon.

Furthermore, in a 40-year follow-up of Holocaust survivors, John Sigal and Morton Weinfeld found that anecdotal reports suggest that Holocaust survivors who were adolescents and young adults at the end of the World War II manifested more paranoid and depressive /masochistic symptoms as parents than those who were younger children at the end of the war.¹⁰⁷

This phenomenon is frequently experienced in therapeutic processes such as Family Constellations¹⁰⁸, Inner Counselor Generational Process.¹⁰⁹

Considering the findings of trans-generational transmission of trauma in other parts of the world, facilitating a change in perceptions of Sri Lankan youth from disempowerment, fragmentation and victimhood to those of wholeness, coherence and self-empowerment may be crucial to averting similar effects in the future. It is also possible that the affects observed in the present may be due to trans-generational transmission of trauma, from centuries of disempowerment, especially during the colonial years.

Section 4: The Fourfold Brain

The day will come when, after harnessing the ether, the winds, the waves, the tides, and gravitation, we shall harness for God the energies of love. And, on that day, for the second time in the history of the world, man will have discovered fire.

Pierre Teilhard de Chardin (1881-1955)

In the early 1950's, Paul McLean presented the Triune Brain theory that proposed that the human brain reflects the various stages of vertebrate evolution: the

reptilian brain, the paleo-mammalian brain, and the neocortex or the rational primate brain of which the most recent and advanced developments are the prefrontal cortex or frontal lobe, most highly developed in humans.¹¹⁰ Although the prefrontal cortex is part of the neocortex, because it has a clearly different function than the neocortex,

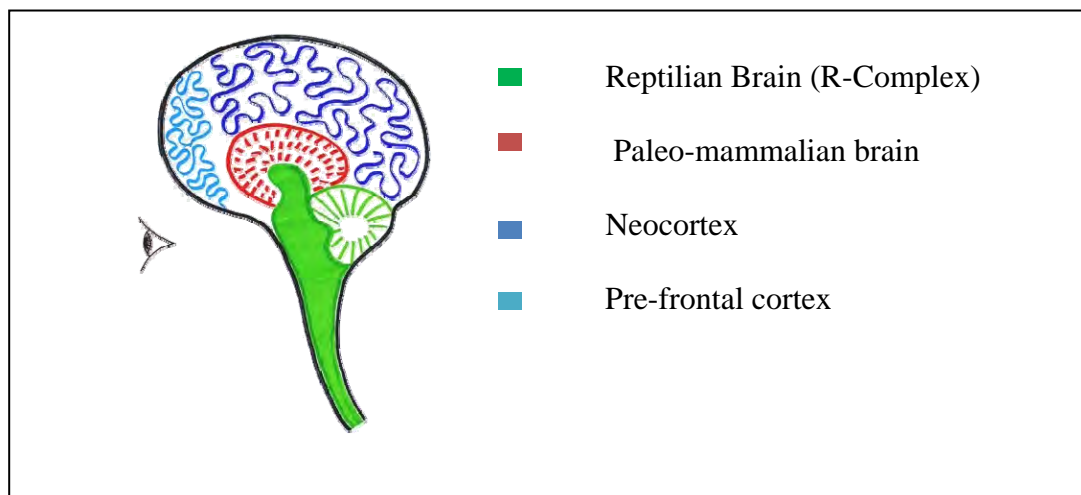


Figure 1. The Four Fold or Quadrune Brain

Source: Connie Barlow, Evolutionary Psychology Charts.¹¹¹

it is considered to be a fourth brain that is meant to serve the demands of a more evolved species living in a different world than the reptilian ancestors.

Neuroscientists originally believed the brain was divided into two sections- the hindbrain, consisting of the reptilian brain, and the forebrain consisting of the old mammalian or paleo-mammalian brain. Today they identify the new mammalian brain also known as the neocortex, of which the pre-frontal cortex is the most recent addition, that has evolved to provide for human survival in the current phase of evolution.

The Reptilian Brain

The oldest part of the brain is the reptilian brain or R-complex, consisting of the brain stem and the cerebellum. Its main purpose is physical survival and maintenance of the body. The cerebellum is in charge of movement. The brain stem houses the autonomic nervous system (ANS), and is responsible for growth, digestion, circulation, breathing, immunity and the "fight or flight" stress response. It also plays an important part in establishing territory, reproduction and social dominance. R-complex behaviors are automatic, patterned and highly resistant to change. Reptilian relationships with "other" can be summed up as "something to mate with, eat, or be eaten by."¹¹² If it is either of the former, go for it and if it is the latter run from or fight it.¹¹³ This part of the brain is charged with activating tried and true survival mechanisms that ensure survival in any kind of stress or trauma - physical or emotional.¹¹⁴

The Mammalian Brain

The second brain to evolve was the paleo-mammalian, brain that governs the limbic system and the primary centers of emotion and cognition.¹¹⁵ This part of the brain has to do with the survival of offspring, and therefore primal, sensorial aspects related to food, sex and bonding are also connected to the limbic system, as are expression and mediation of feeling and emotion related to attachment.¹¹⁶

The amygdala, which associates events with emotion, and the hippocampus, which converts information into long term memory and enables memory recall are

both part of the mammalian brain.¹¹⁷ Repetition of emotions and behavior supports the creation of nerve networks in the hippocampus that enhance memory storage.¹¹⁸ This structure enables learning through experience as well as study.¹¹⁹ The hippocampus selects which memories to store, possibly by “emotion tagging” events so that they can be recalled.¹²⁰ The amygdala relates situations that arouse feelings such as anger, fear, pity and outrage. Because the limbic system links emotions with behavior, it can override the R-complex patterned behavior.¹²¹ These protective, loving feelings and emotions become more intense and complex when the limbic system interacts with the neocortex.¹²²

The Neocortex

The neocortex, also known as the cerebral cortex, is a part of the brain that emerged with the primates, and is the largest section of the brain, taking up five sixths of the brain space. It fits like a cap over the older parts of the brain. It is the center of language, speech and writing. It is responsible for logic, and operational thinking, and allows us to remember the past, and plan for the future.¹²³ The two specialized parts of the neocortex makes voluntary movement and processing sensory information possible.¹²⁴

There seems to be interaction between the three brains through a network of nerves, linking thinking and emotions; each influencing the other parts.¹²⁵ This interaction of memory and emotion, thought and action is the foundation of personality that makes each person unique.¹²⁶

The Pre-frontal Cortex

The most recently developed part of the neocortex, the frontal cortex, is the most developed in humans. The neocortex is similar to the brains of other mammals, but the prefrontal cortex seems to be unique to humans, and is the most advanced and evolved of the brain's structures.¹²⁷

Joseph Chilton Pearce describes the independence and interdependence of the brain structures:

The reptilian brain was hundreds of millions of years in the making and perfecting. The foundations of all subsequent brain evolution to this day, this neural structure gives us and all other mammals our sensory-motor system, with its association with our physical body and a rich heritage of survival and maintenance instincts. All neural developments since have depended on this ancient foundation. We couldn't have evolved or survived without our reptilian ancestor setting up shop in our basement – nor could we survive as humans were that original reptilian temper not modulated a bit by the higher structures built upon it.

This duality - the independence and interdependence of each of our neural structures – can cause trouble should their integration or entrainment fail. Failure to integrate can lead to this cantankerous trio - reptilian id, mammalian ego, and neocortical superego – to erupt in near constant scraps over who gets to play king of the mountain. Indeed, confusion over which of the three gets to integrate the other two into its service is the source of cheap theatrics cluttering life's stage in what should be a great ongoing drama.¹²⁸

During each phase of life the human goes through the various stages of evolution. All parts of the brain exist at birth except for the prefrontal cortex, which begins developing after the baby is born. The reptilian brain develops in utero, and continues throughout infancy through the stage when the baby moves on the belly. The development of the old mammalian brain matures during the stage when the baby

crawls on hands and knees. In early to mid-adolescence an acceleration of brain development takes place that will bring the brain into its maturity. Chilton Pearce writes, that throughout the developmental stages of childhood,

...the prefrontal lobes parallel the growth of the other systems because they have an important task at hand. Their main objective at this time is to govern each module or lobe of the threefold brain in its sequential unfolding in such a way that each older system forms according to the needs of the prefrontals in their secondary stage of development during the child's mid-adolescence. The task of the prefrontals is to turn the unruly reptilian brain, old mammalian brain and neocortex into one civilized mind that it may access later. It is only when this has occurred that the secondary prefrontal stage can unfold as designed.¹²⁹

Recent research on brain development reveals the importance of adolescence in the evolutionary process.

The Adolescent Brain: Evolutionary Significance

A longitudinal study undertaken by the National Institute of Mental Health (NIMH) tracks brain development of the same 145 subjects every two years using Magnetic Resonance Imaging (MRI).¹³⁰ Brain activity of adolescents shows that at this stage of life an accelerated development of the neo-cortex takes place.^{131,132} The study has revealed that shortly before puberty there is a second wave of overproduction of gray matter in the frontal lobe, the thinking part of the brain, that manages planning, impulse control and reasoning.¹³³ Also observed was a sort of pruning process in which neural connections or synapses that are exercised are retained and developed whereas those that are not used or exercised are lost by young adulthood.

Comparing MRI scans of twenty-three to thirty year olds and twelve to sixteen year olds, the presence of myelin implying maturity and stronger, more efficient connections within grey matter was observed.¹³⁴ The largest differences were observed between teens and young adults. Increased myelin indicated increased cognitive and “executive” functions, while spatial, sensory, language and auditory functions were shown to be mature in the teen brains. Brains of schizophrenics in their late teens and early twenties showed decreased “executive” functioning.

In another group of studies, adolescent brains are being studied through MRI scanning to observe teen brain activity when identifying emotions on faces shown on a computer screen as compared to adults.¹³⁵ MRI scans of young teens that typically fared poorly in the task showed activity in the amygdala that processes reactive emotions such as fear, rather than activity in the frontal lobe.¹³⁶ It was observed that as the subjects got older, brain activity shifted to the frontal lobe, showing more mature perceptions that paralleled structural changes in temporal lobe white matter that indicated maturation.¹³⁷

Maria Montessori theorized that from birth through adolescence humans go through a series of sensitive periods during which they are focused on a particular aspect of learning and development. She observed that adolescence is a sensitive period for self-expression, social and moral development and autonomy. Rapid and intense physiological growth is taking place at every level.¹³⁸ She writes,

This is a time of crisis, during which all glands of internal secretion are affected, and through them, the whole organism. The body is growing rapidly but not at a uniform rate, and results in a disturbance of functional equilibrium.¹³⁹

Anodea Judith, draws a connection between chakras and stages of development, and proposes that adolescence is connected to the sixth chakra.¹⁴⁰ She writes,

This is the emergence of Piaget's *Formal Operations* stage where imagination helps the child develop his symbolic conception of the world. For adolescents, it marks a period of re-examining their social identity.- this time making a conscious choice...There may be a dawning interest in spiritual matters, mythology or symbolism...When allowed to mature, this leads to the formation of *archetypal identity*, whose interest is self-reflection.¹⁴¹

The CHI Process™ offers adolescents a symbolic, archetypal identity as part of Earth and Universe and All-That-Is, that is congruent with Judith's presentation of what adolescents need at the stage of life they are in.

Joseph Chilton Pierce suggests that in adolescence, the brain of childhood goes through a transformation in which rapid growth takes place to enable the acquisition of all that is needed to move out of the parental field of influence into a new reality which supports the evolutionary process.¹⁴²

Little by little we will manifest a mature intuitive capacity beyond the limited form intended for children...our childhood bonding with parent and family may have been deficient, leaving us alienated and unable to relate to others, but in a post-biological development, a far greater binding unfolds, embracing an infinitely wider realm and making the old deficiencies of no consequence. All that is required is that we put our shoulders to the plow of the post-biological stage and not look back. No matter how crippled our earlier development may have been, no matter how severe the ensuing nightmare may be for us now, there are no criteria for responding to nature post biological plan other than our willingness to respond. No therapy on our part is required, and no turning back to try and patch ourselves up will do any good....If our years up to now have bred in us a bad dream, all we are asked to do is leave that dream behind. The post biological path to maturation is a process of waking up. In no way are we required to go back into that dream and straighten out its mess. Once we make the shift to the new agenda, we can walk away from that dream with impunity.¹⁴³

From what has been revealed about the teenage brain, adolescence is the prime time for new brain growth. Therefore increased coherence is all the more important in order for optimum growth and development to take place.¹⁴⁴ Because during adolescence, neural connections that are active are strengthened and those that are not are lost, then it may be possible for those who have been exposed to trauma to practice interventions such as the CHI Process™ that so easily and significantly improve coherence, to create and strengthen synapses for physiological coherence and connection to wholeness.

Section 5: The Heart

As a society, we need to shift our basic attitude about how we educate our younger generation. Something is fundamentally lacking in our modern education when it comes to educating the human heart. As people begin to explore this important question, it is my hope that we will be able to redress the current imbalance between the development of our brains and the development of our hearts.

Dalai Lama

The heart is at the hub of an electromagnetic communication system in which energy is transmitted not only to the brain and every cell within the body, but also affects cells *in vitro* outside the body and other people within its expansive field several feet away.¹⁴⁵ Its amplitude is approximately sixty times greater, and its magnetic component that is about 5000 times stronger than that of the brain.¹⁴⁶ The heart center is at the core of our being, and it is theorized that the heart is the point at which the body, emotions, consciousness and energy converge.¹⁴⁷ This would make

it the center of the energy body / spiritual being. Taoists believe that “the original spiritual energy that feeds the Shen /spirit is housed in the heart.”¹⁴⁸ Caroline Myss calls the heart the center of emotional power, and writes that it “resonates to our emotional perceptions, which determines the quality of our lives far more than our mental perceptions.”¹⁴⁹

In Sanskrit, *Chit* means “unconditioned” or “Pure Consciousness.” *Chitta* means “conditioned” consciousness that is connected to matter that is the manifest reflection of *Chit*.¹⁵⁰ David Frawley writes that in Ayurvedic Psychology, the brain is the place of outer consciousness, and the heart is the source of inner awareness, deep feeling and knowing.¹⁵¹ The spiritual heart is said to be located to the right of the physical heart.¹⁵²

Chitta, the deeper mind or the psyche, is associated with the heart – “the most intimate and enduring part of our being...the mind of the soul, the individualized portion of Divinity that we are.” To return to the “peaceful core of consciousness...is to return to the heart.”¹⁵³ Conversely, the deepest traumas of life – birth and death, deep sorrow, attachments, fears and anxieties are also held in the heart. Unenlightened, *Chitta* holds on to embodiment.¹⁵⁴ In its enlightened state, it reflects the bliss of Self that is one with the Divine.

In the Vedic (Indian) energy system the heart is in the Fourth Chakra (energy vortex) named *Anahata*.¹⁵⁵ Anodea Judith’s compilation of Heart Chakra attributes include:

Balanced characteristics: Love, balance, self-love, reciprocal love /relationship/intimacy, devotion, giving and receiving.

Traumas and abuses: Rejection, abandonment, loss, shaming, criticism, abuses other chakras especially lower chakras, own and parents' grief from divorce / death of loved one, loveless cold environment, conditional love, sexual and physical abuse, betrayal.

Deficiencies: Antisocial, withdrawn, cold, critical, judgmental, intolerant of self and others, lonely, depressed, fear intimacy and relationships, lack empathy, narcissistic.

Excesses: Codependency, no boundaries, demanding, clinging, jealousy, overly sacrificing.

Physical Problems: Heart, lung, thymus, breasts. arms /hands, shortness of breath, sunken chest, cardiovascular and circulation, asthma, weak immune system, tension between shoulder blades, pain in chest.¹⁵⁶

Physiological Coherence and the Heart

Coherence can be defined as the quality of being orderly, consistent, and intelligible in communication¹⁵⁷ or as the synchronization between multiple systems or ordered patterning within one system.¹⁵⁸

Physiological coherence produces synchronized interactions among multiple body systems such as the cardiovascular, nervous, endocrine and immune systems, indicative of parasympathetic activity.¹⁵⁹ Heart rate variability (HRV) represents the inter-beat, heart rhythm patterns that show ANS activity.¹⁶⁰ High HRV appears as an orderly, harmonious sine wave-like pattern on an electro-cardiograph (ECG) and emWavePC screen, and is indicative of physiological coherence and parasympathetic

activity, while low HRV appears jagged and disorderly heart rhythm patterns indicative of sympathetic activity.¹⁶¹

HeartMath research has clearly established that Heart Rate Variability (HRV) is significantly affected by emotions, and that blood pressure waves are felt in every cell of the body as pulses.¹⁶² Therefore, it is possible that consciously centering in the heart enables access to the whole body through the energy that flows from the heart through every cell of the body.¹⁶³ Rollin McCraty writes,

One of the primary ways that signals and messages are encoded and transmitted in physiological systems is in the language of patterns. In the nervous system, it is well established that information is encoded in the time intervals between action potentials—patterns of electrical activity—and this may also apply to humoral communications. Several recent studies have revealed that biologically relevant information is encoded in the time interval between hormonal pulses. As the heart secretes a number of different hormones with each contraction, there is a hormonal pulse pattern that correlates with heart rhythms. In addition to the encoding of information in the space between nerve impulses and in the intervals between hormonal pulses, it is likely that information is also encoded in the inter-beat intervals of the *pressure* and *electromagnetic* waves produced by the heart. Karl Pribram has proposed that the low frequency oscillations generated by the heart and body in the form of afferent neural, hormonal, and electrical patterns are the carriers of emotional information, and that the higher frequency oscillations found in the EEG reflect the conscious perception and labeling of feelings and emotions.¹⁶⁴

The Heart-Brain Relationship

On a very basic physiological level, the ANS located in the brain stem or the Reptilian Complex of the Quadrune Brain, serves to regulate heart beat and the inter-beat rhythms of the heart that determine how the heart will beat in order to support the survival of the body. Beyond this, there are a number of other functions that the heart fulfills.¹⁶⁵ In healthy persons, a complex resonance exists between blood

pressure waves, respiration, and ANS activity, and is felt in all the oscillatory systems of the body at every level including the cellular level. When the blood pressure wave reaches the brain, changes are observed in the brain's electrical activity about 240 milliseconds after the hearts contracts.¹⁶⁶ In the state of physiological coherence this effect is at its optimum.

The heart has over 40,000 neurons, and therefore owns a highly complex circuitry through which it senses, regulates and remembers, much like a brain.¹⁶⁷ The heart's brain, independently of the central nervous system, processes information and makes decisions on cardiac control.¹⁶⁸ It senses heart rate, blood pressure signals and hormonal activity, translates them into neurological impulses, and internally processes this information, and sends it to the central brain through afferent pathways in the spinal column and the vagus nerves.¹⁶⁹ When the sensory neurites of the heart detect different neurotransmitters and hormones in the blood, it modifies the afferent neural output sent to the brain.¹⁷⁰

Heart rhythms have a direct effect on the prefrontal cortex of the brain, based on the biological principle of reciprocal connections between neural systems.¹⁷¹ In addition to its main neural connection to the thalamus, the heart rhythms and afferent signals affect highest cortical function.¹⁷² McCraty suggests that additional routes may exist from the heart to the prefrontal cortex.¹⁷³

Considering the powerful effect that the heart has on the brain, it follows that improving physiological coherence during adolescence and early adulthood, when the neocortex and prefrontal cortices are being developed would be vital.

For those exposed to trauma it is crucial that they be taught ways to improve coherence in order to enable optimum brain development and to help them heal trauma.

The Heart's Energy Field

The heart has an energy field that takes the form of a torus.¹⁷⁴ (Figure. 14) The electromagnetic energy moves up from the heart and out through the head, loops around and comes back into the heart through the pelvic floor and back up through the heart, creating an energy field that extends out 12 – 15 feet from the body. The axis of the human torus runs through the center of the body and the heart.

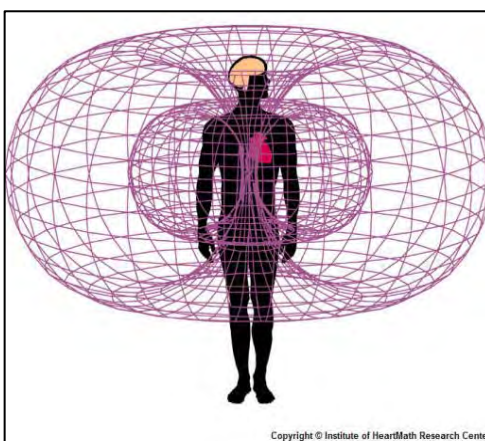


Figure 2. The Heart's Electromagnetic Field Torus

Source: HeartMath.2010. Reprinted with permission

The torus function is holographic, and every part of its energy field, regardless of how small, contains the information of the whole field. Pearce writes,

According to physicists, a torus is very stable form of energy, which once generated and set in motion, tends to self-perpetuate. Some scientists conjecture that all energy systems from the atomic to the universal level are toroid in form. This leads to the possibility that there is only one universal torus, encompassing an infinite number of interacting, holographic tori within its spectrum...We seem to live in a nested hierarchy of toroid energy systems that extend possibly from the minuscule atom to human to planet, solar system and, ultimately galaxy..One implication of this is that each of us centered within our heart torus is as much the center of the universe as any other creature or point with equal access to all that exists.

The intuitively derived Wholeness Mandala symbolizes the whole universal energy field centered in the human heart, in which the whole energy system appears to be contained.

The heart-centered breathing pattern used in the CHI Process™ follows the torus pattern, initially inhaling into the heart, exhaling into the heart to the Heart of Earth, inhaling into the heart, exhaling into the Heart of the Universe, then continuing the pattern of inhaling from the Heart of the Universe into the heart and exhaling into the Heart of Earth, moving breath from the top of the torus axis to the bottom and so on.

Section 6: Breath

Energy is the animating force of life, and one of the ways in which humans and other life forms access it is through breathing. Inhalation brings into the body oxygen and other elements from the environment. Oxygen energizes and purifies the blood, and through the blood every part of the body. Exhalation releases waste products from the body in the form of Carbon Dioxide. Breath creates an energy exchange between the various life forms and elements that form the whole and

establishes and interactive balance is both within the body and with the whole Universal system.

Consciously connecting with the breath – a key vehicle for the energy exchange between ourselves and our environment – including nature, the earth and the universe – opens us to more fully engage in the interaction between ourselves as whole individuals and ourselves as an aspect or cell of the greater whole of Earth, Universe and All-That-Is. It also keeps the mind focused on the present and detached from distractions of past and future.

Conscious centering in breath and if possible, the heartbeat keeps us consciously in the present moment in which past becomes present and present becomes future.¹⁷⁵ To be in the neutrality of the present moment is key to moving quickly beyond past trauma into a future of unlimited possibility and new integrated ways of being.¹⁷⁶

Breathing generates physiological coherence as it modulates heart's rhythms.¹⁷⁷ Slow regular breathing at a 10-second rhythm (5 seconds on the in-breath and 5 seconds on the out-breath) may generate coherent heart rhythms, and a shift from sympathetic to parasympathetic activity, but may not be easy to maintain.¹⁷⁸

The Chinese word *chi* translated as “energy” also means “breath.”¹⁷⁹ The Sanskrit term Vata often translated as “air” more accurately means “energy.” It is also notable that in the Abrahamic religions, God sculpted humans in His own image from the earth and breathed life into him,¹⁸⁰ and the life force that sustains human life

is considered to be the “Breath of God.” The word *Adam* comes from the same root word as earth /ground (*adam /adoma*)¹⁸¹ and also blood (*dam*).¹⁸²

In Judaism, YHVH - the Divine Name can be breathed but never pronounced or spoken. In Aramaic one of the names of the Divine is Alla-Ha. In Arabic it is Allah or Allah-Hu. Although not part of mainstream Christian thought, the first part of the prototype for prayer given by Jesus, a Jew, in its original Aramaic form has been interpreted by scholars of the ancient Levantine languages to be related to bringing Divine Essence into the body and material world through breath, as presented in the following interpretation:

Table 1. First part of Aramaic Lord's Prayer

Transliteration from Aramaic	Aramaic>Greek>English translation from Bible (St. James)	Meaning based on interpretations by Rocco Errico ¹⁸³ , & Neil Douglas-Klotz ¹⁸⁴ and Author ¹⁸⁵
Abwoon d'bwashmaya	Our Father, which art in Heaven	Our Source in the Cosmos (in whose image we were created)
Nithqadash shmakh	Hallowed be thy name.	Your Sacred Name¹⁸⁶ (AllaHa /YHVH) is the Sacred Breath (within us) that is your Sacred Essence!
Tey tey malkhutha	Thy kingdom come,	Come, come (show us your presence) in the material world,
Neqwe sebyanach aykanna	Thy will be done	as you will
d'bwashmaya aph b'arah.	On earth as it is in heaven.	on the earth plane as in the Cosmos.

In the *Vishuddhimagga* - The Path to Purification – a classical work of Theravada Buddhism on the teachings of the Buddha, documented in Pali by Buddhaghosa, the Anapanasati Sutta (Sutra) the Buddha teaches mindfulness of the breath and describes it as a path to purification leading to *Nirvana* (Non-being).¹⁸⁷

In Hinduism, the etymology of the word Brahman is derived from *br* which is to breathe and *brih* to be great. Shaivism explains that when Divine Consciousness starts to descend into manifestation, it first transforms into *prana*, the universal life force. The two main forms it assumes in the individual are the inhalation and the exhalation.¹⁸⁸ Swami Muktananda writes,

*To know the Self is the true aim and purpose of human life. Because a person does not understand the glory of his own Self, he gets into the habit of seeing himself as small, as imperfect, and as separate from God. In this way, he denies himself the experience of his divinity...Not only does the Self pervade and sustain our own individual existence; it also pulsates in every atom of this world. In this way, the Self is apparent; it is manifest. Some philosophers say that the self cannot be known. Yet the Self is always being experienced, at every moment of our lives.*¹⁸⁹

These ancient texts suggest a connection between breath and Divinity or Universal consciousness. Research shows that when breathing involved consciousness or intentionality, there seems to be a greater effect than when breathing occurs in purely autonomic mode.

Heart-centered Breathing

Sheerah Tice found that deep breathing and positive imagery reduced stress and improved coherence in college-age women.¹⁹⁰ Research carried out at the University of Kassel in Witzenhausen, Germany, showed that Heart-centered meditation involving heart centered breathing, intentionally projected to an identified receiver, emitted 100,000 photons per second compared to 20 photons per second when the same breathing technique was carried out without meditation.¹⁹¹ This study showed that heart centered breathing is enhanced by meditation, intention and compassion.

HeartMath research shows that stress relief techniques that involve consciously changing emotional states produce high physiological coherence in various settings with a variety of people of all ages.

The CHI Process™ combines deep heart centered breathing with an image symbolizing a heart-based relationship between the individual and the whole universal system, and an ancient breath mantra that is said to create vibrations and identification with All-That-Is and focus the mind. The So-Ham mantra used in the CHI Process is described in Section Eight.

Section 7: The Use of Imagery in Healing

Human beings express themselves symbolically. Their languages, music, mathematics, visual and performing arts are symbolic ways in which the collective and individual human spirit expresses experiences of its journey on Earth. From traffic signs to logos and computer icons, symbols are all around, and are part of everyday life. They evoke feelings and inner meanings, and are often used to express a concept which can be better expressed through an image than through words. Words are limited in scope in that they have relevance only to those who know their meaning and context. Symbols and images, on the other hand, can express complex concepts that may not be adequately expressed in words, and make them relevant across cultural barriers, far beyond their point of origin.¹⁹² Carl Jung writes,

...a word or an image is symbolic when it implies something more than its obvious and immediate meaning. It has a wider unconscious aspect that is never precisely defined or fully explained. Nor can one hope to define or explain it. As the mind explores the symbol, it is led to ideas that lie beyond the grasp of reason.¹⁹³

According to Jeanne Achterberg, imagination is a mental process that is “the communication mechanism between perception, emotion and bodily change.”¹⁹⁴ It is “the world’s oldest and most effective healing resource, affecting the body intimately on both seemingly mundane and profound levels.”¹⁹⁵

Based on research by Polyak¹⁹⁶ as well as Talbot and Marshall,¹⁹⁷ James Oschman hypothesizes that visual symbols work by amplification:

We know an image on the retina, of a symbol or any object in the visual field results in a pattern of electrical activity that travels through the optic nerve to the optic lobes of the brain. The mechanisms involved have been carefully researched and much is known. The pattern of light on the retina is translated into a pattern of impulses on the occipital cortex. The

retina is projected point to point onto the cortex...We also know that amplification or magnification takes place. The visual cortex has a topographic map of the retina, but the cortical map has 10,000 times the area of the corresponding retinal area. There are about 100 cortical cells representing each retinal cone cell.¹⁹⁸

Based on the investigations of Stryer (1985) Oschman surmises,

There is a huge amplification that takes place because a few photons can trigger the entry of hundreds of thousands of calcium ions into the retinal cell, leading to a depolarization of the membrane and a nerve impulse.¹⁹⁹

When the retinal nerves contact the other nerves' electrical energy spreads over a broad area, and travels through the circuits. This activity can be mapped through a super conducting quantum imaging device (SQUID) or magnetic source imaging.²⁰⁰

Based on research that electrical circuits involved in injury repair and other activities have corresponding patterns in the space around the body, Oschman hypothesizes that,

...looking at a symbol, or even thinking about (visualizing) a symbol results in considerable neural activity involving measurable electrical and magnetic fields. According to him, writing or drawing the symbol can activate sensory and motor pathways and therefore bring in many more electrical and magnetic fields. The concept that viewing, visualizing or writing a symbol can trigger specific patterns of electrical and magnetic fields in and around the body is certainly reasonable, logical and testable. The idea that some of these fields might be beneficial to a nearby person also is reasonable and testable. A thousand or so years of experience with these symbols may also connect with modern science.²⁰¹

Jung discovered what he called the “unconscious self” through his experience with mandalas that he encountered in dreams and recorded in drawings and paintings²⁰². Describing his encounter of the self through creating a mandala, he writes,

My mandalas were cryptograms . . . in which I saw the self – that is, my whole being – actively at work. To be sure, at first I could only dimly understand them; but they seemed to me highly significant, and I guarded them like precious pearls. I had the distinct feeling that they were something central, and in time I acquired through them a living conception of the self. The self, I thought, was like the monad which I am, and which is my world. The mandala represents this monad, and corresponds to the microcosmic nature of the psyche. . . I knew that in finding the mandala as an expression of the self I had attained what was for me the ultimate.²⁰³

For Jung, the spontaneous occurrence of mandalas in the dreams and art of psychologically disturbed individuals presented an opportunity for psychological research to investigate its function in the natural healing process. In Jungian psychology, the mandala is a catalyst for a psychological event called a “crisis of transition,” in which the ego fragments and is in danger of collapse.

Cornell suggests that the mandala brings about a new connection between the ego and the self.²⁰⁴ She describes the mandala as “a concrete symbol of its creator’s absorption into a sacred center.”

In its most elevated form, the sacred circle mirrors an illuminated state of consciousness through a symbolic pattern – making the invisible visible. It is meant to draw creator and viewer into an encounter with animating sources of numinous energy. The Navajo call this center “a spiritual place of emergence” for sacred imagery. By focusing on it, both mandala artist and meditator can open to the divine energies of deities and to the contents of his or her own spiritual and psychological self. When a practitioner willfully illuminates and embodies a sacred image from within the psyche while in a meditative state, spiritual transformation, physical healing, and the integration of personality fragments can result.²⁰⁵

For Cornell, the creation of a mandala is about self-realization and healing.”²⁰⁶

Mandala - A Container for Healing

Mandala forms have been used in traditional healing cultures in the East and West in which the ailing person is placed in the center of a circular structure during the ceremony. They are most often used as tools for meditation, focused prayer and spiritual practice.²⁰⁷

Navajo Sand Painting Ceremony of Native America

The ritual sand painting ceremony of the Navajo tribe is held on the fifth to eighth night of the Night Way ceremonies, with specific designs depicting the Holy People on a cloth or buckskin.²⁰⁸ Sizes vary, and sacred materials such as corn pollen, cornmeal, red, yellow and white sand from ground sandstone, flower petals, powdered roots, bark²⁰⁹ and charcoal are used to create elaborate designs within a circle.²¹⁰



Figure 3. Navajo Sand Painting

Source: <http://www.anthro4n6.net/navajosandpainting/#Introduction>

There are between six hundred and one thousand possible designs that may be prescribed for the sand painting ritual.²¹¹ The artist allows the colored pigments to drip between the fingers to create the designs that re-create the images from sacred mythology of the Holy People, reflecting the state of perfect harmony.²¹² After the sand painting has been created, the patient sits in the picture with his/her body parts aligned with the body parts of the deities to identify with them.²¹³

To complete the process of identification, the chanter places the pigments from the body parts of the deities from the sand painting onto the afflicted body parts of the patient.²¹⁴ Members of the patient's family may also rub sand from the painting onto their own bodies as a blessing.²¹⁵ When the ritual is finished, the sand is collected and given back to the earth in a place far away from habitation, where it will not be disturbed or be touched by humans.²¹⁶

The ritual dramas re-create mythology related to the transgression the patient is "diagnosed" to have made that caused the displeasure of the Holy People. By including the patient in the drama of the healing mythology, and identifying in the healing of the hero, time and space are suspended and healing is enabled through that identification.²¹⁷ The patient is coached by the singer to repeat the words and prayers of the mythological hero to identify with him/her, beseeching the Holy People to restore him/her back to wholeness and harmony, often stating that wholeness has already been achieved.²¹⁸

The Sanni Yakuma of Sri Lanka

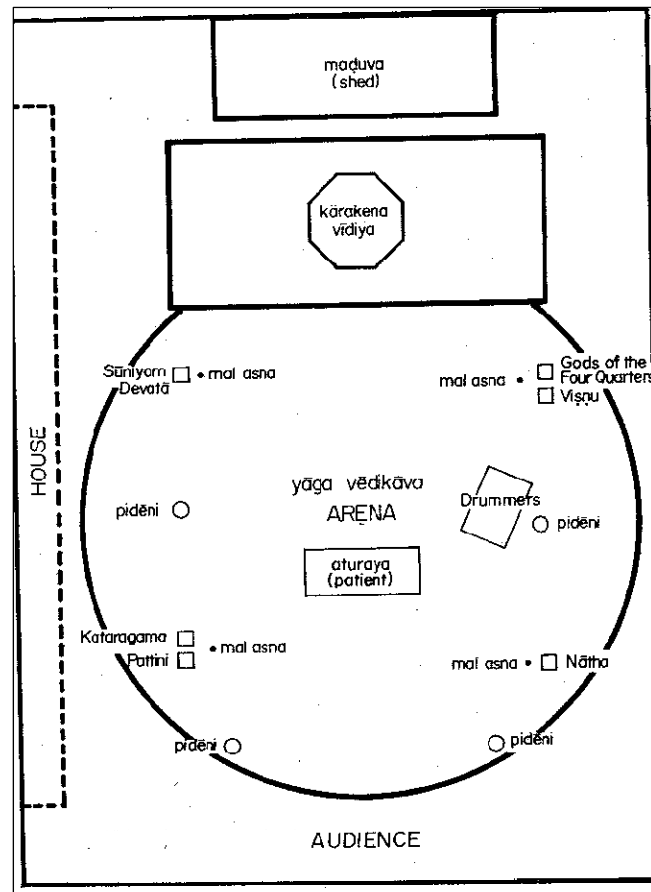


Figure 4. Thovil Ceremony Staging Mandala

Source: *Masks and Systems of Sri Lanka*²¹⁹

In the ritual masked disease demon drama called the *Sanni Yakuma* or the *Thovil* Ceremony of South Sri Lanka, diseases are symbolized as demons portrayed by elaborate masks worn by shamans or lay priests who are the celebrants or Masters of Ceremony.²²⁰ The patient sits in the center of a circle and an elaborate masked drama is performed around him/her invoking the demons (bad) said to be instigators of disease and deities (good) who negotiate with the demons for the patient's release from the disease. Figure. 3 shows the layout for the staging of the Sanni Yakuma.

The Tibetan Kalachakra Mandala

A group of Tibetan monks with years of training in the sacred art of sand mandala, as a form of meditation, create a mandala with intention for the healing of collective suffering on earth.^{221, 222}



Figure 5. Tibetan monk working on Kalachakra Mandala.

Source: Eileen Rose, Photographer. Reprinted with permission.

The *Kalachakra mandala* is created with colored sand depicting benign and malevolent deities that are believed to influence the dramas of human life.²²³ After painstakingly creating the mandala over several days, the sacred sand is swept up and ceremonially deposited in a body of flowing water, to be disseminated throughout the earth.^{224, 225}

Bailey Cunningham writes,

The thread that weaves together what may seem to be unrelated images and concepts, is the circle, the mandala – a form that is itself a whole, while simultaneously part of another whole. Like a wheel within a wheel, our lives are lived within the whole of life itself – all revolving around and related to a central hub. It is the gravity of the center that attracts electrons to the nucleus and people to a community center, while the pull of our own center urges us to connect with our core.²²⁶

Inspired by these traditions, the CHI Process™ invites the individual to imagine themselves at the center of the Wholeness Mandala, with the heart at the center of the universe, connecting, interacting, giving and receiving, aware of sharing energy with all of Nature, Earth and Universe – as part of one unified energy system.

Section 8: The CHI Process

*I will carry evermore within my pulse
the beat of Earth
in my expanding Universe.*

Bill Schul

The CHI Process™ was designed to create for participants a holistic, systemic connection to wholeness through the use of heart-centered breathing, mantra and mandala for the purpose of improving physiological coherence and perceptions of well-being. Each of its two parts is influenced by traditional Eastern spiritual healing practices: The Wholeness Mandala and heart-centered breathing coordinates with the So-Ham breath mantra. Both are meant to facilitate connection to the energy of each organic system within which individuals exist: their own body's energy system,

which is part of Earth's energy system, which is part of the energy system of the Universe.

Mandalas are symbolic circular images or constructs that have been used since antiquity as healing sacred art in many cultures and spiritual traditions around the world. The word *Mandala* is derived from Sanskrit, and means “Container of Essence”²²⁷ and Sacred Circle.²²⁸ In Hinduism and Buddhism as in other spiritual traditions, creating and/or meditating on a mandala is a path of transcendence through which the creators or meditators can connect to their true, greater, immortal, higher, whole or transpersonal Self or, further yet, connect with Divinity. Mandalas are created and/or meditated upon by focusing inward to the spiritual eye, said to be in the pineal gland located in the center of the brain between the eyebrows. This spiritual center is known as the “third eye,” or the 6th chakra.²²⁹ “It is the highest spiritual center for human creation out of which all sacred symbols and revealed truth of one's real nature arises.”²³⁰

In Hindu and Buddhist sacred art, mandalas symbolize the universe as well the essential nature of the individual.²³¹ Mandalas also create sacred space for healing rituals and for the use of teachers and mystics.²³² Creating, meditating, looking at or praying with a mandala is said to have spiritual and mundane benefits²³³. The Wholeness Mandala (Figure.2) is used to symbolically present the interactive relationship the individual has with the whole universal energy system that supports life.

The Wholeness Mandala is an archetypal symbol that was created intuitively through the sequential format for creating healing mandalas developed by Judith

Cornell.²³⁴ This approach is a synthesis of science, transpersonal psychology, the teachings of the Advaita Vedanta, Hindu contemplative traditions and Buddhist Tantra, Judeo Christian and Sufi mystical traditions, and intuition and inspiration from Raja Yoga practice.²³⁵ This approach for creating the mandala combines intentionality, meditation and the “Om” chant in the process of visualizing the healing symbol, and uses white and colored pencils on black paper to create luminous circular mandala symbols.



Figure 6. The Wholeness Mandala

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The black paper on which the symbol is drawn represents the “womb of the universe or the dark un-manifested parts of our soul’s consciousness.”²³⁶ The white pencil represents the pure light of the soul and colored pencils represent the rainbow spectrum contained in white light. The colors of the pencils correspond with the rainbow color spectrum that also represents the chakras or energy centers of the body according to the Vedic system of India.²³⁷ The chakras are located down the center

of the body, aligning with the glands of the Endocrine system,²³⁸ reflecting the programs of the human bio-computer,²³⁹ stages of human development,²⁴⁰ Abraham Maslow's stages of self-realization²⁴¹ and much more. These colors are reflected in the colors of the "heart of the earth" and the colored rays around the "heart of the universe" that represents the sun – projecting light that contains the color spectrum. The heart of the person reflects the colors of the watery planet Earth, symbolizing the connection between the human and the earth. The violet circle above the head represents the energy of the 7th chakra or the Spiritual Energy Chakra representing the non-physical Transpersonal Self, the center of human consciousness.

The body of the human is the trunk of the energetic / imaginary tree, its roots wrapped around the heart of earth and its branches reaching up to the heart of the universe.

On her website dedicated to *The Tree of Life*, Loral Wauters states that,

The tree is a universal, archetypal symbol found in many cultures across the globe since antiquity.^{242, 243} The Tree of Life is, in many ways, a reflection of us, our connection to nature, and all that is. Trees are a bridge between our past, present and future. They are symbolic of creation as well as rebirth and renewal. The tree is a universal whole for it is male and female, dark and light, knowledge and mystery.²⁴⁴

In the context of the Wholeness Mandala, the tree is part of the whole mandala, therefore only a brief analysis of this symbol will be offered here. It may be more appropriate to suggest that each individual explore the insights, awareness or meanings that come up for them as they view the tree within the context of the whole mandala and wholeness in the context of their own lives. On a literal level, the tree serves as a symbol of the individual's connection with nature, and the symbiotic and balanced energy relationship humans and plants have on the planet - in the oxygen

/carbon dioxide and nutritional exchange between them that keeps the whole planet in balance. The visualization of the tree also serves to create a sense of rootedness and expansion in the context of the exercise.

The visualization script [[Appendix D](#)] emphasizes giving and receiving – the energy exchange and sharing between the individual and the whole in the process of breathing. During the Intervention, symbolism and meaning or origins of the Wholeness Mandala were never discussed with participants. They are, instead, invited to imagine themselves as the central human figure whose heart is at the center of the mandala, and to experience the CHI from the center of the Wholeness Mandala.

The So-Ham Mantra

Mantras are repetitive phrases, usually sacred sounds or names of deities that are used as a focal point in meditation in order to experience the vibration of the deity whose divine name is sounded.²⁴⁵ Mantras also helps keep the mind from being distracted by thoughts.

The mantric phrase “So-Ham” (pronounced so-hum) also known as “Ham-Sa,” is a vibrational breath meditation that is a self-realization exercise to attain “pure consciousness.”²⁴⁶ It is based on Verse 24 of the Vijnana Bhairava, the ancient text of the Indian Kashmir Shaiva philosophy.²⁴⁷ The practitioner exhales on “So” and inhales on “Ham.”²⁴⁸ The meaning of *So-Ham* is “I am that,” or “I am Other,”²⁴⁹ meaning “I am everything.”

The meaning of So-Ham bears similarity in meaning to the Ancient Hebrew “Ehyer asher Ehyer,” (translated from ancient Hebrew as “I am that I am”)²⁵⁰ - the self-introduction God, in the form of a burning bush, gave Moses in the desert.²⁵¹

This name like others such as Alla-Ha, Allah-Hu, YHVH seems also to be one that is breathed rather than spoken. These Divine names seem to be breath that is connected to be-ing

In the CHI Process™ the So-Ham is meant to center and focus the mind on the breath. It is important to note that the participants did not know the meaning of So-Ham, nor were they given an explanation of it. If asked, the PI was prepared to say simply that it was a breath mantra that meant “I am that” – or “I am connected to everything,” but interestingly no one asked, and the opportunity for explanation did not arise.

Section 9: Wholeness: A Theological and Philosophical Perspective

*I swear the earth shall surely be complete
to him or her who shall be complete.
The earth remains jagged and broken to him or her
who remains jagged and broken.*

Walt Whitman

This section, examines the wisdom traditions that have influenced the CHI Process™ including Primal Religions, Taoism, Hinduism, and Buddhism. Specific aspects from these theological perspectives have been integrated in CHI.

Primal Religions: Nature as Wholeness

The “primal” or “tribal” religions were based on belief in the sacredness of the material, natural world.²⁵² This form of belief exists even today in Africa, Australia (Aborigines), Southeast Asia, the Pacific Islands, Siberia and among the native people

of North and South America. In tribal belief systems the Source is so remotely transcendent that it is beyond the human capability to know it except through the material world.²⁵³

Primal people are fundamentally connected to, and closely identify with the tribe and the environment in which they live.

The web of tribal relationships sustains them psychologically and energizes every aspect of their life. To be separated from the tribe threatens them with death, not only physically but psychologically as well. Other tribes may be viewed as alien, but to their own tribe they are related in almost the way that a biological organ is related to its host's body.²⁵⁴ ...the tribe...is embedded in nature...so solidly that the line between the two is not easy to establish...disregarding altogether the division between animal and human.²⁵⁵ ...primal rites...sustain confidence in the processes of nature, and renew hope for the future.²⁵⁶

The Divine is perceived to be within all things and inseparable from the material world. In the primal view, "there are not two worlds, but instead a single world that can be experienced in different ways."²⁵⁷ The symbolism used in the Wholeness Mandala incorporates aspects of this ideology.

Contemporary Wicca and Neo-Paganism are modern expressions of the primal religions, and seem to fulfill a need to be more closely connected to Divinity in Nature.²⁵⁸ Modern Euro-American emphasis on individuality gives opportunity for the development of neo-Paganism.²⁵⁹ Together with individuality, the need for an individual religious experience, has helped create a variety of spiritual practices with "no set creeds, no priestly establishment and...a religion of immanence, not transcendence, based on experience, not words."²⁶⁰ Neo-Pagan beliefs and practices were more likely to be passed on by oral tradition than through written texts, as in primal / tribal religions. The primary tenets of Neo-Paganism, including Wicca are:

Animism: A belief that all things are imbued with vitality.

Pantheism: A belief that divinity is inseparable from nature and that deity is immanent in nature.

Polytheism: A belief that reality is diverse, all nature is divinity manifesting in myriad forms.²⁶¹

Wiccan practices attempt to heal human “separation from nature,” and rituals are a means to that end.²⁶² As humans share the natural world with all other forms of life - animals, plants, rocks, water - each manifestation partakes equally of the collective Spirit of Nature.²⁶³

The most basic Wiccan ritual is the casting of a sacred circle, usually at each of the eight seasonal transition points of the year, in which thirteen participants called a “coven,” gather outdoors to honor the powers of the four directions and of the elements of the earth.²⁶⁴ Casting the circle creates a sacred space and sets it apart to be a place in which the archetypal unites with the physical, mental, emotional and spiritual, making it a point of contact between two realities.²⁶⁵ Wicca and Neo-Paganism are attempting to bring back the human connection with Nature and the web of life into the spiritual context of today.

While the design of the Wholeness Mandala was not derived from Wiccan philosophy, it is related in that it represents an archetypal symbol of the universe, and a sacred space through which the individual mentally enters into relationship and interaction with the whole. By visualizing the Wholeness Mandala in the imagination, the sacred space is created within one’s mind and consciousness.

Taoism: Universal Energy as Source

Taoism is one of the most ancient mystical traditions that can be considered a nature-based, non-theistic philosophy in which pure energy is described in terms of how it can be observed and experienced, devoid of personality in myriad forms and expressions. It is defined and referred to simply as *Tao* or The Way. It is based on mystical concepts presented in the *Tao Te Ching*, a slim volume of five thousand Chinese characters written by Lao Tzu. *Tao Te Ching* means ‘The Book of The Way and the Power,’ Although the *Tao Te Ching* is attributed to Lao Tzu, it is most probably an anthology of poetic aphorisms reflecting Taoist schools of thought from a number of sources and periods.²⁶⁶

For many centuries before the ideas presented in the *Tao Te Ching* appeared in written form, they had probably been part of China’s ancient oral tradition, in which sages transmitted wisdom orally to their followers from generation to generation.²⁶⁷ The *Tao Te Ching* appears to have existed in a fluid state around the second half of the third century B.C.E. By the second century B.C.E. it had assumed the form that most resembles the current version. It has been translated into many languages, with over thirty English translations.²⁶⁸

The word *Tao* is a referent for the “Eternal Aspect of Reality,” much the same as God or *Brahman* or *Purusha*, and *Te* refer to the (Tao’s) Power of Manifestation.²⁶⁹ The first part of the *Tao Te Ching* focuses on *Tao* and the second on *Te*.²⁷⁰ The word *Tao* appears 76 times in the *Tao Te Ching*,²⁷¹ each time with a different connotation, function or meaning, while stating that “The Tao that can be spoken is not the true Tao” and “The Tao that can be named is not the true Tao,”

Nevertheless, Lao Tzu goes on to describe the attributes of Tao in beautiful poetic language, wrapped in mystery and contradiction to prove its point.

Huston Smith presents three of the essential meanings of Tao.²⁷² The first essential meaning is the way of ultimate reality, too vast for human beings to fathom. Yet this ineffable and transcendent Tao is considered the basis of all that follows:

There is a being, wonderful, perfect:
It existed before heaven and earth.
How quiet it is!
How spiritual it is!²⁷³

The second essential meaning is that Tao is also the way of the Universe. “It is the norm, the driving force of nature, the ordering principle behind all of life. Behind life, but also in the midst of life, assuming flesh, it informs all things.”²⁷⁴ It is spirit rather than matter. It is inexhaustible. The more it is drawn upon, the more it flows gracefully without hesitance:

It stands alone and it does not change.
It moves around and around, but does not on this account suffer.
All life comes from it.
It wraps everything with its love as in a garment, and yet it claims no honor,
For it does not demand to be Lord.
I do not know its name, and so I call it Tao, the Way, and I rejoice in its power.²⁷⁵
In its third essential meaning, Tao is the way of human life when it meshes

with the Tao of the Universe. It is this human interaction with the Tao and Te that is addressed in the practice of Taoism.²⁷⁶ As Lao Tzu writes about *Tao* he describes what we may interpret as Divine energy / the God Force / Life Force, but does not define it, reflecting how primal religions perceived the Source or the Divine – that cannot be known or defined, but only experienced in all things and all aspects of life.

The *Chuang Tzu*, another important Taoist text, is named for the Taoist sage who is believed to be a contemporary of King Hui (369-319 B.C.E.) of Wei and King Hsuan of Ch'i.²⁷⁷ Although Chuang Tzu did not know Lao Tzu, his spiritual master in life, he was an ardent posthumous follower. Where Lao Tzu was brief and poetic, Chuang Tzu was expansive in the prosaic narratives in which he interpreted and illustrated his predecessor's words:

...the Chuang Tzu shows great interest in the problem of whether there is something which is in effective control over mental activities such as sense perception. This 'mind' or 'soul', which is the elusive sovereign of the body, seems to be thought of as a counterpart to the Tao, which is the equally elusive sovereign of the universe.²⁷⁸

Abhayananda writes that Chuang Tzu corroborated what Lao Tzu had said from his own experience of the Tao and its Unity and balance.

Lao and Chuang extrapolate from this knowledge of the Tao the correct life for one who knows it. Thus Tao is not only the Un-manifest, it is also the guiding Path for the sage to whom it is revealed. The Tao is both the Source of the universe and the eternal Soul of man; it is his life and the Way by which he lives. He lives as the Tao beyond the world, while living as the Te in the midst of it. He identifies with and rests in the Eternal, even while living and acting in the temporal, ephemeral world.²⁷⁹

Taoism has three distinct forms or expressions that relate to how Tao and Te relate to human life.²⁸⁰

Philosophical Taoism is relatively unorganized, and not institutionalized, and emphasizes the wisdom of Lao Tzu and Chuang Tzu in relation to conservation and efficient use of Te (chi) vital energy rather than spending in wasteful, draining ways such as friction and conflict during what we might identify as stressful situations.

Through practicing *wu-wei* – a form of inaction or pure effectiveness in creative quietude of be-ing rather than do-ing, friction in relationships and intra-

psychic conflict can be minimized. Genuine creation is said to come into being when the subliminal self is in charge and the conscious mind is out of the way.²⁸¹

One may move so well that a footprint never shows,
Speak so well that the tongue never slips,
Reckon so well that no counter is needed.²⁸²

The second form of Taoism is in augmenting Te through maximizing *chi* or vital energy. It is from this second school that we have been given the term chi, literally meaning breath or vital energy. Chi is an aspect of Te, the power of the Tao, that is experienced as coursing through the body when it is functioning optimally, or which is blocked when the body is diseased or impaired. The main object is to further the flow of chi to enhance and prolong life. To this end, Taoists learned to draw chi from matter, through movement and engaging the mind, developing energetic technologies to supplement extraction of chi from matter in solid, liquid and gaseous form.²⁸³

Both Kaltenmark²⁸⁴ and Smith²⁸⁵ describe the Taoist programs of hygiene and yoga that were developed to increase the supply of vital energy. The emphasis was on increasing chi to extend life and defeat mortality rather than on curative measures. Breathing Exercises were developed, to draw chi from the air.

The CHI Process™ is influenced by the Taoist concepts of subtle energy, and the practice of Microcosmic Orbit breathing Exercises.²⁸⁶ It is only conceptually related to the Microcosmic Orbit, but does not claim its intensity, depth or effect.

Although the third form of Taoism, institutionalized religion,²⁸⁷ does not relate well to the principles used in CHI, it is useful to describe it here in order to avoid confusion of this aspect of Taoism with the earlier forms. Institutionalized religion

based on Taoism came into being in the 2nd Century, C.E.²⁸⁸ Known as the *Tao Chiao*, it was a response to the needs of common people who did not have the time or inclination to practice the other more mystical/philosophical or rigorously disciplined forms of Taoism. Taoist religion appears to have institutionalized superstition, psychic phenomena, shamanism, soothsaying and faith-healing. The institutionalization of Taoism was influenced by the arrival of Buddhism to China in the 1st Century, C.E, Kaltenmark²⁸⁹ notes that there were significant differences between philosophical Taoism (*Tao Chia*) and what developed into *Tao Chiao*, the Taoist Church, a syncretic blend of Taoist philosophy, various religious and magical traditions from indigenous, folk and foreign sources, particularly Buddhism.

According to Kaltenmark, this syncretism produced a vast collection of scriptures called *Tao Tsang* (Taoist Canon) containing approximately 1,464 documents, strongly influenced by the Buddhist Tripitaka.²⁹⁰ The *Tao Tsang* was spilt into *tung*, a term which has connotations of mysterious caves (in which some of the scriptures were said to have been found) and dealings with sacred powers.²⁹¹ Each *tung* is said to have been revealed by one of the three main divinities that head the Taoist pantheon. The first *tung* was said to have been revealed by Yuan Shih T'ien Tsun (Heavenly Elder of the Primal Origin) who was a direct emanation of the Tao. The second *tung* was revealed by T'ai Shang Tao Chun (Very Noble Lord of the Tao), and the third *tung* by T'ai Shang Lao Chun (Very Noble Lord Lao) – the deified Lao Tzu. According to another theory, the *tung* were presided over by the three persons of Yuan Shih T'ien Tsun – a Taoist Holy Trinity, with Lao Tzu in the

form of Lao Chun the deity who came to earth as the savior of humankind by revealing the Tao and the *Te* through the *Tao Te Ching*.

Taoist religion while influenced by Taoist philosophy is significantly different in practice, in that instead of individuals interacting directly with Tao, priests or shamans act as intermediaries of Taoism for the common people. It became defunct in mainland China, but exists in Taiwan, where the lineage of Taoist priests continues.²⁹² Only Taoist priests / shamans are allowed to perform certain rituals.

Taoist religious texts are full of rituals that have magical effects for harnessing the Tao and Te for human ends.²⁹³ The role of the Taoist priest or shaman was to make cosmic energy available to those who needed it but were unable to access it themselves.²⁹⁴

If the Philosophical Taoists can be said to have attempted to increase energy by cutting effort (energy costs) Taoist adepts may be said to have attempted to increase energy by increasing the gross (energy income),²⁹⁵ and Religious Taoists might be viewed as bank tellers who acted as intermediaries making chi accessible to those who could not access it themselves.²⁹⁶ This is similar to spiritual healing or energy healing practices in which a faith healer, religious minister, preacher, shaman, miracle worker or trained practitioner acts as a channel for healing that is transmitted to the patient or client.

What the *Tao Te Ching* addressed was the mystery of the cosmos. Taoists believe that in the beginning, there was a void pregnant with potential that Lao Tzu called Tao. At this point, the Tao generated swirling patterns of cloudlike energy, called *chi*. This energy eventually differentiated into two balanced aspects: yin -

feminine, dark and dense, and yang, masculine, light and airy. Yin energy formed the earth, yang energy formed the universe, and both energies united to form the creatures including human beings. The physical body contains energies of the whole earth and the whole universe, and is a microcosmic representation of these sources.²⁹⁷

The Way [Tao] begets One;
One begot Two;
Two begets Three;
Three begets the myriad creatures.²⁹⁸

Yin and Yang further differentiated into the Five Phases associated with the elements, seasons, and directions:

Greater Yang: wood and spring (east)
Lesser yang: fire and summer (south)
Greater yin: metal and autumn (west)
Lesser yin: water and winter (north)
The central phase: earth and the solstices²⁹⁹

The central phase represents the perfect balance and unity of yin and yang, symbolized in the Taiji, one of the most eloquent symbols of Holism. The Taiji represents unity and interdependence of opposites in the Tao.³⁰⁰ It also symbolizes yin – female energy rising from its lowest level when yang is at its height and yang energy rising when yin is at its height.³⁰¹ This is most evident in the cyclical movements of the seasons: the first signs of spring begin to appear immediately after winter has peaked and begun to subside.³⁰²

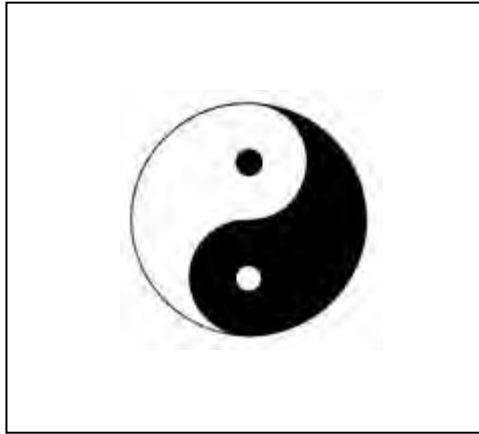


Figure 7. Taiji Symbol of perfect balance

Taoism became the predominant influence of the spiritual life of individuals in China, emphasizing an apolitical mysticism adhering to intrinsic rather than extrinsic spiritual values in order to live a life of peace and harmony based on natural and universal order³⁰³ and connection with Tao. Following the Communist revolution in China, when Taoist religious practices were abolished, Chinese medicine practices were separated from Taoism and integrated into the secular practice of Chinese medicine.³⁰⁴

Despite efforts of Chinese Communism to suppress Taoism, it quietly flowed out of China on the wings of dissidents and the separatists in Taiwan, who transmitted to the world a wealth of knowledge about the access and use of universal energy in healing.³⁰⁵ Chinese medicine and several expressions of Vibrational / Energy Medicine including Chi Gong are rooted in Taoist Principles and practice are gaining popularity and validity in the West.^{306,307,308} Since they are based on universal

phenomena they are applicable in almost any cultural context anywhere in the world, and have been one of the most significant influences in the development of CHI.

Hinduism

Hinduism is one of the oldest polytheistic religions that have survived, because it has not remained static but seems to have continued to evolve into the twenty first century. Currently its belief system is based on the concept that *Brahman* the Great God is formless but is manifest in all material forms, including *atman* – the human being. However, this is not to be taken literally:

The only literally accurate description of the unsearchable of which the ordinary mind is capable is *neti...neti*, not this...not this. If you traverse the length and breadth of the universe saying of everything you can see and conceive, not this...not this, what would be left will be God.³⁰⁹

Like Tao, Brahman is everything and Brahman is no-thing – not material. The chief attributes of Brahman are *sat*/ being, *chit*/ awareness and *ananda*/ bliss. The So-Ham breath mantra is borrowed from the Hindu Siddha tradition, in which breath is the manifestation of Brahman.³¹⁰

Buddhism

In Buddhist thought, the forces of the universe are considered to be the same as that of the human soul.³¹¹ There is no difference between the external and the internal, but “two sides of the same fabric.”³¹² The individual can mentally insert himself into the dynamic forces of the inclusive universe or external world that he is already part of.³¹³

Use of the Wholeness Mandala has roots in the Buddhist Vajrayana Tantric tradition. The practice of using symbolic mandala art is to move from the intellectual and theoretical to direct awareness of reality.³¹⁴

This cannot be achieved through building up of convictions, ideals and aims based on reasoning, but only through conscious penetration of our mind which cannot be reached or influenced by logical arguments and discursive thought. Such penetration is only possible through the compelling power of inner vision, whose primordial images or archetypes are the formative principles of our mind. Like seeds they sink into fertile soil of our sub consciousness in order to germinate, to grow and to unfold their potentialities.³¹⁵

In the Tibetan tantric Buddhism, there are three symbolic forms through which individuals can experience higher dimensions of reality:

- *yantra* – the orderly symbolic form of the mandala used to visualize the reality.
- *mantra* – inner vibrations of sacred sound that is associated with the consciousness that can “open the mind to the experience of higher dimensions.”
- *mudra* – the physical gesture, typically of the hands, that “accompanies the ritual act, the mantric, and the inner attitude which is emphasized by the gesture.”

In the CHI Process™ the Wholeness Mandala is the yantra, So-ham breathing is the mantra, and sitting still with eyes closed and hands on the table or lap is somewhat comparable to the mudra, although there is no discernable connection that this physical posture has to the deeper meaning usually associated with the use of mudra.

It should be noted that the PI did not intend to create this somewhat analogous relationship to Tibetan tantric tradition, since the CHI Process™ was created intuitively. However, the analogies have enough similarity to be interesting.

Rather than focusing on a Brahmanic mantra such as So-Ham, the Buddha recommended a series of breath meditations each with a specific focus ranging from simply sensing the in-flow and out-flow of breath through the nostrils, to more complex and abstract breath focus such as, “I shall breathe in contemplating relinquishment...I shall breathe out contemplating relinquishment.” Although focused on breath, this Buddhist mindfulness meditation extends far beyond the simple So-Ham breathing – the natural, uncomplicated breath pattern used in this research project to help create a calm, coherent state in trauma-exposed youth.

Section 10: Wholeness - A Theoretical Perspective

The principle of holism, on which the CHI Process™ is based, was concisely summarized by Aristotle in his work *Metaphysics* as "The whole is more than the sum of its parts." The Merriam-Webster Dictionary defines holism as “a theory that the universe and especially living nature is correctly seen in terms of interacting wholes (as of living organisms) that are more than the mere sum of elementary particles.”³¹⁶ The word “whole” is derived from the Greek *holos*, the root from which holy, health, healing, holistic originate. *Wholeness*, in the context of holistic health and healing, has been defined as “completeness, indivisibility; a fundamental concept embraced by many healing systems that assert that all things are connected and that each is part of a singular whole. It is accepted that this singular whole is much greater than the sum of all its elements. It is thought that any particular phenomenon is only able to be comprehended in terms of the wholeness from which it derives.”³¹⁷

$E = mc^2$ and Quantum Theory

The explosion of Albert Einstein's $E=mc^2$ and relativity theory into the realm of science at the beginning of the twentieth century, flung open a whole new way of understanding the physical world³¹⁸ In relativity theory, “space is not three-dimensional and time is not a separate entity. Both are intimately connected and form a four-dimensional continuum, ‘space-time.’” Two people moving at different speeds will observe the exact objects in motion differently depending on where they are and how fast they are moving relative to the moving objects they are observing.³¹⁹ The observation changes relative to the individual observer!

Physicists since Einstein, including Niles Bohr of Denmark, Louis De Broglie of France, Erwing Shroedinger and Wolfgang Pauli of Austria, Werner Heisenberg of Germany and Paul Dirac of England, have continued to explore the concept that matter is energy vibrating at different rates to create the appearance of solidity.³²⁰ At subatomic levels, depending on how it was observed, matter sometimes appeared as waves and at others times as particles.³²¹ This was also the case with light.³²² Based on observations, matter has been described by quantum physicists, to be vibrating light photons – similar to experiences mystics have described throughout human history. Fritjof Capra's descriptions of quantum theory would seem to be somewhat analogous to the concept of holism:

Quantum theory thus reveals a basic oneness of the Universe. It shows that we cannot decompose the world into independently existing smallest units. As we penetrate into matter, Nature does not show us any isolated ‘basic building blocks,’ but rather appears as a complicated web of relations between various parts of the whole. These relations always include the observer in an essential way. The human observer constitutes the final link in the chain of observational processes, and the properties of any atomic object can only be understood in terms of the object's interaction with the observer. This means that a classical ideal of an objective

description of nature is no longer valid...In atomic physics, we can never speak about nature without, at the same time, speaking of ourselves.³²³

The following narrative from Paramahansa Yogananda describes his first mystical experience with the interconnected world of quantum energy:

My body became immovably rooted; breath was drawn out of my lungs as if by some huge magnet. Soul and mind instantly lost their physical bondage, and streamed out like a fluid piercing light from my every pore. The flesh was as though dead, yet in my intense awareness I knew that never before had I been fully alive. My sense of identity was no longer narrowly confined to a body, but embraced the circumambient atoms. People on distant streets seemed to be moving gently over my own remote periphery. The roots of plants and trees appeared through a dim transparency of the soil; I discerned the inward flow of their sap.

The whole vicinity lay bare before me. My ordinary frontal vision was now changed to a vast spherical sight, simultaneously all-perceptive. Through the back of my head I saw men strolling far down Rai Ghat Road, and noticed also a white cow who was leisurely approaching. When she reached the space in front of the open ashram gate, I observed her with my two physical eyes. As she passed by, behind the brick wall, I saw her clearly still.

All objects within my panoramic gaze trembled and vibrated like quick motion pictures. My body, Master's, the pillared courtyard, the furniture and floor, the trees and sunshine, occasionally became violently agitated, until all melted into a luminescent sea; even as sugar crystals, thrown into a glass of water, dissolve after being shaken. The unifying light alternated with materializations of form, the metamorphoses revealing the law of cause and effect in creation.

An oceanic joy broke upon calm endless shores of my soul. The Spirit of God, I realized, is exhaustless Bliss; His body is countless tissues of light. A swelling glory within me began to envelop towns, continents, the earth, solar and stellar systems, tenuous nebulae, and floating universes. The entire cosmos, gently luminous, like a city seen afar at night, glimmered within the infinitude of my being. The sharply etched global outlines faded somewhat at the farthest edges; there I could see a mellow radiance, ever-undiminished. It was indescribably subtle; the planetary pictures were formed of a grosser light.

The divine dispersion of rays poured from an Eternal Source, blazing into galaxies, transfigured with ineffable auras. Again and again I saw the creative beams condense into constellations, then resolve into sheets of transparent flame. By rhythmic reversion, sextillion worlds passed into diaphanous luster; fire became firmament.

I cognized the center of the empyrean as a point of intuitive perception in my heart. Irradiating splendor issued from my nucleus to every part of the universal structure. Blissful amrita, the nectar of immortality, pulsed through

me with a quicksilver like fluidity. The creative voice of God I heard resounding as Aum, the vibration of the Cosmic Motor.

Suddenly the breath returned to my lungs. With a disappointment almost unbearable, I realized that my infinite immensity was lost. Once more I was limited to the humiliating cage of a body, not easily accommodative to the Spirit. Like a prodigal child, I had run away from my macrocosmic home and imprisoned myself in a narrow microcosm.³²⁴

Systems Theory

Systems Theory explains everything in the Universe as whole systems that are part of larger whole systems, each with its own set of unique characteristics, interacting, communicating and sharing characteristics with the whole.³²⁵ Each system is made up of a diversity of smaller whole systems that share characteristics with the larger system that it is part of.³²⁶ Although the Wholeness Mandala [[Appendix C](#)] was derived intuitively, it beautifully illustrates Systems Theory.

In 1926, Jan Christiaan Smuts,³²⁷ a white South African Prime Minister, retired after his first term in office, to write *Holism and Evolution*, the first modern work addressing the subject of holism.³²⁸ In his view, holism “--covers both inorganic substances and the highest manifestations of the human spirit.” His writing represents a very concise and creative attempt to integrate philosophy, biology and quantum physics, presenting holism in the context of evolution.

Throughout recorded history, human beings have been moving towards greater and greater fragmentation at every level – individually, collectively, globally, on a planetary level.³²⁹ “Individually there has developed a widespread feeling of helplessness and despair, in the face of what seems to be an overwhelming mass of disparate social forces, going beyond the control or even the comprehension of the human beings who are caught up in it.”³³⁰ The stagnation and deterioration of

existing systems of economics, religion, society organizations, such as family and government, are reflected in the literally and metaphorically fearful state of humanity and its effect on the whole organism of our home planet. A century after $E=mc^2$ was first introduced, many forms of human expression from the arts, the sciences, and communication systems have suggested that humanity may be teetering on an axis between fragmentation and wholeness.

David Bohm writes that humans, while continuing to drift towards greater and greater fragmentation,

“have been aware from time immemorial of this state of apparently autonomously existent fragmentation, and have often projected myths of a yet earlier ‘golden age’, before the split between man and nature and between man and man had yet taken place. Indeed, man has always been seeking wholeness – mental, physical, social, individual,”³³¹

Considering what humans have discovered about the nature of matter and “reality” – that the reality that is observed depends on the perspective of the observer, then whatever is believed to be the truth about ourselves and our world will be the reality we perceive.

It is important to give some emphasis to this point. For example, some might say: ‘Fragmentation of cities, religions, political systems, conflict in the form of wars, general violence, fratricide, etc., are the reality. Wholeness is only an ideal, toward which we should perhaps strive.’ But this is not what is being said here. Rather, what should be said is that wholeness is what is real, and that fragmentation is the response of this whole to man’s actions, guided by illusory perception, which shaped by fragmentary thought. In other words, it is just because reality is whole that man, with his fragmentary approach, will inevitably be answered with a correspondingly fragmentary response. So what is needed is for man to give attention to his habit of fragmentary thought, to be aware of it, and thus bring it to an end. Man’s approach to reality will then be whole, and so the response will be whole.³³²

Cell Biologist Bruce Lipton, confirms this effect on human cell and the human organism in his book, *Biology of Belief*,³³³ and Candace Pert discovered the same phenomena in her studies of the effect of emotions on the human organism.³³⁴ Caroline Myss applies this concept to healing in *Why People Don't Heal And How They Can*.³³⁵ Gary Simmons sums it up, “Wholeness is not outside of you. Nor is it separate from you. It is the essence of your true nature and spiritual identity.”³³⁶

The human heart is at the center of the Wholeness Mandala. The purpose of the CHI Process™ is to create for participants, a holistic, systemic connection to wholeness through the use of breath, mantra and mandala and to improve physiological coherence and perceptions of well-being in the process.

Deep breaths combined with the So-Ham mantra are intended to improve emotional and physiological coherence and connection to the whole universal energy system.

Visualization of the Wholeness Mandala is intended to help the participant bring a sense of their connection to the Whole into the body through the heart and mind so that the entire physical/mental/emotional system experiences a sense of wholeness and coherence.

This research protocol measures physiological coherence using the emWavePC computer program. Physical, emotional, mental and spiritual states are self-assessed through the use of the SUD scale and the two qualitative questions, “What did you feel in your body?” and “What came to your mind?” Results are recorded in Table 6, Chapter 4, and possible implications of these results are discussed in Chapters 4 and 5.

CHAPTER 3: RESEARCH METHODS

*The twofold reality of the universe, which consists of things and space
– thingness and no-thingness - is also your own.*

Eckhart Tolle

This study measured the effects of the CHI Process™ on physiological coherence and perceptions of wellbeing, using a randomized control group intervention group experimental design with repeated measures. The four sections of this chapter describe the research design, the participants, the researcher's background and preparation, the instruments used, and the research procedures.

Research Design

This study was designed as a randomized control group intervention group experimental design with repeated measures. Participants in the Control Group and in the Intervention Group were instructed and monitored individually. The same data were collected from each participant during three five-minute segments. During the first and third segments, participants of both groups sat quietly on a chair with their eyes closed, feet on the floor and hands comfortably on the lap or on the table. During the second segment, Group A (Intervention Group) received the intervention, and Group C (Control Group) continued the same activity as in the first and third segments.

Dependent Variables

Coherence Ratio (CR)

This study measured CR or the percentage of time participants were in a state of coherence during the data collection segments. CR is indicated by numbers on the green, blue and red bars on the right side of the emWavePC computer screen display. [[Appendix E](#)] Green indicates high coherence, blue indicates medium coherence and red indicated low coherence. CR is calculated by adding the numbers on the green and blue bars on the emWavePC screen at the end of the five-minute segments. A kitchen timer was used to time segments.

Perceptions of Wellbeing

Participants recorded self-assessments of their own physical, emotional, mental and spiritual wellbeing on the SUD scale, immediately after each five-minute coherence data collection segment. The SUD scale is commonly used in conventional medical settings such as hospitals to indicate levels of pain and discomfort. It is also used in the Spiritual Wellbeing Assessment to quantify self-assessments of wellbeing.

Qualitative Experience of the Intervention

Immediately after the CR data collection, participants verbally reported on their physical sensations and thoughts during the intervention in response to two questions asked verbally by the PI.

Independent Variable

The Creative Holistic Integration(CHI) Process

Guided by a visualization script read by the PI in Sinhala, intervention group participants individually viewed the Wholeness Mandala, focusing on specific features within it, then with eyes closed, imagined themselves to be at its center, creating the imaginary energy tree, and connecting to the imagined *Heart of Earth* and *Heart of the Universe* with their breath, mentally repeating the So-ham mantra, exhaling on *So* and inhaling on *Ham*.

They continued this breath and thought pattern for five minutes while Heart Rate Variability (HRV) and CR was monitored and data recorded.

Participants

Participants were 60 adolescents and young adults between the ages of 12 and 24 who lost family members in the 2004 tsunami in Sri Lanka's South Coast district of Hambantota. Most of the participants were from poverty level or low income families. Economic challenges were exacerbated due to the loss of livelihood, homes and belongings in the tsunami.

Further distress was caused by internal displacement in temporary camps for extended periods of time until the eventual relocation to "tsunami villages" built with funding from international donors. Education and community life were disrupted. From personal accounts, the most devastating experience was the loss of parents and family members.

Twenty five participants lost their mothers. Twenty six lost their fathers, six lost both parents and are living with relatives, one lost her grandmother who was her primary caregiver, one lost her brother, and one lost three sisters and is the only surviving sibling.

In a culture where children and youth are dependent on their parents and extended family until marriage, in the wake of the tsunami, those who normally would have provided them support were themselves gripped by their own trauma, and were also struggling to cope. Participant responses when asked what came to their minds when they sat quietly with their eyes closed, indicated that five years later, while carrying on the best they can in new homes and communities, just below the surface, the tsunami continues to affect their lives and day to day realities.

Samples

The PI made initial contact with the Executive Director of the after-school program by e-mail, followed by a phone call from the United States to Sri Lanka, to ask permission to do the research project with students who came to the after-school program. Since the PI had carried out an exploratory pilot project in 2007 through this organization, she was granted permission to carry out the project at the after-school program. A phone call to the Program Administrator confirmed that she could come to Sri Lanka and begin the project immediately after school vacations in April 2009. She arrived in Hambantota the day that the program resumed following the Sinhalese and Tamil New Year celebrations.

During the first week, the PI, with assistance from staff members, made a list of after school students who met the inclusion criteria, providing demographic information. Informed consent forms, cover letters and questionnaires were translated from English into Sinhala, typed up and photocopied, and envelopes and stamps purchased from the post office. Return envelopes were addressed to the after-school program for the PI's attention.

Each day of the first week, students who met the inclusion criteria were verbally invited to attend a meeting held in one of the classrooms. They were given a verbal summary of the project, and a demonstration of the computer monitoring procedure, and were informed that before and after the computer monitoring segments they would be required to fill out a questionnaire and asked a few questions about how they felt during each monitoring segment. It was explained that because the project was going to compare the effects of different ways of breathing and that not everyone will be doing the same thing. They were told that it was very important that participants did not discuss their experiences with others until the project was complete, so as not to spoil the experience for others. It was emphasized that doing so would disqualify them from the project.

Those who wished to participate in the project were asked to sign the informed consent form, fold it with a cover letter, place it in an envelope along with a stamped return envelope, and take the packet home to their parents /guardians to be signed and returned by hand or by mail. It was emphasized that only those who filled

out and signed and submitted Informed Consent Forms would be eligible to participate in the project.

After-school program

As the consent forms were returned, the name of each participant was written on a slip of paper, folded four times so that the name was not visible, and placed in an ordinary white envelope marked with the day of the week he/she attended the after-school program.

Each day, after the daily assembly of students, the PI would pick a folded slip of paper from the envelope and invite the student whose name was written on it to participate at that time. She would then ask him/her to pick a rolled paper from the box and give it to her. If the paper contained the letter was *A* the PI followed the intervention procedure. If it was *C*, she followed the control procedure.

As each participant finished their procedure, another name was picked at random. On the average each session lasted between 30 – 60 minutes, and only two participants could be accommodated each day on the four days that the after-school program was in session each week. The number of school holidays due to seasonal festivals as well as several days off for national and local celebrations in honor of the end of the three-decade long civil war, slowed the project down considerably. In order to move the project forward, the PI decided to open it to other organizations and locations in the area.

In-Home

The PI contacted an organization that provided support to tsunami-affected families, to explore the possibility of recruiting participants through them. Since their outreach program was no longer in operation, she was referred to an unemployed community outreach worker, who had experience with area families, and was known and trusted in the community. The PI employed this woman, to help recruit participants and to accompany her on visits to homes of potential participants. She provided names and addresses of potential participants who met the inclusion criteria. The PI wrote the names of suggested participants from the list on slips of paper, folded and placed them in envelopes marked with the name of the villages in which they lived.

On days that the after-school program was not in session, the PI rented a [three wheeler](#) with a driver, picked up the community outreach worker from her home and went to one of the villages in which potential participants lived. The outreach worker decided which village would be visited that day. The PI randomly picked a slip from the envelope for that village, and together they went to the home of the participant, whose name was on that slip of paper, arriving after s/he had returned from school and had time to finish the mid-day meal. Introductions were made, and the purpose of the visit explained. If there was interest in participating in the project, the informed consent form was read³³⁷ to potential participants and their parents or guardians, the monitoring procedure demonstrated and their questions answered. The living area was organized to accommodate the computer equipment. The participant randomly picked a slip of paper that indicated which procedure the PI would follow.

On the average, each visit lasted approximately an hour, and four processes were completed each day.

In the workplace

Most 18 – 24 year olds usually live at home, despite being out of school, in the work force, and/or studying in universities or vocational training institutions. They do not usually spend much time in the home, so the PI chose to recruit participants of this age group through the workplace. The PI requested permission from the manager of the hotel she was staying at, to recruit project participants from among the hotel staff. In response, the PI was invited to attend a weekly staff meeting and given the opportunity to describe the project and invite those who met the inclusion criteria to read and sign an informed request form and submit it to the PI before they left the meeting. The hotel manager offered the PI a small conference room, free of charge, to carry out project activities as needed. He also announced to the entire staff, that project participants, with agreement of their supervisors, could take time off from their duties, as needed, to participate in the project.

The PI informed volunteers that each day, one person would be randomly picked to participate in the project, and be informed by 9 a.m., so that they could make arrangements to be relieved of their duties with enough time to have lunch and be at their appointment by 12:30 p.m. If they were unable to be there at the appointed time, they would inform the PI as soon as possible and another participant would be randomly picked.

The names of all those who submitted signed informed consent forms, were written on slips of paper folded in four, and were placed in an envelope. Around 9 a.m. the PI would randomly pick one slip of paper, and make phone contact with the participant whose name was on it to invite him/her to participate in the project that day. If this participant was not available, their name would be returned to the envelope and another name would be picked.

Upon arrival, participants randomly picked a rolled slip of paper from the box that would indicate to the PI which procedure to follow. Only one participant in this group was processed each day.

The inclusion and exclusion criteria listed below applied to all participants in all groups.

Inclusion Criteria

- Between 12 and 24 years of age.
- Lost parent/s or close family members in 2004 tsunami.
- Read and submitted signed informed consent form.
- Parent/guardian of minors read and submitted informed consent form.
- Comprehends and follows written, visual and verbal instructions.

Exclusion Criteria

- Under 13 and over 24 years of age.
- In treatment for cardiovascular and/or psychological disorders.
- Physically disabled.

- Does not follow instructions or disrupts project activities.

Randomization

The names of all participants were written on slips of white paper, folded four times, and placed in envelopes on which their location or, in the case of the after-school program, the days of the week they attended were written. Each day the PI randomly picked a slip of paper from the appropriate envelope containing the name of the next participant to be selected to participate. Neither the PI nor the participants knew who would be picked next.

In a box, the PI placed 60 identical slips of white paper rolled tightly - 30 with the letter *I* for intervention, and 30 with the letter *C* for control written inside. When each participant arrived for their sessions, the PI asked him/her to randomly pick a rolled up paper from a box and give it to her, without looking at it. If participants asked what was inside, the PI told them that what was written in the papers indicated to her what she was to do with them during their session. Participants were not aware that there were different groups – only that there were different breathing techniques being tested.

Participants were randomly distributed equally between the control group and the intervention group as follows:

Table 2. Age and Gender Distribution: Control Group.

Age group	Female	Male
12 – 14 years	11	6
15 – 18 years	6	3
19 – 24 years	1	2
Total	18	11

Table 3. Age and Gender Distribution: Intervention Group.

Age group	Female	Male
12 – 14 years	11	3
15 – 18 years	4	3
19 – 24 years	8	6
Total	17	12

Setting

This project was carried out at three locations in the Hambantota District: a privately funded after-school program originally established for school age children of tsunami victims; homes of participants in two tsunami villages³³⁸ and participants' workplaces. In all cases participants were in an environment with which they were very familiar. The PI did not change the settings except for arranging one or two pieces of furniture as necessary to accommodate the placement of the computer in a place where it could be plugged into a direct current electrical supply with the screen positioned so that it was not visible to the participant.

The table below shows the number of participants processed at each setting.

Table 3. Participant composition at each location.

Group	After-school program	Homes	Workplace
Intervention group	17	9	4
Control Group	21	7	2

The After-School Program

The after school program is a privately funded institution, managed by a Board and run by an administrator and a staff of eight, including four teachers, secretary / psycho-social counselor, cook, bus driver /computer assistant, and night watchman. It is located in a house in which the rooms had been adapted for use as classrooms. Each week, the program serves approximately 150 children and youth aged 7 – 18. All were from economically challenged families, most of whom lost parents and family members in the tsunami.

What was originally meant to be a psycho-social program for tsunami-affected children and youth, has, five years later, been transformed into an after-school study program that supplements the sub-standard government-run public education. On Tuesdays, Wednesdays, Thursday afternoons and Saturday mornings, for three hours, different groups of about 25 to 30 students are transported to the center by bus from various schools in the area, to be given a hot lunch, and tutored in English and Sinhala language, Mathematics, Social Studies and Computer skills.

The building in which the after-school program is run is a residence, with an open plan, with no walls between classrooms. Only the Administrator's office, the accountant's office, the computer lab and the kitchen are enclosed. The students were

divided into four groups, and rotated between the four classes in the time they spent in the program. A covered area outdoors on one side of the house was used as a classroom, since indoor space was inadequate to house all four classes simultaneously. Because there are no sound-barriers between rooms, sounds of teachers and students voices and interactions are carried from room to room. Since the building is located on a busy street, the noise of traffic and street noise can be heard throughout the building.

Despite the PI's request, prior to arrival, for one consistent area to be designated for the research project, it was obvious, that this was not possible or fair given the space limitations. Each day, upon arrival, the PI was designated either the *sala* (an open foyer area at the entrance) or one of the classrooms to carry out project activities. No attempt was made to reduce noise, or change whatever was normal in the environment. It is a common practice to create necessary private space in the midst of daily activity, and this was what the PI had to do in this location.

To avoid contamination of data due to the *Heart Field Effect*,³³⁹ or Heart resonance with others in too close proximity during data collection periods, a masking tape line marked the 20 foot boundary, maintaining distance between the participant and others in the building. The PI entered this area only to prepare and instruct participants and record data.

The computer was placed on a desk or chair and plugged into an electrical outlet so that the participant could not see the computer screen from where she/he sat.

Homes

The homes of participants were modest structures of various dimensions with a simply furnished living room area, kitchen and two or three bedrooms, depending on the size of the family, and a small yard in which flowers and/or vegetables were grown. All had access to electricity, and the PI had to temporarily disconnect the television set or a lamp to plug in the computer. The computer was set up on a small table, or a chair, positioned so that the screen was not visible to the participant. The participant sat on a chair, with hands on the lap and feet flat on the floor, facing away from the computer screen. The PI explained to others in the home that it was necessary for the participants to be alone in the room so as not to be disturbed, and because the presence of others in too close proximity could affect the data.³⁴⁰ Family members graciously and willingly vacated the area and relocated to other parts of the house or to the garden, at least 20 feet away from the participant, until all the necessary data had been collected from the participant.

Workplace

A small conference room with a rectangular table and chairs was made available to the PI to conduct project activities. Each participant sat on a chair at the table, with hands on the lap or on the table, and feet flat on the floor. The computer was placed across from him/her, on the other side of the table, with the screen facing away from the participant.

INSTRUMENTS

Selection of instruments used in this study was based on the following criteria:

1. The ease of use by participants and PI in settings that were familiar to participants.
2. The ease of reproduction of measures for multiple uses as needed.
3. Appropriateness to culture and situation.
4. Maintaining compliance with accepted reliability and validity standards.

EmWavePC

The emWavePC, a heart rhythm coherence feedback system, the most recent version of the Freeze Framer technology developed by the HeartMath Institute. It graphically presents HRV or the inter-beat heart rhythm patterns that represent - SNS and PNS activity that indicates stress and de-stress responses of the body. The screen display shows a timeline, a graph of the accumulated coherence score that indicates the quality of coherence, a bar chart of the CR showing the percentage of time during the data collection period that a participant spent in low, medium and high coherence and the average heart rate during the monitoring period. High CR represented by the green bar reflects a high percentage of PNS activity, medium CR, represented by the blue bar, reflects the percentage of time the body moved between SNS and PNS activity, and low CR, represented by the red bar, reflects the percentage of SNS activity during the monitoring period.

Data is collected using a plethysmographic optical sensors³⁴¹ connected either to the middle finger or the earlobe on one end and a USB port on the computer. This study used the earlobe sensor.

Loaded onto a laptop computer, emWavePC provided an easily transportable instrument that could be used in environments that were a normal part of participants' lives, rather than in a contrived, specially prepared one. Coherence data of all participants was collected during three five minute timed sequences, during and after the intervention, or control segments. [[Appendix](#)]

The emWavePC program is a biofeedback and entrainment training device, however, this study used it for data collection, recording and filing. It is non-invasive, inexpensive and portable, making it highly appropriate for use in this study, so that research participants could be tested non-invasively in familiar surroundings. The emWavePC has a sample rate of 256 Hz, making it an acceptable tool for measuring HRV and Coherence data for the purposes of this study.

The PI used a digital kitchen timer to maintain a constant of 5 minutes for each of the data collection segments. She stationed herself at a distance so that the participant could not hear the sound of the timer, returning to the testing area as needed to instruct and question the participant, to start and stop computer monitoring and to record data.

Subjective Units of Distress (SUD) Scale

The SUD scale provides a subjective quantitative self-assessment by participants of their experiences. It was originally developed by Joseph Volpe as a

simple trauma assessment tool, and is used widely by medical professional in hospital to assess patient pain and discomfort levels, and by psychologists, professional counselors and researchers to assess the progress of interventions as experienced by the client or subject.

In this study, the SUD scale provided a subjective correlation to the objective physiological coherence data collected on the emWavePC.

The following form, translated into vernacular Sinhala, was completed by each participant after each data collection segment.

SUD Scale Form

Date_____

ID#_____

SEGMENT # : ____

How do you feel now?

Physical: (pain, discomfort, tightness etc.)

Best 0 1 2 3 4 5 6 7 8 9 10 Worst

Emotional: (happy, sad, angry, frustrated, worried etc.)

Best 0 1 2 3 4 5 6 7 8 9 10 Worst

Mental: (focused, forgetful, confused, brain fog etc.)

Best 0 1 2 3 4 5 6 7 8 9 10 Worst

Spiritual: (peaceful, restless, connected to self, others, nature, hopeless etc)

Best 0 1 2 3 4 5 6 7 8 9 10 Worst

Comments

/Details:_____

Qualitative Data Questions

After each data collection segment, participants were verbally asked the following questions:

1. What did you feel in your body?
2. What thoughts came to your mind?

The PI recorded participant responses on a data form on the computer. Participant's choice not to answer these questions was honored. The choice not to answer was entered as "No Response." These reports provided a qualitative narrative that could be discussed in terms of its correlation with the quantitative data.

Procedures

All procedures were carried out on an individual basis. When a participant arrived for his/her session, the PI carried out the following procedures, closely following the script below.

Randomization

PI: (Showing the box of rolled up slips with I or C written inside.)

Pick one of these and give it to me.

PI: What is written on this slip tells me what activity you will be doing during your session.

(If the letter on the paper was *C*, the participant would receive the Control Group procedures. If it was *I* the Intervention Group procedures were followed.

Come, sit down on this chair.

Participant: (sat)

Protocol

Protocol was carried out individually for each participant, and included one, thirty-minute session divided into three, ten-minute segments of activity and data collection. CR data were recorded for five minutes during each segment, after which data from the SUD scale and the two qualitative questions were recorded.

SUD Scale: Pre-session

This pre-session was more to instruct participants on the meaning of each item on the SUD Scale Form, and what was required of participants in relation to quantifying perceptions on the form.

Pre-session data were not included in data analysis.

The PI noted that there was no difference between the pre-session and First Segment SUD scores.

Pre-session procedure script

PI: (Presenting the SUD Scale Questionnaire attached to a clipboard, and a ballpoint pen.)

On this paper you will draw a circle around the number that will show what you think your status is in what you are feeling and experiencing right now – physically, emotionally, mentally and spiritually. Circle 5 if you feel neither good nor bad. 0 is the best that you possibly can feel. So, if you're feeling good, you'll pick a number between 0 and 5 that will show exactly how good you feel. 10 is the worst you can possibly feel. So, if you are experiencing difficulties, then you'll pick a number between 5 and 10 that will show how bad you are feeling.

Physical means sensations you feel in your body like aches and pains, tightness, discomfort, tiredness. Now circle the number that shows how your body feels right now, and if you want to describe what you feel, you can write it below or tell me, and I'll type it into the computer. (This option was given in case the participant did not know how to write.)

Participant: (Circles appropriate number.)

PI: Your emotional state has to do with feelings of happiness, sadness, anger, fear, worry. So, circle the number that shows how you feel emotionally right now.

Participant: (Circles the appropriate number.)

PI: Mental issues have to do with matters like concentration, focus, forgetfulness, confusion, difficulty understanding and studying, racing thoughts - things like that. What number would you give your mental state?

Participant: (Circles the appropriate number.)

PI: Spiritual matters have to do with experiencing peacefulness (*samakami*), lightness of being (*sahallu*), deep satisfaction and comfort, (*Sanaseemak /Sahanayak*) compassion, gratitude, and feeling good about yourself, and feeling connected to

yourself, others, Earth and Universe and powerful energies / forces that we may feel or believe in even without seeing.

Participant: (Circles the appropriate number.)

PI: OK. Now write your name, age and today's date on the paper, and give me it back to me.

All Participants: Segment 1

All participants followed the identical procedure regardless of which group they were in.

Sit comfortably on your chair.

Place your hands palms down on your lap or on the table.

I am going to clip this ear sensor on your ear lobe like I demonstrated the first day.

The ear sensor will record your pulse and send it to the computer through the wire.

Each time you will sit quietly for 5 minutes, without moving around, with your hands quiet and your eyes closed.

Then I will start recording your pulse on the computer, and leave the room for 5 minutes.

When I return, I will stop recording and ask you a few questions and record your answers on the computer.

Then you to will fill out this form again.

Is this OK with you?

Do you have any questions?

Ready? Now close your eyes and breathe normally.

PI began emWavePC data collection

I will be back in 5 minutes.

PI stopped emWavePC data collection

Slowly open your eyes.

Qualitative Report Procedure

PI: What did you feel in your body while you had your eyes closed?

Participants replied.

PI recorded answers on the computer.

PI: What came to your mind?

Participant replied.

PI recorded answers on the computer.

PI: presented the SUDS Questionnaire.

OK. Now draw a square around the numbers that describe how do you are feeling now?

Participant: Filled out the SUDS Questionnaire.

Control Group: Segments 2 and 3:

Participants who randomly picked the C group followed the exact procedure in Segment 2 and 3 as in Segment 1.

Intervention Group: Segment 2

The CHI Process

The Wholeness Mandala graphic [[Appendix C](#)] was placed upright in a plastic stand in front of the participant. The PI read the guided visualization script in Sinhala.

The following is the English translation:

- Look at the mandala.
 - Notice the person in the center, and the heart at the center of the person and the whole mandala.
 - Notice the hearts at the center of the earth and the universe.
 - Notice how the roots go from the heart through the base of the body to the heart of the earth.
 - Notice how the branches and leaves go up from the person's heart up through the top of the head to touch the heart of the universe.
 - Hold this image in your mind. Close your eyes.
 - Imagine you are sitting on Earth, in the universe.
 - Your heart is at the center of you and the mandala.
 - Breathe slowly and deeply through your heart.
 - As you inhale you receive...as you exhale, you give.
 - You exchange energy with all of nature around you – all that is on Earth.
 - Feel your breath go in and out. Inhale...Receive....Exhale...Give.
 - Your heart is full of life energy.
 - As it pulsates, it pumps blood and energy to and from every part of your body.
- Giving...Receiving.

- Feel your heart...beating as it gives and receives energy.
- Imagine that your heart is a seed, pulsating with life energy.
- Inhale... exhale...inhale... exhale...inhale...exhale.
- Inhale slowly and deeply into your heart.
- Exhale: sending roots from your heart, through the center of your body, through your legs, down to the heart of the earth.
- Inhale: Breathe Earth's energy slowly and deeply into your heart.
- Exhale: sending branches and leaves up through the center of your body, through the top of your head, into the heart of the universe.
- Inhale: Breathe universal energy into your heart.
- Exhale: ...send the breath down into the heart of the earth. Think "So"
- Inhale: Think "Ham".....Exhale: "So."
- Your breath connects you to everything that is – on Earth and in the Universe.

(PI starts data collection)

Continue this breathing and thought pattern until I come back and tell you to stop.

I will be back in 5 minutes.

(5 minutes later: PI returns and stops data collection.)

You can breathe normally now. Slowly open your eyes.

Intervention Group: Segment 3

Participants followed the exact procedure as in Segment 1.

Qualitative Methods

After each segment participants were verbally asked and answered two questions:

- 1) What did you feel in your body?
- 2) What came to your mind?

Answers were simultaneously translated from Sinhala to English, and entered as comments in to a table format on the computer, created for this purpose by the PI prior to beginning the project.

Principle Investigator's Role

The PI was involved in every aspect of this research study, and was responsible for the design, creating the Wholeness Mandala and all instruction scripts and execution of the research project, and writing this dissertation.

The PI originally intended to train others to carry out the activities of this project, while she focused on data collection. However, it became clear on the ground that staff members at the after-school program had neither time nor interest in receiving training or being as actively involved in the project as the PI had envisioned. Therefore, the PI was personally involved in all aspects and phases of this research, with support provided as needed for recruitment activities, Sinhala translation and typing of written material by the Administrator and staff of the after-school program and the community outreach worker. All communications with participants, parents and support personnel were in Sinhala.

Data Collection

Data was collected according to the following schedule:

Table 4. Data Collection Schedule and Summary.

Protocol Segments	Control Group	Intervention Group
Segment 1	Coherence Data	Coherence Data
5 minutes	Normal breathing eyes closed Hands on table or lap	Normal breathing eyes closed Hands on table or lap
5 minutes	Qualitative Report	Qualitative Report
	SUD scale	SUD scale
Segment 2	Coherence Data	Coherence Data
5 minutes	Normal breathing eyes closed Hands on table or lap	CW Exercise Hands on table or lap
5 minutes	Qualitative Report	Qualitative Report
	SUD scale	SUD scale
Segment 3	Coherence Data	Coherence Data
5 minutes	Normal breathing eyes closed Hands on table or lap	Normal breathing eyes closed Hands on table or lap
5 minutes	Qualitative Report	Qualitative Report
	SUD Scale	SUD Scale

Controlling the environment for contamination of data

As the ANS is extremely sensitive to internal and external stimuli, the following controls were used to avoid contamination of data.

- To control for biofeedback effects, participants will not see the computer screen until all the data has been collected, and the session completed.
- To control for heart rate synchronization with others in the vicinity, participants will be monitored in a space at least 20'X 20' away from others.³⁴² The PI was present in the room only before and after data collection, to instruct participants on what to do, to turn the monitoring device on and off, and to record and file data on the computer.
- To control for visual stimuli, the eyes will be closed.

Method of sharing results with research participants

All participants:

After the data had been collected and recorded from the three segments, each participant was invited to view the emWave recordings on the computer screen, and received a verbal explanation in simple language of what it meant.

The emWavePC graphics made it interesting and easy for participants to understand.

Control Group:

Those who were in the control group were asked if they would like to learn a different Exercise. If they said yes, they were given the intervention, were monitored

and recorded on the emWavePC, marked the SUD Scale, and gave qualitative report on the intervention experience, and were shown the results. Although no statistical analysis was done with this data, in every case, clear improvements were observed.

Data Analysis

A trained statistician processed the data utilizing SPSS, using a mixed analysis of variance (MANOVA) with between groups and within group factors.

Verification

The Coherence data was recorded on the emWavePC computer program on a laptop computer.

Qualitative verbal data was typed in on the comments box of emWavePC or typed directly into a database set up on the laptop computer.

Perceptions of Wellbeing were recorded by participants on the SUDS forms. At the end of each day, the PI checked the database to make sure that all the data from that day was entered correctly into the database.

No changes were made after data entry, except for the removal of names from all data published in this study.

Ethical Considerations

Informed consent

The informed consent form [[Appendix F](#)] was translated to Sinhala, typed up, and adequate numbers of photocopies made to enable each participant and parents of minor participants to sign one copy to give to the PI and retain one copy for

themselves. Language used in the translation was simple enough to be understood by participants and parents alike.

In all locations, before volunteers signed up for the project, the PI read each item of the Informed Consent form aloud to all participants due to the possibility that they may not know how to read the document, and to avoid any embarrassment from this. Minor participants were requested to read the Informed consent form aloud to their parent or guardian, and invite them to contact the PI if they had any questions. It should be noted that some parents were illiterate.

Demonstration

In addition to the informed consent form, the PI gave participants a demonstration of how the computer would be used in the project, showed them the emWavePC screen display, and gave an explanation of what it meant.

During the computer demonstration, the most common question asked by participants, was whether there was a danger of the ear sensor giving them an electrical shock. The PI assured them that it would not, and explained that it only picked up the rhythms of the heartbeat much like a stethoscope used by doctors, except that the ear sensor picked up the pulse of the blood flowing through the earlobe to find out how well the heartbeat was resonating in other parts of the body, and sent this information to the computer. Participants were invited to try the ear sensor on if they wished to, and many enthusiastically tried it out observed with much interest by the others in the group.

In order to avoid influencing results, the terms *consciousness or wholeness* was not used in describing the project to participants and parents. The project was described as (transliterated) “husma ganeemey pareekshanaya” or “breathing experiment.”

Parents and guardians of minor participants in the after-school program were sent the informed consent form through the participants who had already volunteered for the project , and had signed the informed consent forms. Parents / guardians were requested to read, sign and return them through their children /charges or by mail in the stamped addressed envelopes provided for that purpose. Participants who were processed in their homes and at their places of work, and parents or guardians of minors were also read the informed consent form and given the computer monitoring demonstration before signing the informed consent form right before their session.

CHAPTER 4: RESEARCH FINDINGS

When a critical mass of humans evolve to the transpersonal level of consciousness a higher civilization is likely to emerge, with a deeper solidarity and a higher sense of justice and responsibility.

Irvin Laszlo

This chapter presents the results of the study described in the previous chapter. It includes a narrative of the quantitative and qualitative effects of the intervention and control procedure on the study participants, illustrated with graphs, figures and tables. CR was measured by the emWavePC computer program, Perceptions of Physical, Emotional, Mental and Spiritual Wellbeing were indicated on the SUD Scale and Quantitative verbal reports in response to the questions, 1) “What did you feel in your body?” and 2) “What came to your mind?” were recorded by the PI on a computer database. A table showing qualitative and raw quantitative data side by side is presented at the end of this chapter.

The study utilized a randomized experimental design with repeated measures. A trained statistician processed the data using a mixed analysis of variance (MANOVA) with between groups and within group factors.

Results clearly show significant improvements in all categories of data gathered from participants in the intervention group compared to baseline and control group data. The results of this study support the hypothesis that participating in the CHI Process will improve physiological coherence and the perception of wellbeing in a population of Sri Lankan youth, and negates the null hypothesis.

Coherence Ratio (CR)

CR shows the percentage of time the participant was in a state of high coherence during the five-minute data measurement segments. CR is calculated by adding the percentage of time that the participant was in medium and high coherence during the data gathering segment. High Coherence indicates heightened parasympathetic nervous system activity that supports growth, development, healing and optimum functioning of the body's systems.

An example of the emWavePC screen for one of the participants during his s is shown in Appendix E.

Graphs, tables and narratives showing the results of the study described in the previous chapter are presented as sets on the following pages. Graphs and Descriptive Statistics are shown on one age and the narratives on next page.

Table 5. Coherence Ratio Descriptive Statistics

GROUP		Mean	Std. Deviation	N
CR1	Control	37.76	23.430	29
	Intervention	29.83	25.544	29
	Total	33.79	24.621	58
CR2	Control	33.76	22.679	29
	Intervention	78.76	29.190	29
	Total	56.26	34.443	58
CR3	Control	35.62	19.542	29
	Intervention	47.45	62.737	29
	Total	41.53	46.440	58bb

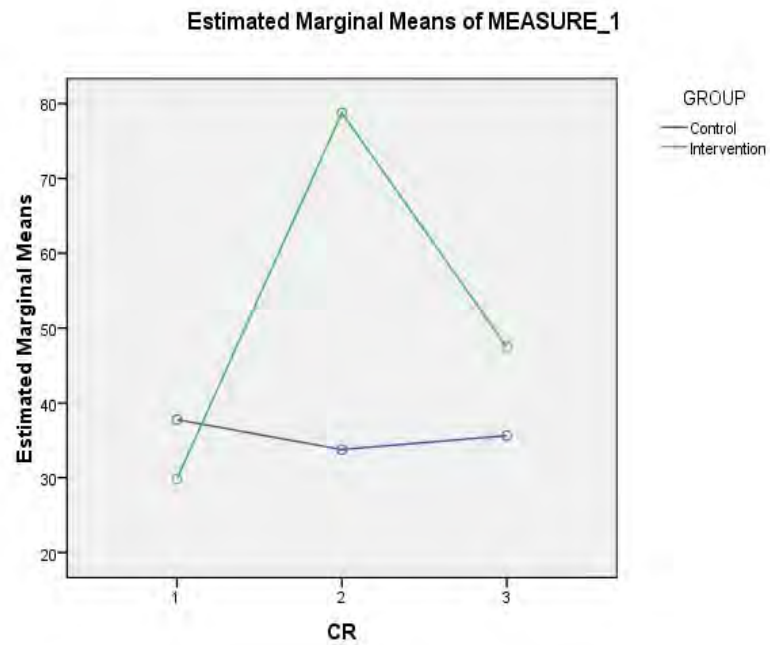


Figure 8. Coherence Ratio Graph

Segment #1: At baseline, the mean CR of the Intervention group was approximately 29.8, and the control group's mean CR was 37.7.

Segment #2: The Intervention group showed a significant improvement, with the mean CR at 78.7, while the Control group showed a slight decrease to 33.7 mean CR.

Segment #3: The mean CR of the Intervention Group decreased slightly to 47.4 while the Control group increased slightly to 35.6.

The Intervention Group practicing the CHI Process showed a statistically significant higher CR ($P = .001$, $F = 11.17$). The above statistics support the hypothesis that Creative Holistic Integration significantly improved Coherence ($F = 11.17$, $P = .001$) of a population of Sri Lankan youths ($N=58$) who lost family members in the tsunami.

The high CR achieved during the intervention in the Second Segment was not maintained during the Third Segment, but was higher than the First Segment or at baseline.

Perceptions of Wellbeing

Participants recorded perceptions of their own physical, emotional, mental and spiritual wellbeing on a Subjective Units of Distress (SUD) scale from 0 to 10 (0 = best possible, 10= worst possible). The tables and graphs below were created from SUD scale data in all four categories as well as from as average of the combined data.

Perceptions of Wellbeing: Physical

Table 6. SUD Scale Physical: Descriptive Statistics.

GROUP		Mean	Std. Deviation	N
SUDS 1P	Control	2.00	1.464	29
	Intervention	2.93	2.154	29
	Total	2.47	1.885	58
SUDS 2P	Control	2.24	1.845	29
	Intervention	1.66	1.778	29
	Total	1.95	1.820	58
SUDS 3P	Control	2.28	2.297	29
	Intervention	1.34	1.717	29
	Total	1.81	2.064	58

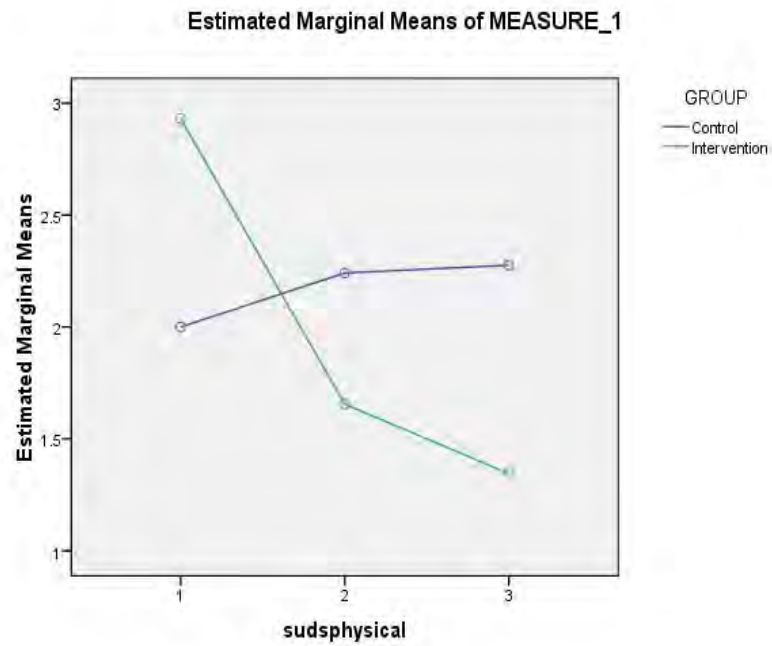


Figure 9. Perceptions of Physical Wellbeing: SUD Scale Graph

Segment 1: Baseline data was gathered prior to the instructional session and computer monitoring.

The intervention group was 2.93, and the Control group averaged at 2.00.

Segment 2: The Intervention group averaged at 1.66 while the Control group averaged at 2.24.

Segment 3: The intervention group averaged at 1.34, and the Control group averaged at 2.28.

The SUDS Perceptions of physical wellbeing showed a slight, but progressive improvement in the self-perceived status of the intervention group ($F = 9.03$, $P = .004$) and a very slight insignificant improvement in the control group.

Perceptions of Wellbeing: Emotional

Table 7. SUD Scale Emotional: Descriptive Statistics

GROUP		Mean	Std. Deviation	N
SUDS 1E	Control	2.52	1.883	29
	Intervention	2.93	1.831	29
	Total	2.72	1.852	58
SUDS 2E	Control	2.48	2.230	29
	Intervention	1.55	1.824	29
	Total	2.02	2.073	58
SUDS 3E	Control	2.17	2.156	29
	Intervention	1.24	1.431	29
	Total	1.71	1.873	58

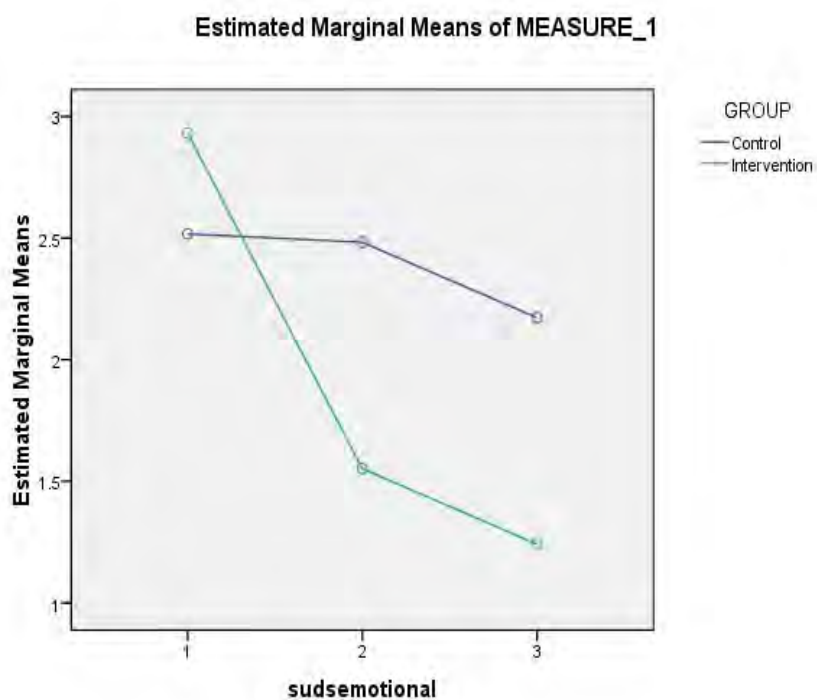


Figure 10. Perceptions of Emotional Wellbeing: SUD Scale Graph

Segment 1: The intervention group averaged at 2.93, and the Control group averaged at 2.52.

Segment 2: The Intervention group averaged at 1.55 while the Control group averaged at 2.48.

Segment 3: The intervention group averaged at 1.24, and the Control group averaged at 2.17.

The SUDS Perceptions of emotional wellbeing showed a slight, but progressive improvement in the self-perceived status of the intervention group ($F = 6.34, P = .015$) and a very slight insignificant improvement in the control group.

Perceptions of Wellbeing: Mental

Table 8. SUD Scale Mental: Descriptive Statistics

GROUP		Mean	Std. Deviation	N
SUDS 1M	Control	2.79	1.916	29
	Intervention	2.97	1.822	29
	Total	2.88	1.855	58
SUDS 2M	Control	2.38	2.411	29
	Intervention	1.55	1.594	29
	Total	1.97	2.069	58
SUDS 3M	Control	2.31	2.436	29
	Intervention	1.34	1.370	29
	Total	1.83	2.019	58

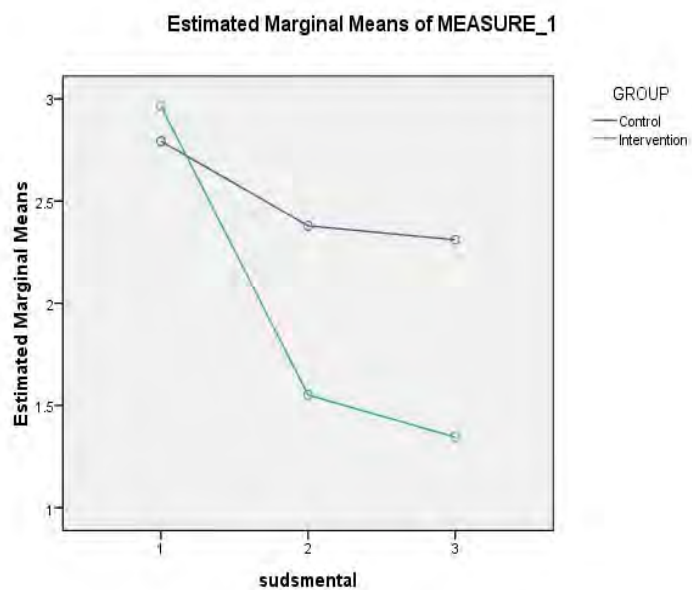


Figure 11. Perceptions of Mental Wellbeing: SUD Scale Graph

Segment 1: The intervention group averaged at 2.97, and the Control group averaged at 2.79.

Segment 2: The Intervention group averaged at 1.55 while the Control group averaged at 2.38.

Segment 3: The intervention group averaged at 1.34, and the Control group averaged at 2.17.

The perceptions of mental wellbeing showed no statistically significant improvement in the self-perceived status of the intervention group ($F = 3.90$, $P = .053$).

Perceptions of Wellbeing: Spiritual

Table 9. SUD Scale Spiritual: Descriptive Statistics

	GROUP	Mean	Std. Deviation	N
SUDS 1S	Control	1.93	1.438	29
	Intervention	2.72	1.869	29
	Total	2.33	1.700	58
SUDS 2S	Control	1.97	1.861	29
	Intervention	1.38	1.321	29
	Total	1.67	1.626	58
SUDS 3S	Control	2.07	2.219	29
	Intervention	1.28	1.334	29
	Total	1.67	1.858	58

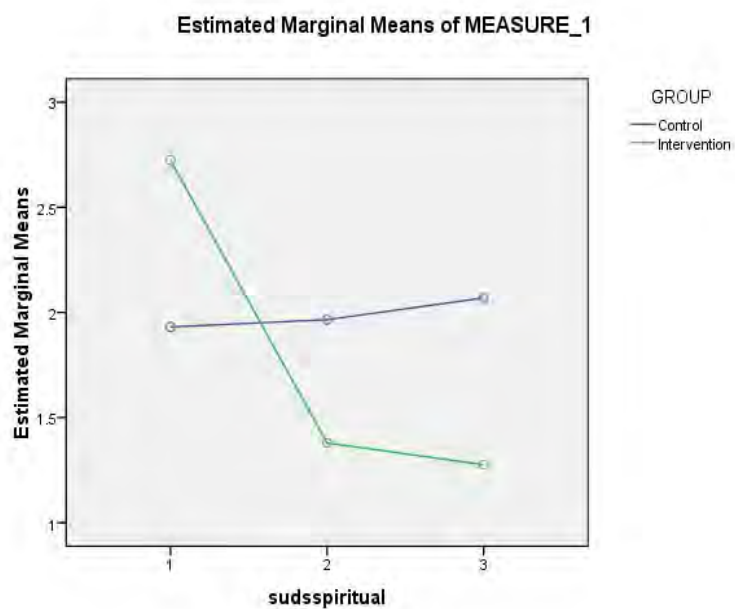


Figure 12. Perceptions of Spiritual Wellbeing: SUD Scale Graph

Segment 1: The intervention group averaged at 2.72, and the Control group averaged at 1.93

Segment 2: The Intervention group averaged at 1.38 while the Control group averaged at 1.97.

Segment 3: The intervention group averaged at 1.28, and the Control group averaged at 2.09.

The perceptions of spiritual wellbeing showed a statistically significant improvement in the self-perceived status of the intervention group ($F = 8.13$, $P = .006$).

Perceptions of Wellbeing: Average

Table 10. SUD Scale Average: Descriptive Statistics

GROUP		Mean	Std. Deviation	N
SUDS1AV	Control	2.31	1.339	29
	Intervention	2.89	1.457	29
	Total	2.60	1.417	58
SUDS2AV	Control	2.27	1.843	29
	Intervention	1.53	1.420	29
	Total	1.90	1.672	58
SUDS 3AV	Control	2.21	2.130	29
	Intervention	1.30	1.308	29
	Total	1.75	1.810	58

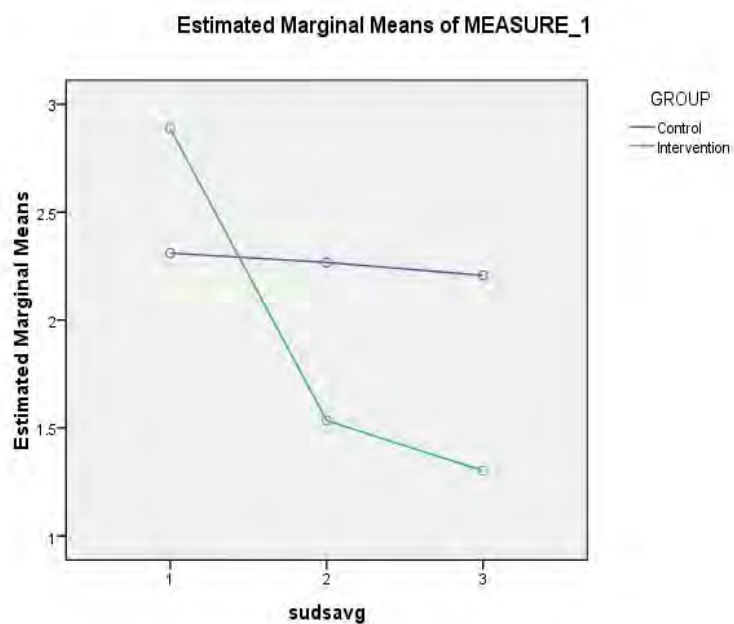


Figure 13. Perceptions of Wellbeing: SUD Scale Average Graph

Segment 1: Baseline data was gathered prior to the instructional session and computer monitoring. The SUD average for the intervention group was 2.89, and the Control group averaged at 2.31.

Segment 2: The Intervention group averaged at 1.5 while the Control group averaged at 2.2.

Segment 3: The intervention group averaged at 1.3, and the Control group averaged at 2.2.

The SUDS Average showed a statistically significant improvement in the self-perceived status of the intervention group ($F = 9.749$, $P = .003$).

Qualitative and Quantitative Data

The following table sets forth the Quantitative and Qualitative data gathered in this project. To collect data for the SUD scale and the two questions relating to physical and mental/emotional well-being the PI asked the prescribed questions and participants answered verbally in Sinhala. Responses were recorded and translated into English by the PI. Every attempt has been made to summarize responses without losing meaning and integrity of participant responses. Discussions about the data and possible correlations between the quantitative and qualitative data are offered in Chapter 5.

Table 11. Qualitative and Quantitative Data: Intervention Group

Segment	ID #	Participant Details	Sex/ Age	SUDS Average	Physical What did you feel in your body? CR=Coherence Ratio	Mental /Emotional What came to mind? (Translated from Sinhala)
Segment 1	A 1	Lost mother. Living w/father & stepmother.	M15	5	No comment CR=15	Little fearful/nervous – wondering what this thing (the ear sensor) is. I get nervous about unfamiliar things. (PI reassured about safety of the ear sensor and asked if he did not want to continue, but he said it was OK and he wanted to continue.)
Segment 2				2	No comment CR= 100	Focused on breath and So-Ham. No thoughts. Felt very relaxed and light <i>sahallu</i> .
Segment 3				1	Felt light CR=13 .	“Angatay hithatay hari sahalluy!” – Felt very light in body and mind.

Segment 1	A 2	Lost father. Living w/ mother & stepfather	F13	5	Leg pain. CR=7	Thought about home. I get hurt easily and get angry quickly. I forget things and can't concentrate. My mind wanders a lot.
Segment 2				3.5	No Comment CR=80	No thoughts. Focused on breath and So- Ham.
Segment 3				2.75	No Comment CR=22	Thought about school – about studies and home work. I prefer to be with my friends (than to study).
Segment 1	A 3	Lost mother. Living with father.	M12	3	No Comment CR=27 HR=97	Thought about playing cricket. I like to play.
Segment 2				.25	Feeling light CR=77	Sahalluy! Focused on breathing ad So-Ham.
Segment 3				.25	Feeling good. CR=19	Still feeling good. I thought about going to computer class when I finish this activity.
Segment 1	A 4	Lost brother. Living with grandmother.	F14	1.75	No Comment CR = 21	Thought about home. I am living with my grandmother now. I like living with her - my parents are faraway in the village.
Segment 2				.5	No Comment CR=100	I thought of the mandala, the breathing and So Ham.
Segment 3				.5	No Comment CR = 20	Thought about my sister's little son – 2 years old. I like him a lot.
Segment 1	A 5	Lost mother. Living in employer provided housing.	M21	6.75	Pain in upper back and right shoulder blade. CR=0	Thought about problems in my family. My mother lived and worked abroad – in the Middle East since I was little. My father took care of us – but he drank. My older siblings left home as soon as possible. They did not get along with my father. I was on the streets a lot when I

						was a teenager. When he drank, he beat us – so we stayed away as much as we could – and got beaten for that too. A few months after my mother came back the tsunami took her. Now my father is very sick. I am glad I got this job. I work hard, but my body hurts – so I have to be careful. I forget things a lot – this is why I stopped going to school.
Segment 2				4.75	Did not feel pain. CR=100	Stayed focused on breathing and So-Ham.
Segment 3				4.75	Felt slight body pain, but much less than the first session. CR=3	Thought about my life as in the first session, but thoughts did not linger for long.
Segment 1	A 6	Lost mother. Currently living in employer provided housing.	M24	1.5	No comment CR=37	Random thoughts – not many – unimportant.
Segment 2				1	Feeling light. CR=100	Felt sahallu. Focused on breathing and So-Ham.
Segment 3				1	Feeling better CR=13	No thoughts came up. Felt better than before.
Segment 1	A 7	Lost father. Living w/mother.	F13	2	Lightness. CR=37	Felt sahallu. Thought of school. Felt happy.
Segment 2				.25	Very light! CR=100	Hungak shalluy! Very light! Focused on breath and So-Ham.
Segment 3				.25	Light! CR=63 Arm hurts from staying still.	Sahalluy!
Segment 1	A	Lost mother.	F16	2	No comment	Curious about activity.

	9	Living w/father			CR=8	Felt a little afraid, of the activity – concerned about getting electrocuted by the wire (ear sensor). (PI explained that there was no danger of this happening, but asked if she wanted to discontinue, but she replied that if it was safe, she wanted to continue.)
Segment 2				.75	No comment CR=92	Thought of the mandala, breathing and So-Ham. Thought of school- both pleasant and not. Mind wanders when I am in class. Sometimes my mind wanders during this activity too, but not as much as in class..
Segment 3				.75	No comment CR=25	Thought about the mandala.
Segment 1	A 10	Lost father. Living w/mother.	F15	3.75	No comment CR=37	Thought about my cousin who died of childbirth recently. Felt scared and sad when I think of her.
Segment 2				0	Feel light CR=100 HR=75	Feeling good – light, sahallu. Focused on breathing and So-Ham.
Segment 3				0	Lightness CR=18	No change. Still feeling good. Sahallu.
Segment 1	A 11	Lost father. Living w/ mother.	F18	3.5	Leg Pain CR=0 Pain in legs.	Thought about my little brother. Concerned about problem with pain in my legs. Thought about going to computer class after this session. Wondering if my friends will come to the class today. Lots of random thoughts – going from one thing to another.

Segment 2				5	CR=38	Eyes felt sleepy. Concerned about what I felt in my eyes. Felt a little afraid (bhaya) – Never felt like this before.
Segment 3				.5	Head felt heavy. Body felt light. Side hurt a bit. CR=38	Felt good – no fear. Felt comforted, <i>sanaseemak dhanuna</i> .
Segment 1	A 12	Lost mother. Living w/ father.	F 14	4.25	No comment CR=0	Felt comforted, <i>sanaseemak</i> . Felt a little scared – fearful of new activities.
Segment 2				2.5	No comment CR=17	Sill a little scared. Focused on So-Ham. Felt comforted.
Segment 3				2.75	Lightness CR=37	Sahalluy! Not much to say.
Segment 1	A 13	Lost 3 sisters. Living w/both parents.	F14	1.25	No comment CR=18	Feeling good about what I am doing.
Segment 2				1.5	Feel very light. CR=97	Feeling very good. Sahalluy! Thought only of breathing and So-Ham.
Segment 3				1.5	Feeling good. I thought that I will breathe better in the future than I did in the past. Breathing better /deeper. CR=31	Felt different when thought about the mandala picture.
Segment 1	A 14	Lost mother. Living w/ Grandmother.	F13	1.75	Hand felt strange, <i>amuthu</i> . CR=0	Nervous about doing something different. (PI asked if she wanted to discontinue the activity, but she said she wanted to go on.
Segment 2				.75	No comment. CR=0	Started So-Ham, but I think I fell asleep.
Segment 3				.75	No comment. CR=50	I liked the So-Ham so did it this time, even

						without breathing deep. Thought of the picture.
Segment 1	A 15	Lost mother. Living w/ father.	M22	4.75	Breathing a little slower than usual. CR=79	(Note: Not studying. Unemployed.)
Segment 2				0	Got a bit tired. CR=49	
Segment 3				5	Very light!!! CR=91	Hari sahalluy! Feeling very light!
Segment 1	A 16	Lost both parents. Living w/paternal grandmother & aunt.	F14	1.5	Shoulder hurts. CR=46	No thoughts.
Segment 2				0.5	Head heavy. CR=92	Thought of So-Ham.
Segment 3				0.25	CR=66	Saw the mandala in my mind.
Segment 1	A 17	Lost mother. Living w. father & stepmother.	M13	0.5	Pain in joints now and often. CR=39	Heard sounds around me.
Segment 2				0	Pain in foot. CR=60	Sahallu! Thought about breathing and So-Ham. Heard lots of sounds – not bothered by them, but noticed how loud it is in here.
Segment 3				0	Foot still hurts. CR=23	Sahalluy! Still heard sound – still very loud.
Segment 1	A 18	Lost father.. Living in rented room.	F23	3.25	I found it a little hard to breathe. CR=100	Heard the sound of the sea. Thought of her good friend. Thought of meditation. (NOTE: Job: Bookkeeper. Part-time accounting student)
Segment 2				2	Body felt light. CR=95	Mind felt light – much more than before. Thought only of

						breathing and So-Ham.
Segment 3				1	CR=12	I lost track of everything. Maybe fell asleep? Came back to earth when I heard you (PI) come back into the room. I heard many sounds around me.
Segment 1	A 19	Lost mother. Living w/ father. .	F13	2	No comment CR=14	Random thoughts. Heard various sounds around me.
Segment 2				3.5	No comment CR=60 87	Thought of breathing and So-Ham. I saw the mandala in my mind's eye.
Segment 3				2.25	No comment CR=36	Mind was light. (Hithata sahalluy!) I saw the mandala again.
Segment 1	A 20	Lost grandparents, and several aunts and uncles. Living in rented room. .	F21	5.25	Body felt light. CR=45	Mind was centered. Thought about what I have to do next in my work. I often have negative thoughts about what is possible. I used to be very confident when I was younger, but now I feel unsure of myself. I am always worried about what others might say if I do not succeed in my job.
Segment 2				3.5	Body very relaxed. CR=100	Thoughts centered. Sahallu! I focused on my breath and So-Ham. Sometimes thoughts came, but I went back to So-Ham. I was wondering what So-Ham is.
Segment 3				2.5	A little tired. CR=61	My thoughts were still centered. I saw a garden with flowers. I saw you (PI). I thought about travelling abroad. I think I'd like to teach in a Christian Church school for young kids.

Segment 1	A 21	Lost father. Living w/mother.	M12	3	CR=19	I was thinking about this activity. Not sure what was going to happen.
Segment 2				1.25	CR=30	Felt sahallu – very light. Sometimes I lost the So-ham and random thoughts came to my mind, then I suddenly remembered So-ham and got it back. This happened a few times. May have fallen asleep at times.
Segment 3				1	Light. CR=9	Still feeling sahallu – peaceful and calm.
Segment 1	A 22	Lost mother. Father living far away – left her with grandmother.,	F12	1.5	Conscious of sensor on earlobe. CR=81	I was wondering what was going to happen in this activity. I felt that the sensor was loose on my ear. (Father living in another town with new wife.)
Segment 2				1	Body felt light. CR=44	Mind felt light. Focused on breathing and So-Ham.
Segment 3				0.5	Same. CR=65	Thought about my grandmother and of my friends.
Segment 1	A 23	Lost father. Living w/mother.	F14	3	A little dizzy. CR=7	Thought about school – in a good way.
Segment 2				2.5	No dizziness. I feel good. CR=100	I thought about coming here to this program. Thought about breathing and So-Ham most of the time.
Segment 3				2.5	Still good! CR=45	Hari sahalluy! Very light! The mandala came to mind.
Segment 1	A 24	Lost father. Living with mother.	F17	2	No comment. CR=45	Thought about the difficulty I am having learning things, and wondered if these activities will help me.
Segment 2				0.5	Body felt very good.	Mind was light. I was thinking about So-

					CR=65	Ham. It did not let anything else come to mind.
Segment 3				0.25	Feeling even better. CR=65	My mind stayed in one place and did not wander.
Segment 1	A 25	Lost several uncles and aunts. Living with aunt during the week and with parents on weekends.	M16	1	Normal. CR=36	Normal.
Segment 2				0	Body felt light. Firm. CR=100	Focused on breathing and So-Ham. No thoughts.
Segment 3				0	Sahalluy! CR=36	Hitha sahalluy! (Mind is light!) I thought about studying more than I do now for my exams.- wondering if this will help me.
Segment 1	A 26	Lost father. Living w/mother.	M14	3	CR=44	Heard sounds around me.
Segment 2				1.75	The center of my forehead (third eye) felt strange. CR=94	Thinking of my forehead. Repeated So-Ham.
Segment 3				1.25	Did not feel the strange feeling in my forehead. CR=36	Thought of the meditation – the breathing and So-Ham. Heard sounds but less than the first session.
Segment 1	A 27	Lost grandparents and several uncles and aunts.	M23	2.5	Feels strange to have my eyes closed. Relaxed. CR=48	My mind was in one place. Feeling good.
Segment 2				1.5	Felt my heart beat – expanding and contracting. – not so easy	Sahalluy! Very relaxed – but only temporarily. Focused on So-Ham.

					to breathe slowly. CR=96	
Segment 3				1.5	Relaxed CR=48	Mind was still in one place. Still feeling good.
Segment 1	A 28	Lost father. Living w/ mother.	M15	1.75	CR=26	Feeling good. Thinking about my friends at school.
Segment 2				1.25	Sahalluy! CR=98	No thoughts – only So-Ham.
Segment 3				1	NO comment. CR=4	Same as the first time – although no thoughts this time.
Segment 2	A 29	Lost father. Living w/ mother. University Student	F21	3.5	Normal. CR=25	Various thoughts – nothing particularly significant.
Segment 3				2.5	Difficult to breathe slowly. Had to take a deeper breath once in a while. CR=100	No thoughts – only So-Ham.
Segment 1				2.25	Very relaxed. Light. CR=47	Random thoughts came, but I thought about So-Ham.
Segment 1	A 30	Lost father. Living w/ mother.	M19	2	Normal. CR=50	Sahalluy! I thought about my exam in August.
Segment 2				1	Sahallu! CR=100	Mind was focused on So-Ham. No other thoughts came.
Segment 3				.75	Sahallu! CR=65	Random thoughts – calm.

Table 12. Qualitative and Quantitative Data: Control Group

Segment	ID #	Participant Details	Sex/ Age	SUDS Average	Physical What did you feel in your body? CR=Coherence Ratio	Mental /Emotional What came to mind? (Translated from Sinhala)
Segment 1	C 1	Lost mother. Living w/father & stepmother.	M14	3.75	Nothing special CR=20	A few nights ago, a snake ate 6 of my doves from the cage where I keep them. When my mother died in the tsunami, my father bought me a pair of doves, to make me feel better. These doves laid eggs, that hatched and I had baby birds, and I was raising doves as a hobby. I had 14 doves before the snake ate 6 of them. Now I have only 8.
Segment 2				5	Same CR= 15	Everything (bad) happens to me! First my mother died in the tsunami. Now the snake eats my doves. One of my friends has 25 doves and the other one has 36 – but the snake never got any of theirs. Everything always happens to me!
Segment 3				2	Same CR=45	I was thinking – what if, when I am walking on the street sometime, I find Rs.400 on the ground. (eyes light up) I could buy myself another pair of doves and breed them, and soon, I'll have more birds. I want to start a business of breeding doves to sell.
Segment 1	C 2	Lost father Living w/ mother	F12	1	Nothing CR=36	Thought about breathing

Segment 2				0	Felt a heaviness CR=43	Would like to do something to feel lighter.
Segment 3				0	Felt OK CR=14	No problem
Segment 1	C 3	Lost mother. Living with father and step-mother.	M12	1.5	Nothing CR=17	Heard teacher in the next room and listened to what he was saying.
Segment 2				1.5	Nothing specific CR=14	Thinking about things I learned in English class. Would like to learn English.
Segment 3				1.5	Nothing special CR=27	I was aware of street sounds, birds, other sounds in the environment.
Segment 1	C 4	Lost father. Living with mother.	F14	1.5	Nothing, Normal. CR = 33	Heard sounds around me. Thought of home.
Segment 2				2.25	Normal CR=33	Remembered happier childhood days in old neighborhood. I don't have any friends in the new neighborhood in the tsunami village. I miss my friends and my relatives. I get sad thinking about my father dying in tsunami and how much our lives have changed. Mother has not found work. She never worked before, and worries all the time about how she will manage. We get by with the help we receive from the government and some other people from overseas who send us money each month.
Segment 3				6.75	Same CR = 9	Feeling confused and sad about the situation at home.
Segment 1	C 5	Lost mother. Living w/ father & stepmother.	F16	5.5	I have kidney problems - high levels of	Thinking of home. Missing mother. Difficulties with step

					protein in my urine. <i>CR=19</i>	mother.
Segment 2				4.5	No difference. <i>CR=13</i>	Feeling slightly better.
Segment 3				4.5	Same <i>CR=19</i>	Same
Segment 1	C 6	Lost father. Living w/ mother	F15	1.75	Nothing <i>CR=16</i>	Scared /nervous about sensor on her earlobe. Will it give me a shock? (Felt better after explanation from PL.)
Segment 2				1.75	Light. <i>CR=39</i>	Not afraid - felt light (sahalluy).
Segment 3				1.75	Same <i>CR=61</i>	Same.
Segment 1	C 7	Lost both parents. Living w/ Grandmother.	M16	0.75	Pain in neck <i>CR=25</i>	Thinking that I am missing a class at school to be at the after-school program today. I'm sorry that I will have to miss coming here next week.
Segment 2				1.25	<i>CR=7</i> 87	I enjoyed being with eyes closed.
Segment 3				0	Energized. <i>CR=19</i>	I felt energized when I sat quietly with eyes closed.
Segment 1	C 8	Lost mother, Living w/ Father & stepmother.	M14	0.5	Sleepy. Light. <i>CR=13</i>	Listened to sounds around me. Felt sleepy. Feels a little more sahallu (lighter) than usual.
Segment 2				0	Same. <i>CR=27</i>	Saw Volleyball match in my mind. I'm on the team.
Segment 3				0	Same. Light. <i>CR=7</i>	I saw myself helping my father water the plants outside. This time I saw myself playing in a cricket match. I like being with my eyes closed. Felt "sahallu" (light).

Segment 1	C 10	Lost father. Living in employer provided housing.	M24	3.5	No comment. CR=29	I don't really like my new job. I want to learn the work, but I'm not so happy here. I liked my old job, but could not work there because of problems after my motorcycle accident.. I don't want to live away from home- prefer to work closer to home. See...I am not really interested in the field I am in now. I'm doing this because it has better prospects for me, but it is really boring here. I miss my friends at home.
Segment 2				2.75	No comment. CR=14	I experienced some memory loss after motor-cycle accident 2 years ago. I am fearful that the memory loss will return.
Segment 3				2.75	OK. CR=34	Listening to sounds around him (including ocean sounds.) Feeling a bit better.
Segment 1	C 11	Lost father. Living w/ mother.	F13	5	Slight headache CR=25	Thought about home. About father who died. Worried about mother.
Segment 2				8	Headache worse. Felt shaky. Shivers. CR=37	Thinking about how I will support my mother if I don't pass my exams. I have difficulty at school. I don't understand things. I often wonder if my father is not really dead, but living somewhere else. Will I ever see him again?
Segment 3				9.5	Body shaking visibly. Chills. Skin pale CR=30	Thought about my parents again. My mother was in a fire, and was burned by kerosene cooker. She has difficulty working

						due to severe headaches. What will happen to me if my mother dies?
Segment 1	C 12	Lost both parents. Living w/ Grandmother & aunt.	F 13	3.25	CR=29	Listening to sounds around me. The teacher in next room was speaking very loud.
Segment 2				5.25	No comment. CR=9	I wondered what the other kids in my group are doing while I am doing this.
Segment 3				5.25	No comment. CR=19	I thought about my aunt. She's nice. I like her.
Segment 1	C 13	Lost Grandmother - primary caregiver. Living w/ mother. Father living away from home for work. Father has serious illness.	F13	1.25	No comment. CR=38	Felt happy thinking of "palu kadanawa" – (picking special kind of fruits from trees) with my little brother. I am afraid that I am in trouble with my teacher for lying to her. I am afraid that I might get a beating. I always get into trouble at school.
Segment 2				1.5	No comment. CR=2	Listening to sounds outside room. Was wondering if my mother will remember to bring the book covers I need for school, and medicine for father's body pain. He's not well.
Segment 3				1.5	Feel hot. Felt sleepy and lazy CR=33	Thought about the trip I took over the Vesak holidays. Thought about a song my mother sings. .
Segment 1	C 14	Lost both parents. Living w/ Grandmother & aunt.	F14	1.75	Felt good. Liked being with her eyes closed CR=5	Thought that I like to learn new things.
Segment 2				.25	Body felt comfortable. Felt like she was ok. CR=6	Thought about a book I am reading at home.

Segment 3				0	Felt very good. CR=6	Thought about homework. I like to do homework.
Segment 1	C 15	Lost father. Living w/ mother.	F13	2.25	Body felt light /numb. CR=10	No special thoughts.
Segment 2				0.5	Good. CR=16	Thought about the end-of-war celebration we had at school today. Wondering what is being taught at school right now in the special after-school classes..
Segment 3				1	Felt good. CR=45	Felt good. Thought about going to English class next.
Segment 1	C 16	Lost mother. Living w/ father & stepmother.	F15	3	Head hurts. Has a cold and cough. CR=23	Thought about headache.
Segment 2				0.75	Same. CR=21	Fearful (bhaya) that what I am doing might be harmful. Will this (ear sensor) give me a shock? I am normally fearful of unfamiliar things. (PI gave explanation and asked if she wished to discontinue. She said she wanted to continue.
Segment 3				0.25	Same. CR=44	Not afraid anymore. I'm curious about what I will see on the computer. Can I see?
Segment 1	C 17	Lost father. Living w/Mother. Studying Ayurveda.	F23	2.5	Has pain in joints often – now. CR=72	Normal - no particular thoughts.
Segment 2				2.25	Pain in foot. CR=68	Thought of foot pain.
Segment 3				2.75	Still pain in foot. CR=76	Heard every sound around me – thought about what I was hearing.

Segment 1	C 18	Lost mother. Living w/ father.	M16	3	Felt blood pulsating and flowing through legs and hands. CR=55	Thought about upcoming G.C.E. O.L. exam.
Segment 2				3.5	CR=17	Worried about whether I will pass or fail the exam in December.
Segment 3				3.5	CR=42	Same thoughts as before.
Segment 1	C 19	Lost father. Living w/ mother. Not studying or working.	M21	0	CR=100	Pirith - Buddhist chanting - tape started playing in one of the other rooms of the house almost immediately after the session began.) Felt comforted (sahaneyak). Mind felt light.
Segment 2				5.25	Body felt good. CR=86	Was bothered by mosquitoes. Distracting!
Segment 3				3.75	Same. CR=47	Still bothered by mosquitoes. Same.
Segment 1	C 20	Lost mother. Living w/ father.	F14	4	CR=60	Thought about hanging out with friends after school.
Segment 2				2.25	No comment. CR=41	Thought about coming to the center – I think I am learning a lot here.
Segment 3				1.75	CR=38	Wondering if father will give permission to go on a trip with uncle's family. I want to get permission somehow. I want to go to Kataragama. (a sacred pilgrimage spot) with Uncle and cousins. Am worried that father will not let me go on the trip. I used to be very afraid of the dark & had to take medicines for a while. This helped, but my father had me stop taking the

						medicines. He did not think it was good for me. I now sleep in his room.
Segment 1	C 21	Lost father. Living w/mother.	F14	1.5	No comment. CR=25	Listening to teacher in the next room.
Segment 2				1.5	No comment. CR=16	Heard the teacher again, but this time tuned him out.
Segment 3				1.75	Head hurts. Sometimes feels dizzy, but not today. CR=30 100	Same.
Segment 1	C 22	Lost mother. Living w/ father & stepmother. Failed GCE/OL exam. Not studying or working. Does not seem to be concerned.	F17	1	Body felt good. Light. CR=84	No special thoughts.
Segment 2				0.5	Same CR=70	Nothing changed.
Segment 3				0.5	Better than before. CR=47	Nothing specific.
Segment 1	C 23	Lost mother. Living w/father & grandmother	F12	2	Felt light. CR=70	No thoughts. Heard sounds around me. .
Segment 2				2	CR=59 84	Same
Segment 3				1.5	Tough to sit for this long - uncomfortable. CR=36	I got bored .
Segment 1	C 24	Lost father. Living with mother and grandmother. In university.	F20	4.25	Felt heartbeat in ear. CR=40	Was a little tense because this is an unusual activity, but was curious.
Segment 2				1.75	CR=61 85	Felt like opening my eyes but didn't.
Segment 3				1.5	Still felt heartbeat in	Felt OK.

					ear. CR=60	
Segment 1	C 25	Lost mother. Living w/alcoholic father. Accompanies father when he goes drinking to protect him. Does not want father to get re-married.	M12	1.5	Body felt like I was getting smaller - thinner. CR=60	I saw something like black – lumpy pieces (kutti kutti) near me.
Segment 2				1.5	Not much. CR=74	Nothing special.
Segment 3				1.5	Same. CR=57	Same
Segment 1	C 26	Lost both parents. Living with foster family.	M16	1.25	Feels normal CR=43	Thought that I am going to pass the exam.
Segment 2				1.25	Body feels sahallu CR=44.	Sahallu mind.
Segment 3				1.25	Same CR=9	No change.
Segment 1	C 27	Lost father. Lives w/mother & stepfather.	M13	2.5	Floating! CR=13	Not much.
Segment 2				2	CR=39	Nothing in particular.
Segment 3				2	Same CR=22	Same.
Segment 1	C 28	Lost father. Living w/ mother.	M14	3	No comment. CR=22	Heard sounds. Was disturbed by people and sounds around me.
Segment 2				3	Same CR=25	Same
Segment 3				2	Same CR=28	Same
Segment 1	C 29	Lost father. Living w/ mother.	M14	2.75	Legs restless - only when I sit. CR=44	Thought of friends at school.
Segment 2				2.75	Same CR=46	Thought about dancing. I like dance and drama very much..
Segment 3				2.75	Head felt	When I think of

					heavy CR=45.	something my mind holds on to it.
Segment 1	C 30	Lost Grandparents (was very close to them). Living w/ parents.	F17	1.75	Usually excessively sleepy at home. Felt OK CR=38	Felt comforted (<i>Sahaneyak</i>)
Segment 2				1.25	Same CR=22	Same
Segment 3				1	Same CR=18	Same.

CHAPTER 5: SUMMARY, DISCUSSION, AND SUGGESTIONS

If healing is reconnection and we are suffering because of our separation from the nurturing matrix of a more encompassing consciousness, we might wonder what's stopping us from re-establishing that connection... We are, for the most part, struggling with the isolation of the materialistic ego, the journey of the hero who has chosen separation, and must now wander through the wilderness of alienation until he discovers a way to a new union – one that honors his individuality at the same time as it celebrates his oneness with the universal. This will yield a new human consciousness, one that reveres the earth, but also embraces the stars... our hero can discover that she is guided in her journey by inner voices that are part of a vast realm of power and consciousness – one that is, in fact, the essence of who she is herself.

Rudolph Ballentine

The final chapter of this dissertation briefly summarizes and reviews the study including the methodology and the results, discusses the implications and meaning of the study and makes suggestions for future research and application.

Summary and Review

The CHI Process™ was meant to facilitate a holistic, systemic connection to the whole universal energy system that the individual is part of, by visualizing the Wholeness Mandala, and bringing this connection into the body through heart-breathing combined with the So-Ham mantra, to quickly and easily experience improved coherence and wellbeing.

A randomized experimental design with repeated measures was utilized with fifty-eight youth volunteers between the ages of twelve (12) and twenty-four (24), randomly assigned to an intervention group (n = 29) and a control group (n = 29).

Instruction and data collection were carried out individually in one session of approximately thirty minutes, divided into three ten-minute segments. Coherence data was collected for five minutes during each segment.

The control group sat quietly, breathing normally with their eyes closed, during all three segments. The intervention group did the same as the control group in the first and third segments, but did the CHI Process™ during the second segment.

Quantitative data pertaining to physiological coherence was collected using a laptop computer loaded with the emWavePC computer program, and self-perceptions of physical, mental emotional and spiritual wellbeing were measured using the SUD Scale. Qualitative data pertaining to participant experience was collected immediately after each data collection segment by asking participants to verbally describe what sensations they felt in the body and what thoughts came to mind during that segment. The PI simultaneously translated participants' qualitative responses from Sinhala into English while typing it into the computer.

Summary and review of results

This study was based on the hypotheses that the CHI Process™ will

1) improve physiological coherence expressed in Coherence Ratio (CR) as measured by the emWavePC program, and

2) improve perceptions of wellbeing as measured by the SUD Scale.

The intervention group showed statistically significant improvements in CR ($P = .001$) and perceptions of wellbeing ($P = .003$). From these statistical analyses it appears that the hypotheses are valid, and that the results are significant.

Qualitative data provided valuable information on participants' experience of the intervention during each of the data collection segments, and were presented side by side with the quantitative raw data for on Table 11, in order to show correlation.

Some observations and comparisons of quantitative and qualitative data.

Some interesting phenomena were observed in quantitative and qualitative data and comparisons made between the two:

Although the mean CR was significantly improved in the intervention group in the second segment, in most cases, it decreased during the third segment, indicating that the body went back to low coherence, although noticeably higher than in the first segment.

Although CR decreased in Segment Three, intervention group participants verbally reported that they continued to feel better and showed improvements in perceptions of wellbeing on the SUD scale.

Twenty six out of twenty-nine participants in the intervention group reported that they repeated the So-Ham mantra mentally with no other thoughts throughout the intervention. Of these, the CR of eleven participants was 100, seven were over 90, and six were between 60 and 80.

Some participants in both groups reported feeling “sahallu” – a Sinhala word that means an overall “lightness of being” - even when CR was low in the third

segment. It is not clear why this was. It is possible that just closing their eyes for five minutes made them feel more relaxed, although it did not affect physiological coherence.

Eight participants reported fear of the ear sensor that they thought was an electrical wire that could electrocute them. When the PI explained that the ear sensor was not an electrical wire but more like a stethoscope, their fears were allayed and they chose to continue.³⁴³

Immediately after control group participant C20 started Segment 1, a *pirith* (Buddhist chanting) audio recording was inadvertently turned on in another part of the house. During this segment a CR of 100 was recorded. Although there were mosquitoes in the room, C20 was not bothered by them. In segments 2 and 3, the *pirith* tape was turned off, and the CR went down considerably, and the participant reported being bothered by the mosquitoes.

In Segment 1, when control group participant C1 was thinking about his pet doves being eaten by a snake the previous night (loss), the CR was 20. In Segment 2, when he was thinking “everything happens to me,” (self-pity) the CR was 15, and in Segment 3, when he was thinking about finding money that was dropped by someone in the street by chance, with which he could buy doves to replace the ones he lost (hope), the CR was 47.

It was also interesting, but not surprising that when a participant reported nodding off during the data collection segment, CR was usually low or at 0.

Discussion of Methodology

This discussion focuses on what was learned from this study that may be useful to others in replicating it, carrying out their own explorations of this process or facilitating coherence through connection to wholeness.

Ease, shortness and effectiveness of the intervention

The CHI Process™ is extremely easy to carry out, and significant improvements in physiological coherence and sense of wellbeing were observed in five minutes of practice.

The inclusion of qualitative data

Collecting qualitative data that directly related to participant experience of each data collection segment provided invaluable information of what participants consciously experienced during the data collection segments in which they did or did not improve physiological coherence. This applied to both the intervention group as well as the control group. Not only did the reporting of the qualitative data give the PI information that she could correlate to CR data shown on the emWavPC screen, but it also was an opportunity for participants to cognitively reflect on their own experiences in relation to what they saw on the computer screen after data collection had been completed.

Randomization

The randomization process was effective in equalizing the number of participants in each group, but did not balance age and gender distribution within and

between groups. This resulted in the mean age of the intervention group being older than that of the control group, which could have made a difference in the observed results. This study may have been served better if the PI had matched ages and gender between groups, but this would have affected true randomization.

The Control Group

Control group participants were offered the intervention after all their data had been collected and recorded, and they had seen their results in the emWavePC screen. A few declined, but most accepted, and saw dramatic changes in Coherence Ratio and perceptions of wellbeing during the intervention. These results were recorded, but not statistically analyzed or included in this study. Based on raw data, their Coherence Ratio also appeared to improve significantly during the intervention.

Isolation of the intervention

Both groups did exactly the same activity in every five-minute data collection segment, except for the intervention group, who, in the second segment, were given the intervention. The probability that the observed outcome was due to the intervention is very high.

Preparation and streamlining of intervention

The use of the Wholeness Mandala, and carefully scripted guided visualization made the protocols streamlined and time-efficient. This streamlining minimized the need for excessive verbal exchange, and limited contact between the PI and the participants. The design allowed for three ten-minute segments that

included both instruction and five minutes of data collection at baseline, intervention and post intervention.

Familiar settings

Since the study was conducted in familiar settings that were part of participants' day to day realities, changes in CR and perceptions of wellbeing may have been much more significant than if this study had been carried out in a contrived controlled one. Baseline data collected in these settings showed similar levels of sympathetic nervous system activity in both groups indicating what was normal for participants in these settings. Generally, baseline CR was low.

When the intervention groups showed significant improvements, they did so despite the evidence that the same settings produced low coherence at baseline. Therefore results produced during the intervention were even more significant than if they would have been tested in highly controlled settings. This also increased the probability that the results seen were due to the intervention, since those seen in the control group showed no improvements.

The importance of the qualitative data

The qualitative data collected in this study brought the voices of the participants into the study without violating confidentiality. It provided valuable information that made it possible to correlate personal experience to quantitative data. The qualitative narratives revealed details of the mental, emotional and physical aspects of the experience while HRV/coherence was being recorded.

The ANS always operates in the moment, and its activity is reflected clearly in the Heart Rhythms or HRV patterns and CR graphically presented on the emWavePC screen. Viewing Table 11 information along with the emWavePC screen provides a holistic snapshot of what happened during each segment. An example of this has been presented in [Appendix E](#).

Possible validity issues

Randomization and the short duration of the intervention addressed many possible threats to validity with a few exceptions.

Convenience Sampling

The sample was drawn from populations conveniently accessible to the PI. No attempt was made to recruit from the entire population of 12 – 24 year olds who lost family members in the tsunami in the Hambantota area or in all of Sri Lanka, therefore generalizations about 12 to 24 year olds who lost parents in the tsunami cannot be made from this study.

Settings

The study was conducted in several settings that were very familiar to participants. The intention was to observe the effects of the intervention on participants in a setting that was normal for them. However, it is possible that data collected at different locations, although with the same equipment, may have had an effect on outcome.

Novelty Effect

It is possible that some participants in both groups may have registered a lower CR due to fear of the ear sensor in the first data collection segment. Several participants expressed fear of being electrocuted by the ear sensors indicated in qualitative reports. Although the PI had explained the ear sensor during the group orientation as part of the informed consent procedure, some participants may not have absorbed this information. During the session, the PI explained again that the ear sensor was not an electrical wire, but more like a stethoscope that monitored pulses, and asked participants if they preferred to discontinue the session, but all chose to continue.

Researcher Effect

As the PI was involved in all aspects of this study, it is possible that the results could be due to a “Researcher Effect” or the influence of intentionality. During the entire period during which this project was carried out, the PI practiced the CHI Process™ as a meditation for approximately 20 minutes at the beginning of the day and spontaneously for a few minutes at a time, whenever the process came to mind

several times during the course of the day. A detailed account of her direct and indirect preparation for carrying out this study is given in Chapter 1. Considering the amount of healing work the PI had done in herself and in the development of the CHI Process™ it is entirely possible that the results of this study could have been due to the effects of Morphic Resonance³⁴⁵ or the PI's intention, and not due to the Intervention, since the PI knew who was in the Intervention and control groups right before their sessions. It is not known, through this study, whether other researchers with different backgrounds, experiences and preparation methods could replicate this study and achieve similar results.

Despite the possible validity issues, the fact that under the same conditions the control group showed little or no change makes it more probable that the significant results of this study were due to the intervention and not any other reason. All of the above points have implications for future investigation.

Relationship of current study to prior research

This study was related to and greatly influenced by research and work of others that have contributed to this work.

Study on Promotion and Protection of the Rights of Children

The study carried out by Grac'a Machel reported in *Promotion and Protection of the Rights of Children* on behalf of the United Nations, and her call for effective programs for youth, had a major influence in the development of the CHI Process™ as a self-empowering, holistic self-care intervention. CHI could potentially be a tool

for youth all over the globe, especially the Third World, to use and share with their peers and family members to heal trauma in their own lives and in their communities during these troubled times.³⁴⁶

HeartMath studies

The extensive research carried out by the Institute of HeartMath (IHM) on the nature and power of the human heart, heart-brain interactions, HRV analyses and heart-rhythm-patterns and coherence had a great deal of influence on this study. The effect of switching negative emotions such as anger and frustration to gratitude and love on the coherence of the whole human organism was fascinating. This represented the effect that the parts (emotions) have with the whole.

Beyond the initial excitement of discovering reading about this phenomenon was the burning question of how coherence might be affected by creating consciousness of the whole and bringing it into the parts, especially the physical body. This was what the various energy healing modalities were about, with a large body of anecdotal evidence, but not much empirical evidence, possibly due to the fact that not many devices are available for measuring effects.

The research presented by Rollin McCraty, William Tiller, Dana Thomasino and Mike Atkinson on HRV and coherence was the study that influenced the use of coherence as dependent variable in this study.³⁵⁰ HRV and physiological coherence presented a holistic measure for holistic interventions for stress and trauma, since it is directly related to ANS activity that is affected by those conditions.

EmWavePC

Finding a measuring device that was portable and economical, with which coherence could be measured was crucial for this study. Other dependent variables such as saliva cortisol levels commonly used in stress related studies were not feasible in the conditions in which this study was carried out. HeartMath's emWavePC technology was perfectly suited to meet the requirements of this study. The emWavePC program loaded onto a laptop computer, the PI could carry it in her backpack to the various settings to record coherence data. All that was required was an electrical outlet where the laptop computer could be plugged in. The graphic display of raw data on the emWavePC screen was highly effective showing participants the effect produced by the intervention after all their data had been collected and recorded. Although emWavePC was not originally meant to be a research tool, it provided a valid and highly appropriate way to record and recall data, and basically made this study possible.

Studies on the electromagnetic energy of the heart field

HeartMath studies on the electromagnetic field of the heart provided the ground for the heart-centered focus of this study. Although the CHI Process™ and the Wholeness Mandala had been intuitively derived prior to the PI's knowledge of the existence of HeartMath or knowledge of their phenomenal work, discovering their work confirmed that the simple the CHI Process™ based on ancient spiritual practices, was firmly grounded in science. It encouraged the PI to pursue the

empirical study of the CHI Process™ as an intervention to enable trauma-exposed people – especially youth, to heal their trauma by using consciousness to create coherence within themselves and their communities during these challenging times.

[\(Chapter 2, Section 4\)](#)

The discovery of the theory that the electromagnetic field of the sun, the earth and the human universe were shaped and functioned as a torus fit perfectly with the concept of the intuitively derived Wholeness Mandala and the heart breathing pattern of the CHI Process™ and one of the “Aha!” moments of this study.

Theories and Research on adolescent development

Maria Montessori’s theories on the “Sensitive Periods” of childhood and adolescence have greatly influenced the PI in her life and work since her own adolescence, and have been part of the foundation of her work with children and adolescents over the years. Joseph Chilton Pearce seems to have taken over where Montessori left off, presenting adolescence as a period in which humans are hard-wired to move human evolution forward. This underscored the importance of giving adolescents the tools to create coherence within during this usually chaotic time of life, in which neither adolescents nor their parents seem to have an understanding of what is going on or why. Neither do they understand, that this stage of life could be an evolutionary opportunity for paradigm shift in human beings as individuals and as collectives.

The work of Vamik Volkan with trauma-exposed populations around the globe expanded the PI’s understanding of how adolescent trauma affects future generations. Studies carried out by Volkan and others confirmed the PI’s own self-

healing experiences through Ann Nunley's Inner Counselor Generational Process³⁵¹, Karin Cremasco's Body Harmonization Emotional processes³⁵² in which the PI experienced connections between physiological issues in her own life and her siblings' that seemed to be connected to emotional traumas experienced by ancestors a few generations back.

Daya Somasunderam's qualitative study in war-torn north Sri Lanka added another dimension of understanding of the psychosocial problems created by ethnic conflict, and the importance of simple, holistic, culture-appropriate approaches to support healing of trauma-exposed individuals and communities on both sides of the conflict.

Discovering the extensive research carried out by the NIMH on childhood and adolescent brain development was a major eye-opener in relation to this study. The findings showing that rapid development of the neo-cortex, especially the prefrontal cortex takes place during adolescence, presented a new spin on the importance of coherence during this stage of life. NIMH research also revealed that what is learned and practiced repeatedly during this stage of life will form new neuro-pathways that will form the belief systems and behavior patterns of adulthood.

This has major implications for all youth, but particularly those who have been exposed to trauma. Considering the findings of the NIMH studies on the adolescent brain, improving physiological coherence is especially important for this group in order to promote brain development and create behavior patterns that will reflect the higher consciousness of the well developed pre-frontal cortex rather than the reactive, fear-based patterns generated by the reptilian brain. (Chapter 2, Section

3). Discovering the NIMH study was yet another serendipitous event in the course of this study, since the PI first heard of this study on an interview that happened to be playing on the car radio on her way to the grocery store.

Joseph Chilton Pearce's writing on the Quadrune Brain - the reptilian brain and its partner the Ego, that so diligently attends to the autonomic work of human survival, the broad range of conflicting and passionate emotions of the old mammalian brain and the constant chattering of the neocortical "monkey brain," seem to be in need of a new patch to deal with the challenges of modern living. Nature in her infinite wisdom, has provided the pre-frontal cortex, so that humans can literally and metaphorically pull themselves together and survive the mental-emotional deluge of modern living that has the reptilian and monkey brains in a tailspin. These influences and insights gave greater depth to the meaning and importance of the simple CHI Process™ for youth in general - especially for those who have been exposed to trauma.

Research on the effects of Reiki on the ANS³⁵³

Reiki is an energy healing modality that utilizes universal energy for healing self and others. Vicki Nutter's research on the effects of Reiki on the ANS measuring entrainment ratios of HRV using the Freeze Framer technology, the predecessor of emWave, found no significant effects of Reiki. Closer scrutiny of this research showed that Nutter measured coherence of her research subjects while they were lying passively on a massage table receiving treatments from a Reiki practitioner. Many of the participants were deeply relaxed and some slept through the sessions, and were not consciously involved in the treatments.

Nutter's study was key to the PI's insight that improvements of HRV, coherence and entrainment may possibly occur due to conscious involvement of the subject in their own healing and transformation processes. Nutter's subjects did not exercise awareness or consciousness, but were completely passive throughout the intervention.

In placing Nutter's study alongside HeartMath studies showing significant improvements in HRV and physiological coherence, it appeared that in the HeartMath studies, participants were consciously involved in creating coherence within themselves through heart-breathing and intentionally changing their emotional states during the intervention – engaging the neocortex and the pre-frontal cortex that is the part of the brain that is involved in consciousness. Puran and Susanna Bair's studies on Heart Rhythm Meditation, also involved consciousness, and showed improvements in coherence.

Although Nutter's study did not substantiate her hypothesis, it was a source of important insight not necessarily in developing the methodology for this study, but in understanding the results that may be possible when interventions involve conscious and intentional connection between heart, breath and brain - especially the pre-frontal cortex.

Study on the Heart Field Effect³⁵⁴

Christine Bair's study on the Heart-Field Effect and the influence of the healer's heart rhythms on the research subjects was also influential in developing research protocols. Because of Bair's study, the PI made certain that an area of eighteen to twenty square feet was maintained between the participants and others,

including the PI, during data collection segments, to control for the effects that others' heart rhythms may have on the participants that could affect HRV and coherence readings.

The Mandala process

The mandala process developed by Judith Cornell, had a direct influence on creating the Wholeness Mandala that was used in this study. Although the PI used Cornell's process to create the Wholeness Mandala, she did not use this process with the participants, but used the mandala as a visual device intended to draw participants into the symbolic circle of wholeness as has been the practice in various cultures around the world, including Sri Lanka, Tibet and the Navajo culture of North America that use the circle as a sacred healing space. In the CHI Process™ participants create the mandala healing space in their minds, imagining themselves and their hearts at the center of the Wholeness Mandala.

The use of the SUD scale in this study was influenced by Cornell's use of pre and post workshop Spiritual Wellbeing Self-Assessments based on the SUD scale, filled out by participants to self-assess and document changes within themselves that could be attributed to their participation in the workshop.

As in most research, this study generated more questions than it did answers, and presents a plethora of possibilities for further research.

Suggestions for Future Research and Application

This study examined only the synergistic effects of the combination of several components of the CHI Process™ as a whole – the Wholeness Mandala

visualization, the heart breathing and the So-Ham mantra. However, it is not clear whether or not the effects observed were truly synergistic, or if they were produced by only one or two components, and if so, which ones produced the observed effects. That heart breathing combined with conscious or intentional mental activity is known.^{357, 358} Therefore the effect of the other components can be investigated in comparison to heart breathing as well as their effects on heart breathing. Some research questions that can be explored in this regard are:

- What is the effect of the Wholeness Mandala on coherence?
- What is the effect of the So-Ham breath mantra on coherence?
- What is the effect of the Wholeness Mandala on heart breathing?
- What is the effect of the So-Ham breath mantra on heart breathing?

This study only took Coherence Ratio into consideration, but not the quality of coherence expressed by emWavePC as the Coherence Score. A research question that can be explored is:

- What level of coherence can be achieved through the practice of the CHI Process™?

This study could not determine if CHI actually increased participants' awareness of connection to the whole universal energy system through use of the Wholeness Mandala. The investigation of the following research question is suggested:

- Does the CHI Process™ improve a sense of connection to the whole universal energy system?

This study only observed the effects of a single five-minute practice of the CHI Process™, but not its longitudinal effects on coherence. A research question that could be asked is:

- What are the longitudinal effects of the CHI Process™ if practiced regularly?

This study was carried out using the Wholeness Mandala created by the PI.

Therefore an interesting research question would be:

- What is the effect of a Wholeness Mandala created by the participant on the overall CHI Process™ and coherence compared to that which was created by the PI?

The study was carried out with a limited sample in a specific cultural setting, and a specific type of trauma exposure, therefore cannot be generalized to other cultures and other types of trauma. In order to investigate the effects and applicability to other cultures and other types of trauma-exposure, a meta analysis that includes a variety of cultures and types of trauma exposure is suggested. Creative adaptation of the CHI Process™ as appropriate for other cultures is recommended. For example, in the United States, instead of “So-Ham” the phrase “I am That,” the English meaning of So-Ham could be used.

Possible implications for holistic health and spirituality

This study has implications for several, if not all areas of holistic health and spirituality, since the CHI Process™ involves the entire human organism and its connections with the whole universal organism and energy system as part of it. It is especially relevant to Transformational Psychology, Transpersonal Psychology, Energy Psychology, Energy Medicine, Holistic Medicine and Integrative Medicine, because the CHI Process™ can be practiced by clients or patients as an adjunct to any treatment. It may empower them to actively participate in their own healing by creating physiological coherence within themselves. Because it is grounded in ancient spiritual practices, it is relevant also as a spiritual practice.

Since five minutes of the CHI Process™ seemed to have a profound effect on physiological coherence, which puts the body and therefore the entire person into a harmonious, centered and balanced place that is conducive to optimum functioning of all the body's systems, that makes it possible to step out of survival mode even for a brief period, and into heightened PNS activity such as healing, restoration, growth, development. Therefore, the CHI Process™ can be utilized as a stand-alone self-treatment or as an adjunct to virtually any and all other treatments, holistic, integrative or allopathic.

It's most important use may be as a tool for trauma recovery – which seems to be one of the most challenging conditions facing individuals and communities all over the world today, especially in relief work in man-made and natural disaster situations.

Possible implications for other fields

Disaster Relief Work

The CHI Process™ could be incorporated into disaster relief programs for to facilitate traumatic stress relief in survivors and well as care givers and emergency workers.

Programs for youth

The CHI Process™ is ideally suited for programs addressing concerns related not only to trauma-exposed youth but to any and all youth, as well as children. As suggested by Machel as a best practice, youth can be involved in teaching the CHI Process™ to peers and younger children and even adults in their own families, as well as in community programs.³⁵⁹

Holistic health education for children and youth

Because the CHI Process™ taps into the universal energy field which scientists tell us is where all information exists in energetic form, there may be implications for its utilization in education. HeartMath studies have shown that coherence enhances learning and performance in children and adolescents, therefore could apply to the CHI Process™ since it also creates physiological coherence.

Quick team building exercise for collectives

The CHI Process™ may lend itself to creating connection between diverse individuals who need to be part of a unified team drawing on talents of each of its members, whether in a family, a community, working group or a business or corporate collective that is a system.

Performance enhancement in all areas

Since HeartMath studies have shown that improved coherence can enhance performance in business and sports, the CHI Process™ may also be effective in enhancing performance in the work place, sports, performing and visual arts and any and all types of creative, physical or intellectual activity.

Conclusion

The disconnect between the individual and the collective whole seems to be at the root of problems plaguing humans as individuals and as collectives – observable at every level – families, societies, to the whole planet seem to be suffering the consequences of humanity's disconnection from the whole universal and Earth system. Global warming; wars that humans wage against each other as individuals and as groups; diseases in which human cells mutate into forms that cause the destruction of the whole body; the immune system meant to protect the body turning against itself – appear to be some of the symptoms of the lack of coherence between humans and the whole planetary and universal system that they are part of.

David Bohm's words were a great inspiration and confirmation of the importance of living with and sharing the consciousness of wholeness.

...what is needed is for man to give attention to his habit of fragmentary thought, to be aware of it, and thus bring it to an end. Man's approach to reality will then be whole, and so the response will be whole.”³⁶¹

Grac'a Machel's recommendations on promoting and protecting children also resonated deeply.

The task of rebuilding war-torn societies is a huge one that must take place not only at the physical, economic, cultural and political, but also at the psychosocial level. Reconstruction must relate to the child, the family, the community and the country. Rebuilding need not simply mean returning to the way things were, but can offer opportunities to leap into the future rather than follow a slow but steady path of progress... Young people must not be seen as problems or victims, but as key contributors in the planning and implementation of long-term solutions.³⁶²

How then can we be aware of our self-destructive “habit of fragmentary thought, and bring it to an end?” How do we “leap into the future rather than follow a slow but steady path of progress?”

To respond to this question, I change the voice in which I write, from third person to first person, in order to underscore the simultaneously personal and global nature of this work.

The CHI Process™ is a personal response to calls for a new way to be coherent and whole as an individual, and as a member of the Earth community. The re-unification of the individual with the whole seems to be what the sacred texts, mystics and wisdom teachers have recommended throughout human history. That is what I intended to contribute to when I allowed myself to personally open to re-

connecting with Earth and Universe, and allowed the consciousness of wholeness to enter into my being.

These energies have been the Divine Breath that has given me new life and created a different person than I was when I started on this journey. My body and mind have been transformed by consciously connecting to Spirit, and discovering the truth of who I am. To share with others what I have learned in the process of recognizing wholeness within myself, is the least I can do to “love my neighbor as myself.” Although this learning came to me as I was approaching the autumn of my life, it seems to be those who are approaching their springtime who are most ready and willing to receive the tools I have to offer. It will be an honor and blessing to share the CHI Process™ with them, and with whoever else resonates with it.

The stress and trauma that we encounter in our day to day lives, or in the man-made and natural disasters that millions are facing in these times may be an opportunity to use the new prefrontal cortex patch that humans have been blessed with, to help the old mammalian and reptilian systems to manage our survival better instead of creating chaos and the destruction of our species. The fifty-eight trauma-exposed Sri Lankan youths practicing the CHI Process™ for five minutes showed me that this may well be a possibility.

This study was conducted in south Sri Lanka while massive military operations were taking place up north in an effort to “end” almost three decades of war. This violence may have ended the fighting temporarily, but it did not resolve the conflict or bring peace and reconciliation to the island. Despite the human tragedy that was taking place up north, I stayed grounded and connected to the universal

energies and the natural beauty all around me, practicing the CHI Process™ daily, and focusing on the project. The experiences that these young people shared with me of their five-minutes of the CHI Process™ gave me hope, and a vision of what was possible for other trauma-exposed youth in other parts of the island and wherever else they may be in the world.

It is my highest intention that this study and the CHI Process finds its way to all who can benefit by it, and contributes to the development of other simple, low cost, holistic interventions and empirical explorations to support the shift into wholeness and coherence – within ourselves as individuals, in our communities and in our world.

Wholeness and Blessing of ONE

I breathe into my heart, receiving with thanks,
Wholeness and blessing of ONE
I breathe out and I give to the Heart of Earth,
Wholeness and blessing of ONE.
I breathe into my heart, from the Heart of Earth,
Wholeness and blessing of ONE.
I breathe out to the Heart of Universe,
Wholeness and blessing of ONE.
I breathe into my heart, from the Heart of Universe,
Wholeness and blessing of ONE.
I breathe out to ONE with love and with thanks,
Wholeness and blessing of ALL.
I am ONE in many, many in ONE
Wholeness and blessing of ONE
I am spirit and mind, emotions and body,
Wholeness and blessing of ONE
I am Earth I am Sky I am Wind I am Water
Wholeness and blessing of ONE
I Am That I am That I am That I Am That
Wholeness and blessing of ONE
I am that I Am that I am That I am That
Wholeness and blessing of ONE

Suchinta Abhayaratna

(March 21, 2010.)

NOTES

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CHAPTER THREE

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CHAPTER FIVE

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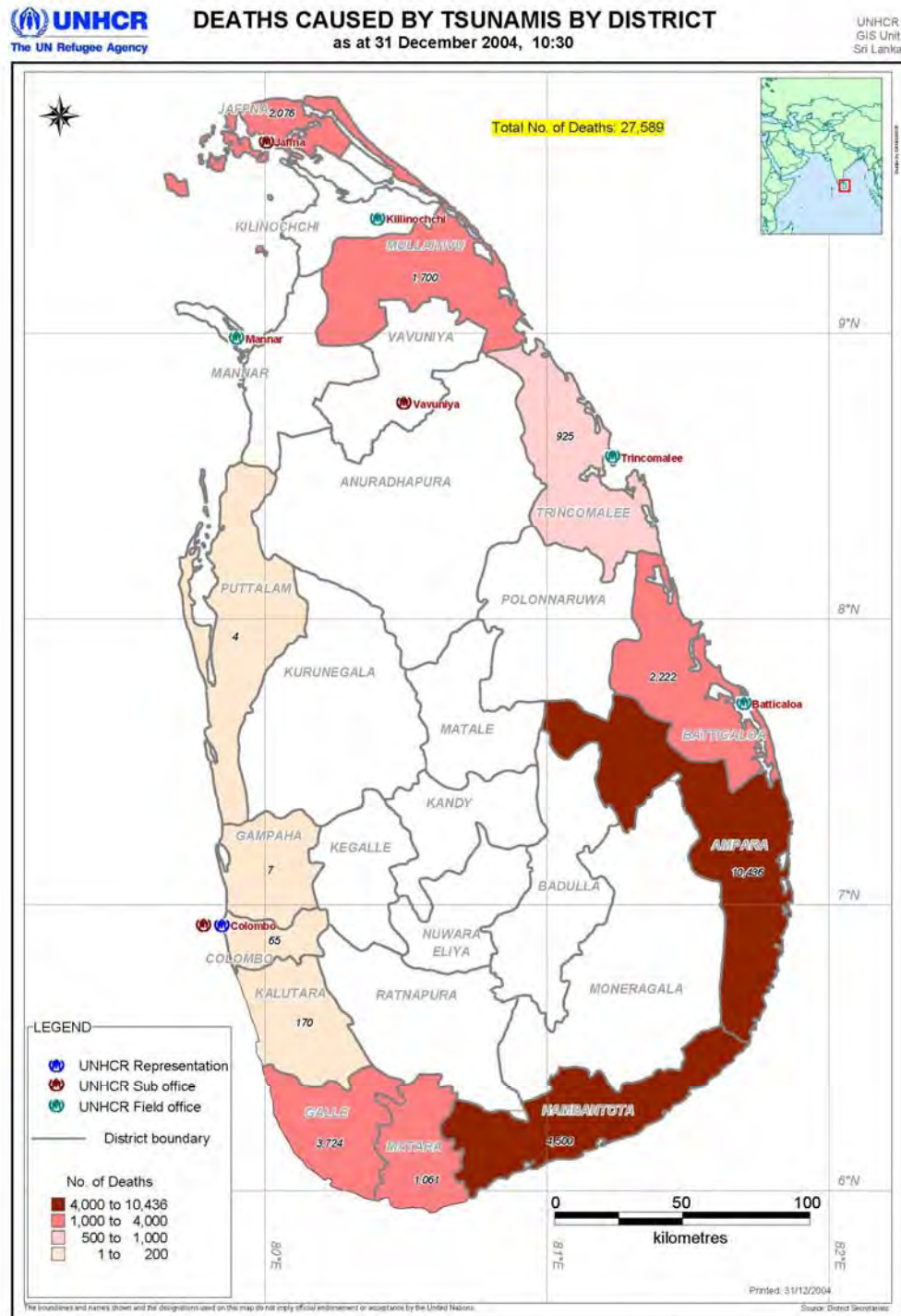
APPENDIX A : Map of Sri Lanka



Map No. 4172 Rev. 2 UNITED NATIONS
January 2007 (Colour)

Department of Peacekeeping Operations
Cartographic Section

APPENDIX B : Map of Tsunami Deaths by area.



APPENDIX C :The Wholeness Mandala



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APPENDIX D : Wholeness Mandala Visualization Script - English

(English translation of Sinhala script)

Look at the *mandala*.

Notice the person in the center, and the heart at the center of the person and the whole mandala.

Notice the hearts at the center of the earth and the universe.

Notice how the roots go from the heart through the base of the body to the heart of the earth;

Notice how the branches and leaves go up from the person's heart up through the top of the head to touch the heart of the universe.

Hold this image in your mind. Close your eyes. Can you see the mandala with your eyes closed?

(If yes: continue.)

(If no: Open eyes, look at the mandala again, until you can see it with your eyes closed.)

- Imagine that you are sitting on the earth, in the universe.
- Imagine you are sitting on the earth, in the universe.
- Your heart is at the center of the mandala...at the center of your wholeness.
- Breathe slowly and deeply through your heart.
- As you inhale you receive...as you exhale, you give.
- You are exchanging and sharing energy with all of nature around you – all that is on Earth...all that is in the universe.
- Feel your breath go in and out. Inhale...Receive....Exhale...Give.
- Your heart is full of life energy.

- As it pulsates, it pumps blood and energy to and from every part of your body...to every little cell and organ... Giving...Receiving.
- Feel your heart...beating as it gives and receives energy.
- Imagine your heart is like a seed, pulsating with life energy.
- Inhale... exhale...inhale... exhale...inhale...exhale.
- Inhale slowly and deeply into your heart.
- Exhale: sending roots from your heart, through the center of your body, through your legs, down to the heart of the earth.
- Inhale: Breathe Earth's energy slowly and deeply into your heart.
- Exhale: sending branches and leaves up through the center of your body, through the top of your head, into the heart of the universe.
- Inhale: Breathe universal energy into your heart.
- Exhale: ...send the breath down into the heart of the earth. Think "So"
- Inhale: Think "Ham".....Exhale: "So."
- Inhale: Think "Ham".....Exhale: "So."
- Think "Ham".....Exhale: "So."
- Your breath connects you to everything that is – on Earth and in the Universe.

(Begin data collection)

Continue this breathing and thought pattern for 5 minutes. I will be back to tell you when it is time to stop.

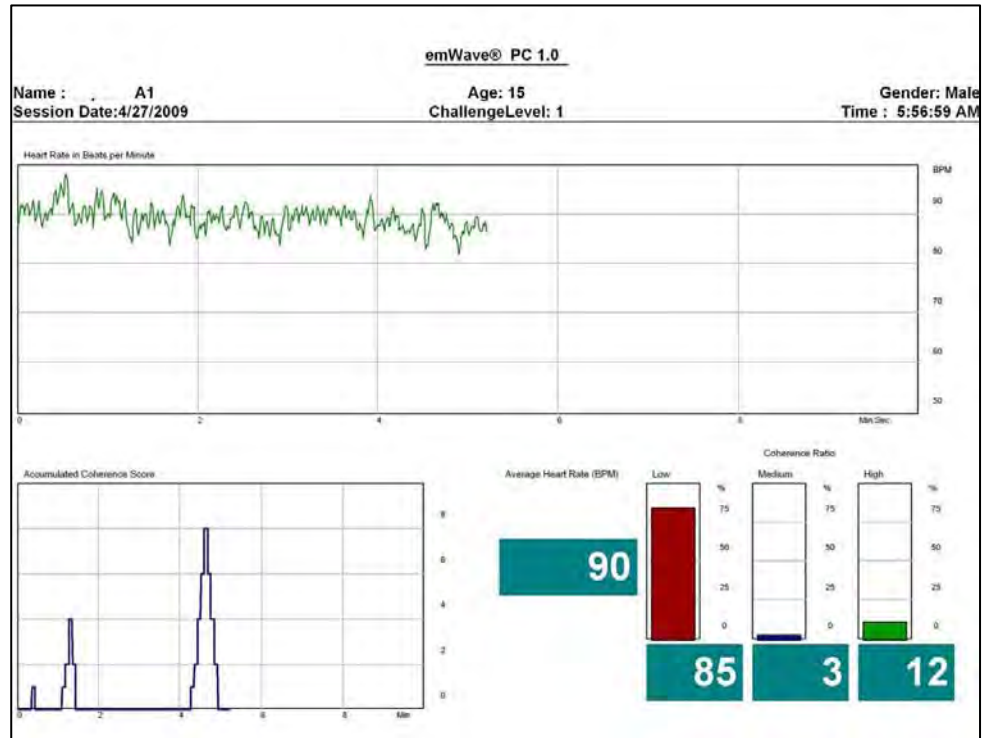
(End data collection)

When you are ready, slowly open your eyes.

APPENDIX E : Raw Data – emWavePC, qualitative and quantitative.

Raw data examples from the same participant during the three segments.²

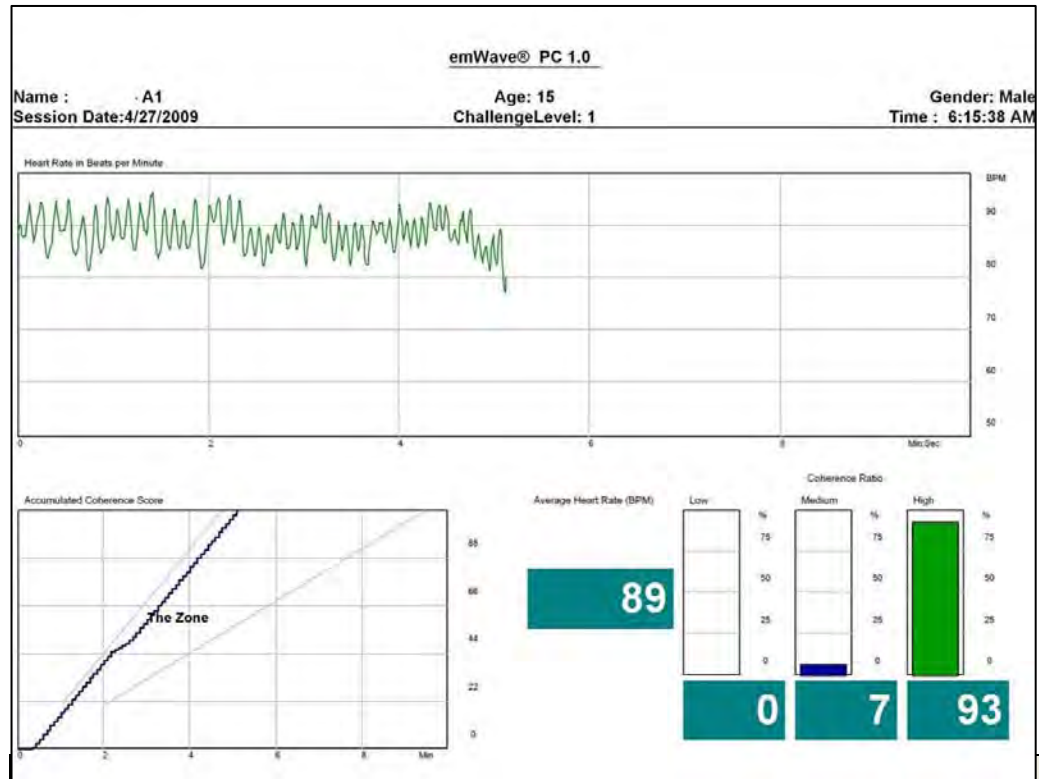
Segment 1: Baseline



Segment	#	Details	Age/ Sex	SUDS	Physical	Thoughts: Mental/Emotional
Segment 1	A 1	Lost mother. Living w/father & stepmother.	M15	5	No comment CR=15	Slightly fearful /nervous. Wonders what this thing is.(ear sensor) "I get nervous about unfamiliar things. (PI reassured him about safety of the ear sensor and asked if he wanted to discontinue continue, but he chose to continue.)

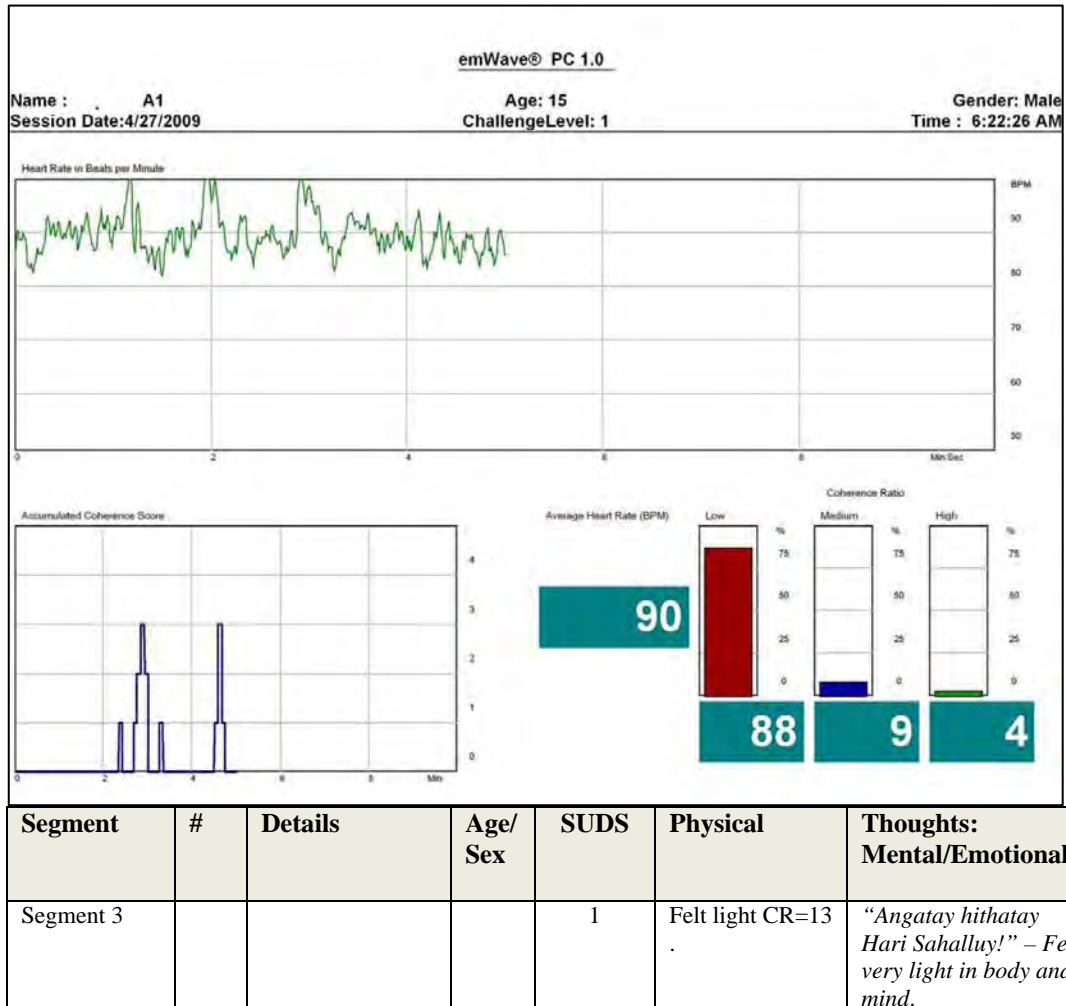
² Note that the time displayed on the EmWave display screen shows US EST. Add 10.5 hours for correct Sri Lanka time – 4:28:59PM.

Segment 2: Intervention



			Sex			Mental/Emotional
Segment 2				2	No comment CR= 100	Focused on breath and So-Ham. No thoughts. Felt very relaxed and light (sahallu).

Segment 3: Post



APPENDIX F : Informed Consent Form – English translation

Please read the following information, and ask any questions you may have before you decide to participate in the research study.

Please note that if you agree to participate in this study, you are free to withdraw at any time, for any reason, without penalty.

Purpose of study:

To observe the effects of practicing self-care involving breathing techniques.

Duration of study:

Approximately 30 minutes, including training, practice and computer monitoring.

What will be required of you as a participant:

- To be present for the entire training and practice session.
- To follow all instructions very carefully.
- To submit to non-invasive computer monitoring.
- To answer a few verbal questions about your experience.

Several techniques will be taught and tested in this project. You will be taught one of them. The techniques will be similar but not identical.

Training: A few breathing techniques will be taught and tested in this project. Each participant will experience one or two of these techniques.

Practice: Participants will practice what they are taught in their session.

Monitoring: Pulse will be monitored and recorded non-invasively by computer during 3 practice segments. You will be asked a few questions about what you experienced during these segments.

Review and explanation of data / results: After all the participants have completed their sessions and all the research data has been collected, you will be shown the results of your session, and be given an explanation of what it means.

PLEASE NOTE: All of the above mentioned training, protocols and monitoring are completely safe and harmless. They are not meant to diagnose, treat or cure any physical or emotional symptoms or illnesses. If you experience physical and/or emotional discomfort during and/or after any segment, you are kindly advised to inform the Researcher immediately.

PRIVACY: Your participation is strictly voluntary. Your name will not be mentioned in the research findings. You will be identified only by a code number.

If you would like additional information concerning this study before or after it is complete, or have concerns or questions of any kind, please contact:

Suchinta: 077-8394455 or (Name of the Administrator): 077-967XXXX

Please mark the appropriate box:

☐ I am between 12 and 24 years of age.

☐ I take medicine prescribed by a doctor.

Details:_____

☐ I have read and understood all the above information, and agree to the requirements listed above. I have received a copy of this consent form to keep.

_____/_____
Signature of participant Date

With my signature I affirm that I am the ☐ parent / ☐ legal guardian of:

Participant Name:_____/Age:_____,
and give permission for him / her to participate in the above study. S/he has been advised of and understands all the information and requirements above, and agrees to them. I have received a copy of this consent form to keep.

_____/_____
Signature of parent /guardian Date

Printed Name:

Address:_____

Phone: Home:_____ Mobile/Hand Phone_____