### **Oral Presentations**

### **Biofield Imaging**

#### 0-1

# IMAGING BIOFIELD INTERACTIONS BY MEASURING BIOPHOTON EMISSION

Katherine Creath, PhD, PhD, 1.2 and Gary E. Schwartz, PhD1.3 <sup>1</sup>Center for Frontier Medicine in Biofield Science, University of Arizona, Tucson, AZ

<sup>2</sup>Optical Sciences Center, University of Arizona, Tucson, AZ <sup>3</sup>Psychology, Surgery, Medicine, Neurology, and Psychiatry, University of Arizona, Tucson, AZ

**Objective:** This study was designed to image biophoton emission from and between various plant parts.

Materials and Methods: A highly sensitive, low-noise, cooled, Roper Scientific camera was used to image self-generated biological chemiluminescence (biophotons) in a completely dark, light-tight chamber from plant parts. Biophoton emission correlates with oxidative metabolic processes producing singlet oxygen and other oxygen-related free radicals. Plant parts were placed on either black or white (non-fluorescing) backgrounds. A sequence of long-exposure images (1/2 to 2 hours) was taken once the chlorophyll fluorescence decayed (after 30 minutes in darkness) over a period of several hours. Image brightness corresponds to the amplitude of biophoton emission.

**Results:** More light is seen between adjacent plant parts than where there are no adjacent plant parts. Definite structure can be seen between plant parts that falls off with distance. White backgrounds scatter and reflect more biophoton emission than absorptive black backgrounds. With time this interaction increases and then decays as the plant parts decay.

Conclusion: Each biological object is a weak light source that interacts with adjacent biological objects. When looking at interactions between objects, white backgrounds enhance these effects, while black backgrounds enhance effects within the object. These images show feedback and synergy between living systems as well as pictorial evidence of biofields and auras. Light streaming between objects indicates a type of communication between the objects. We speculate that these self and mutual fluorescence/luminescence effects are not exclusive to plants and are present in all biological systems that emit biophotons.

Supported in part by NIH P20 AT00774-01 (Center for Frontier Medicine in Biofield Science) from the National Center for Complementary and Alternative Medicine (NCCAM), and Prof. Arthur F. Gmitro and his research group for use of equipment and facilities.

#### O-2 HIGH DENSITY ENERGY IN WATER AND AQUEOUS SYSTEMS

<u>Vladimir Voeikov</u>, and M.V. Lomonosov, Moscow State University, Moscow, Russia

**Objectives:** Recently it became known that water may be oxidized by singlet oxygen giving rise to hydrogen peroxides and other reactive oxygen species (ROS). Such reactions are known to produce energy of electronic excitation (EEE) equivalent to photons in visible and UV-range of the spectrum. Can analogous processes arise in aqueous systems spontaneously?

Materials and Methods: Single photon counters were used to

register ultra-weak photon emission from natural artesian waters and aqueous solutions of amino acids.

Results: We discovered that water in solutions containing natural ingredients of artesian waters being in contact with air gradually oxidizes and accumulates EEE turning into a highly non-equilibrium dynamic system. In aqueous amino acid solutions there develop autoxidation processes accompanied with spontaneous and stimulated emission of radiation. These processes display oscillatory patterns and are highly sensitive to external ultra-weak influences

Conclusions: We suggest that water—the most abundant molecular constituent of living systems and being at the same time structured matrix of life—may also play primary role in bioenergetics as the source of EEE. This high density energy may serve for sparking downstream biochemical and physiological events while oscillatory character of processes with ROS participation flowing in aqueous systems may play the pacemaker role for them. On the other hand these processes are likely to be receptive for external resonance-like factors. Besides, drinking value of water may depend on its ability to "burn."

# O-3 GAS DISCHARGE VISUALIZATION MEASUREMENTS OF THE EFFECT OF INTENT ON WATER

<u>Daniel A. Lewis II, BA</u>, <sup>1,2\*</sup> Sabrina E. Lewis, BA, <sup>1,2,3</sup>, Lewis Mehl-Madrona, MD, <sup>3,5</sup> Iris R. Bell, MD, PhD, <sup>1,3,4,5,6,7</sup> and Gary E. Schwartz, PhD, <sup>1,4,5</sup>

<sup>1</sup>Center for Frontier Medicine in Biofield Science, University of Arizona, Tucson, AZ

<sup>2</sup>Saybrook Graduate School and Research Institute, San Francisco, CA
<sup>3</sup>Program in Integrative Medicine, University of Arizona, Tucson, AZ
<sup>4</sup>Department of Psychology, University of Arizona, Tucson, AZ
<sup>5</sup>Department of Surgery, University of Arizona, Tucson, AZ
<sup>6</sup>College of Medicine, University of Arizona, Tucson, AZ
<sup>7</sup>College of Public Health, University of Arizona, Tucson, AZ

**Objective:** Building upon our previous findings that the GDV is capable of discriminating various types, we investigated if intention and/or energy could be placed in water.

Materials and Methods: Highly purified liquid chromatography water (HPLC), purified water (PW), and Tucson tap water were used. Three experimental conditions were: (1) a control condition (no intervention), (2) an individual concentrated on bringing earth energy up through his feet into a bottle of water or syringe held in his hand, and (3) that same individual concentrated on the water emanating the best amethyst properties that it could. Trials were 2 minutes for each condition. GDV photographs were taken immediately after each condition.

**Results:** The differences between purified and HPLC replicated Form Coefficient [F(1, 22) = 5.2760, p = .03151], spectrum [F(1, 22) = 10.835, p = .00333], and area [F(1,22) = 10.835, p = .00333]. The amethyst intention condition was statistically different from the control condition, on spectrum [F(1, 12) = 11.586, p = .00523] and area [F(1, 12) = 9.9069, p = .00841]. In addition, across all reported parameters earth energy and the amethyst condition showed marginally significant differences between themselves.

**Conclusions:** The GDV can be used to measure intention and the imparting of energy into water can be studied. The findings indicate that the use of amber glass bottles does not stop the flow of energy or intention into water.

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#### **O-4**

## THE EFFECTS OF REIKI ON BACTERIAL CULTURE GROWTH IN RELATION TO PSYCHO-SOCIAL CONTEXT

Beverly Rubik PhD,<sup>1</sup> Audrey Brooks PhD,<sup>2</sup> and Gary Schwartz, PhD<sup>2</sup>

<sup>1</sup>Biofield Research Center, Institute for Frontier Science, Oakland, CA <sup>2</sup>Department of Psychology and Center for Frontier Medicine in Biofield Science, University of Arizona, Tucson, AZ

**Objective:** To measure effects of Reiki treatments on growth of heat-shocked bacteria, and to determine the influence of practitioner psychosocial well-being.

**Materials and Methods:** *E. coli* K12 was grown overnight and resuspended in fresh medium. Culture samples were paired with controls to minimize any ordering effects. Samples were heat-shocked prior to Reiki treatment, which was performed by single Reiki practitioners for up to 15 min, with untreated controls. Plate count assays were performed to determine the number of viable bacteria using an automated counter. 14 Reiki practitioners completed 2 runs (n = 28 runs).

**Results:** No difference was found between the Reiki and control plates using paired t-tests. Half the runs showed control counts greater than Reiki bacterial counts, and vice versa. Individual practitioners did not produce consistent effects in duplicate runs. However, upon close examination of the pre-post psychosocial data, changes in social (p < .05), mental (p < .09), emotional (p < .09), and overall well-being (p < .08) were found to correlate with Reiki treatment outcome. For practitioners starting with a lower level of well-being, control counts are likely to be higher than Reiki-treated bacterial counts. For practitioners starting with a higher level of well-being, Reiki counts are likely to be higher than control counts. Although practitioners with control counts greater than Reiki have lower well-being scores initially, both groups improve to the same level of well-being at post-test.

**Conclusion:** Changes in Reiki practitioners' well-being correlate with the outcome of Reiki on bacterial culture growth.

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#### **O-5**

# THERAPEUTIC TOUCH AFFECTS PROLIFERATION AND BONE FORMATION IN VITRO

<u>A. Jhaveri</u>, M.B. McCarthy, and G. Gronowicz Department of Orthopedic Surgery, University of Connecticut Health Center, Farmington, CT.

**Objective:** Our goal was to determine if Therapeutic Touch (TT) had an effect on the growth and differentiation of bone cells *in vitro*.

Materials and Methods: Human osteoblasts (HOBs) obtained from bones of patients undergoing orthopaedic procedures, and osteoblast-like cells derived from a human osteosarcoma (SaOs) were used. Cells were plated into culture dishes and qualified practitioners performed TT for 10 minutes, twice a week. Corresponding untreated cultures were used as controls. At 1 and 2 weeks, cell proliferation was determined by [³H]-thymidine incorporation and by immunocytochemistry for Proliferating Cell Nuclear Antigen (PCNA). At 2 and 4 weeks, calcium content was measured biochemically and was visualized by fluorescent microscopy with calcein and phalloidin. Northern blots were performed to determine the expression of mRNA levels of Type I collagen, bone sialoprotein and alkaline phosphatase.

**Results:** No significant differences were found in proliferation assayed by [3H]-thymidine incorporation at 1 or 2 weeks for SaOs and 1 week of TT for HOBs. However, TT significantly (p = 0.01)

increased HOB proliferation after 2 weeks. PCNA staining confirmed these data. No calcium content increase was observed in HOB or SaOs cells at 1 week, but mineralization increased in HOBs and significantly (p = 0.004) decreased in SaOs after 2 weeks of TT, which was confirmed by calcein/phalloidin staining. Northern blots indicated an increase in mRNA expression for bone matrix proteins in HOBs and a decrease for SaOs.

**Conclusions:** Therapeutic Touch increases human osteoblast proliferation, differentiation and bone mineralization, and decreases differentiation and mineralization in human osteosarcoma-derived cells.

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#### 0-6

A COMPARISON OF HUMAN ENERGY FIELDS BEFORE AND AFTER STIMULATION OF DR. C. NORMAN SHEALY'S RINGS OF FIRE, EARTH, WATER, AIR, AND CRYSTAL

Barbara A. Haydon, BSN, MA, ThD Brasstown, NC

**Objective:** The present research explores the human energetic field change in the human body after the electrical stimulus of Dr. C. Norman Shealy's Rings of Fire, Earth, Air, Water, and Crystal are applied. In addition, a control group of non-acupuncture points is also compared to the rings' analysis. The rings of acupuncture points produce specific hormones in the body with stimulation of the points with the SheLi TENS. The present study compares the five rings and their respective electro magnetic energy fields.

Materials and Methods: The Gas Discharge Visualization Bioelectrography (BEO-GDV) instrument was used to measure the change in the human energy field. The GDV camera did a measurement of the fingertips with and without a filter. The SheLi TENS stimulator device was used to stimulate the acupuncture points of the rings and control group. Fifty-five to sixty-one volunteers were tested in each set. The age ranges was 21 to 80 years and were all healthy individuals.

**Results:** The pre-treatment numbers were compared to the post-treatment numbers. A statistical change was detected in the Rings of Water, Earth, Crystal, and Air without a filter both right and left hands. No statistical change was detected for the Ring of Fire with or without a filter. Statistically significant changes in the energy field with a filter included the Ring of Crystal left hand and Ring of Earth right hand. The rings of Air and Water had no statistical significant change with a filter. The control showed no statistical significant change with or without a filter. Another analysis of the least-squares fit was done to show the movement of the electromagnetic field before and after stimulation. All of the rings showed a movement toward the balance points except the control group.

**Conclusion:** The most significant finding in this research was that the electrical stimulation of the acupuncture points (rings) with the SheLi TENS moved the electromagnetic energy toward a homeostasis or balance point in the body.

### Physiology and Energy Healing

#### $\mathbf{O}$ -7

HOLISTIC APPROACH TO THE STUDY OF PSYCHOSPIRITUAL HEALING

Maria Syldona, PhD

Transpersonal MindBody Healing Center, Huntington, NY

**Objective:** Investigating psychospiritual healing is best accomplished with a multifaceted approach. This study integrates East-

ern and Western scientific traditions and first and third-person analyses toward understanding the mechanisms of psychospiritual healing.

Materials and Methods: Energetic mechanisms underlying the healing meditation state of consciousness in 27 mental healing practitioners was assessed by obtaining and comparing d.c. electrodermal measures recorded simultaneously and continuously from acupoint and nonacupoint locations using two Autogen 3400 Dermographs (biofeedback machines; Autogenics-Cyborg, Chicago) and specially designed electrodes to minimize artifact. An ABAB within-subject experimental design, with baseline, was employed. Five-minute wakeful (talking) states of external focus alternated with 5-minute healing meditation states. After each of the five-minute segments, subjects indicated graphically their *felt sense* of a flow of healing energy.

Results and Conclusions: Results supported the main hypotheses: primarily that d.c. potential measurements taken on acupoints differ in nature from those taken on nonacupoints, and may indicate that the flow of qi (or prana) through the meridian (nadi) system is identical to, or closely underlies, the endogenous d.c. potentials of the body. Furthermore, d.c. potential data displayed temporal patterns distinguishing acupoint from nonacupoint measurements. Patterns also appeared that distinguished healing meditation states from ordinary wakeful states of external focus. Additionally, subjects' graph of their *felt sense* of a flow of healing meditation energy corresponded only to d.c. potential patterns taken from acupoint locations. ANOVA analysis revealed a statistically significant difference (p < .001) between acupoint and nonacupoint d.c. potential measurements.

#### O-8 EEG BRAINWAVES AND HEART RATE VARIABILITY (HRV) ANALYSIS OF BIOENERGETIC HEALERS

Juan Acosta-Urquidi, PhD BRAIN-TOPOS, Seattle, WA

**Objective:** To record EEG and HRV data during Bioenergetic Healing sessions.

Materials and Methods: Cortical potentials were measured with a Lexicor NRS-24 digital QEEG system, Boulder, CO, full cap 19 electrodes, Intl. 10-20 system, bandwidth 0.5-32 Hz, including offline analysis software. HRV analysis used the Heart Rhythm Scanner 1500 ECG unit, BioCom Technologies, Poulsbo, WA. An electrocrystal sensor device (BFA, Enermed, Vancouver, CAN.) recorded discrete electromagnetic (EM) signals from the practitioners during the state of "sending enegy" (SE). EEG, HRV and BFA signals were simultaneously recorded from practitioners, revealing the complex shifting brainstates, the physio-emotional components of the experience and EM emission signals. A baseline was initially recorded and compared to data taken at 10-40 min. time points during SE state. Practitioners of diverse Energy Healing modalities (Pranic, Reiki, Quantum Touch, Shamanic, Johrei), were selected for this study. Most sessions consisted of distant healing, but in some cases the client was in the same room receiving the healing.

**Results:** Baseline EEG signatures were distinct, as expected, but some consistent features were noted: assymetrical alpha activity, was shifted to right temporal-parietal sites, maximal at T6, P4. Phase synchrony maps (theta-alpha, 7-10Hz) and low-amplitude delta power (1–4 Hz), revealed higher than normal Z-scores (LSRDB database). During SE state, robust (45–200% increase) in mostly alpha power was detected at T6, P4. Phase synchrony was also increased in alpha-theta band. HRV analysis during SE state revealed increased coherence (peak ca. 0.1 Hz power-freq. spectrum) in only a few healers, most showed increased sympathetic arousal, reflecting the establishment of a "healing connection" with their target.

**Conclusion:** These studies demonstrate measurable physiological changes during SE state that correlate with a psycho-spiritual healing experience. Ongoing studies are measuring EEG and HRV in the clients receiving the energy healing.

#### 0-9

# EEG CHANGES IN EXPERIENCED JOHREI PRACTITIONERS

Gary Schwartz, <sup>1,2</sup> <u>Audrey Brooks</u>, <sup>1,2</sup> Daniel Lewis, <sup>1,2,3</sup> Kim Corley, <sup>1,2</sup> Katie Reece, <sup>1,2</sup> and Katherine Burleson<sup>2,4</sup>

<sup>1</sup>Department of Psychology, University of Arizona, Tucson, AZ <sup>2</sup>Center for Frontier Medicine in Biofield Science, University of Arizona, Tucson, AZ

<sup>3</sup>Saybrook Institute, San Francisco, CA

<sup>4</sup>Program in Integrative Medicine, University of Arizona, Tucson, AZ

**Objective:** To examine the difference in EEG activity between "givers" and "receivers" of Johrei before and after a healing session.

**Methods and Materials:** Twenty Johrei practitioners (10 pairs) conducted a standardized Johrei healing session for 22 minutes. Participants were randomly assigned to be either the giver or receiver. All participants had a minimum Johrei practice of 1 year and were active Johrei "givers" and "receivers." EEG activity was recorded pre- and post healing intervention. Five minute eyes-open and 5-minute eyes-closed recordings were obtained.

**Results:** Initial findings for EEG alpha (8–12 hz) from the left and right sides of the head reveal different EEG alpha patterns for "givers" and "receivers." Repeated measures analyses of variance indicate that (1) the senders decrease their EEG alpha from pre to post intervention on both sides of the heads, and (2) the receivers show a relative increase in left-sided EEG alpha post training.

**Conclusion:** This is the first basic science study examining biophysical and psychophysiological mechanisms of giving and receiving energy. The difference in EEG alpha activity between "givers" and "receivers" suggests that receivers experience a relative increase in relaxation in the "left hemispheric."

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#### O-10 DYNAMICAL CHANGES IN EEG ALPHA CORDANCE RESPONSES OVER TIME DURING SUCCESSFUL

HOMEOPATHIC TREATMENT OF FIBROMYALGIA

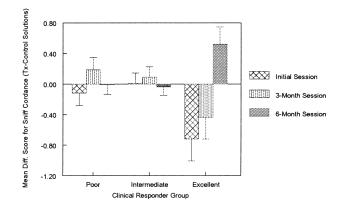
<u>Iris R. Bell, MD, PhD,</u> Daniel A. Lewis, II, BS, Gary E. Schwartz, PhD, Sabrina E, Lewis, BA, Anne Scott, PhD, Audrey J. Brooks, PhD, and Carol M. Baldwin, RN, PhD University of Arizona, Tucson, AZ

**Objective:** We previously reported that initial electroencephalographic (EEG) alpha cordance patterns distinguished fibromyalgia patients with subsequently excellent local (tender point pain) and global (overall health) clinical responses to homeopathy from all other patients (Bell et al. 2004). Given homeopathy's history of inconsistent replicability, the present study reassessed the same measure over time.

Materials and Methods: Evaluated initial, 3-month, and 6-month EEG alpha (8–12 hertz) cordance during a double-blind, randomized, placebo-controlled trial of individualized LM-potency homeopathy in fibromyalgia (N = 50). EEG sessions (eyes-closed) included 16 2-second sniffs of diluted patient-specific treatment solution [verum for Active; placebo for Placebo group], randomized in order by pairs with 16 2-second sniffs of similarly-prepared control solvent solution. Cordance was computed as a derivative of absolute and relative power for nearest neighbor electrode pairs per <a href="www.qeeg.org">www.qeeg.org</a>. Averaged cordance values for all sniffs of treatment solution minus control solvent were compared over excellent, good, and poor responders.

**Results:** The excellent clinical responders (defined at 3 months) showed a progressive shift from negative to positive difference scores in cordance over 6 months. The pattern differed from that of good and poor responders to verum and placebo.

Conclusions: Consistent with the complex adaptive systems model for homeopathic healing, the data suggest that EEG cordance is a dynamic biomarker for the evolution of excellent clinical responses. The pattern over time was unique to exceptional responders on verum. Apparent irreproducibility of homeopathy research may stem partly from the assumptions of conventional medical researchers that human beings and biomarkers are static rather than dynamic entities.



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### **Qualitative Research**

# 0-11

CLIENT PERCEPTIONS OF THE EXPERIENCE OF DAHN YOGA ENERGY HEALING, MEDITATION, AND EXERCISE

Bonnie Raingruber, PhD

Center for Health and Human Services Research, California State University, Sacramento, CA

**Objective:** The objective of this study was to examine client perceptions of Dahn Yoga energy healing, physical exercises, and meditative practices.

**Methods:** A phenomenological investigation of 10 adults receiving energy healing and practicing meditation and Dahn Yoga was conducted. Caucasian adults between the age of 21 and 55 were interviewed. Themes that appeared throughout the interviews were identified using a Heideggerian approach. The results were presented to the participants for validation.

Results: Participants described being aware of physical sensations associated with Chi energy flow and feeling more energetic following Yoga, meditation, and energy healing sessions. Participants reported that their intuitive experiences increased as a result of these practices. Intuitive experiences included seeing colors/lights, seeing images that were described as having significance in terms of one's life, noticing precognitive insights, and experiencing more vivid dreams. Participants mentioned becoming more flexible and experiencing physical improvements such as decreased back pain, enhanced sleep, decreased depression, and improved immune function. The sense of community in the Yoga center motivated individuals to participate in the healing sessions as well as the meditative and Yoga practices on a regular basis.

**Conclusion:** A combination of Yoga exercises, meditation, and energy healing is effective in increasing mental and physical flexibility, diminishing physical and mental problems, and enhancing individual's reflective/intuitive abilities. By learning Yoga and meditative exercises, individuals were able to continue experiencing the benefits obtained from energy healing provided by Yoga Masters.

#### O-12 DEVELOPING TOOLS TO ASSESS OUTCOMES FOR SPIRITUAL/ENERGETIC HEALING: PILOT STUDY

Elizabeth Sutherland, ND, 1,2 Cheryl Ritenbaugh, PhD, MPH, 1,2 Susan Kiley MSW LMT, 3 and Nancy Vuckovic PhD1

<sup>1</sup>Center for Health Research, Kaiser Permanente Northwest, Portland, OR

<sup>2</sup>Helfgott Research Institute, National College of Naturopathic Medicine, Portland, OR

<sup>3</sup>Kaiser Permanente Northwest Pain Management Clinic, Portland, OR

**Objective:** Conventional assessment instruments do not capture the multidimensional outcomes of spiritual/energetic healing. To address this, we elicited descriptions of how subjects themselves describe their healing process. The long-term goal is to develop language that can portray a patient's healing experience, regardless of healing tradition, and ultimately to deepen our understanding of what actually heals. This work is initially qualitative but can lead to development of Likert-type scales for spiritual/energetic outcomes assessment.

**Materials and Methods:** Within a pilot study of energy healing for chronic headache, six female patients recruited from Kaiser Permanente Northwest (KPNW) Pain Clinic were given audiotaped interviews for approximately one hour at baseline, post-third treatment, end of treatment, and three months after end of treatment. Initial analysis was conducted by coding interviews for emergent themes, common descriptors, and key events.

Results: Each participant reported profound shifts in self-awareness after three sessions. In each case changes were noted by others (healthcare providers, family members), and four of six showed decreased utilization of KPNW medical resources. Examples of language used to describe this experience included: "Walls that obstructed my creativity have melted"; and "Something locked up inside me since childhood has released, relieving the hold it had on my body." Potential scalable items from this study will be used in the next pilot.

**Conclusion:** Patients' descriptions of their healing process may lead to a systematic way to query patients across healing traditions and provide the basis for spiritual/energetic outcomes assessment scales.

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#### O-13 BECOMING AN ENERGY HEALER: A QUALITATIVE EXPLORATION

<u>Deogracia Cornelio, PhD</u>, and Sara L. Warber MD Michigan Integrative Medicine, University of Michigan, and Department of Family Medicine, University of Michigan, Ann Arbor, MI

**Objective:** To elucidate the concepts and processes related to becoming a biofield energy healer.

Materials and Methods: Nineteen participants were selected to represent a variety of energy healing modalities from Midwestern U.S. metropolitan area. Semi-structured interviews elicited their descriptions of healing theory and practice. Interview transcripts

were qualitatively analyzed to identify recurrent themes, conceptual categories and relationships. They were reviewed and validated by a second investigator.

**Results:** The healer and client enter the healing space and are defined anew as partners, as agents, as energy entities. The ability to help others heal is achieved through an "awareness" of and "an openness" to energy. The healer's role is one of "facilitator" of the client's own ability to heal, a "conduit" for the energy. Healers talk of "holding" clients in a "sacred" space of "deep love and compassion" to "meet the client where he or she is" and "work with them." Thus, they must reach a state characterized by clear "intent." This state demands a practice of self-care and self-management, which bring the healer to embody important aspects of their definition of energy, health and ethical practice. The healer's identity is one of "living the practice."

**Conclusion:** Becoming an energy healer extends beyond formal training and into the development of a cohesive practice informed by a complex system of beliefs and the principles of their traditions. It includes mentorship, overarching philosophical explorations and ongoing self-regulation. The healer state and identity are defined by what is conducive to health and promotes healing.

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#### 0-14

A PHASE 0 STUDY OF SPIRITUAL HEALING FOR PATIENTS WITH HIV/AIDS: DEVELOPING METHODS FOR SPIRITUAL ASSESSMENT

<u>John Laird, MD</u>, <sup>1</sup> Ibrahim Jaffe, MD, <sup>1</sup> and Cheryl Ritenbaugh, PhD, MPH<sup>1,2</sup>

<sup>1</sup>The Jaffe Institute, Pope Valley, CA

<sup>2</sup>Helfgott Research Institute, National College of Naturopathic Medicine, Portland, OR

**Objective:** To develop methods for studying spiritual healing among HIV/AIDs patients, including identification of the most important spiritual foci for assessment before and after interventions, and parameters to evaluate these foci in relation to changes in biomedical and psychometric measures.

Materials and Methods: Fifteen patients participated in a wait-list controlled pilot study of spiritual healing for HIV/AIDS. The protocol included an introductory explanatory session, two intensive group healings 10 days apart, and 4 class sessions in between to help integrate the healings. At each of the intensive group healing sessions, I. Jaffe led the healers in qualitatively assessing the patients at several energetic levels and describing what appeared relevant to the patients' health, well-being, and outcome. Assessments were tape-recorded, transcribed, and coded for themes and content. Changes and areas which resisted change from pre-baseline to post-second healing were noted. These form the basis for subsequent comparison with viral loads, CD4 counts, and psychometric assessment at baseline, one, and three months post healing.

**Results:** Qualitative analysis provided eight dimensions for consistent assessment of spiritual state: (1) energetic assessment of T cells; (2) energetic assessment of virus; (3) energetic relationship of patient's T cells and virus; (4) energetic assessment of thymus;

(5) willingness and ability to receive love; (6) relationship to divine purpose; (7) soul issues; (8) surrender to a spiritual path.

Conclusions: Identified dimensions for pre and post energetic/spiritual assessment provide a starting point for studying spiritual interventions in HIV/AIDS in relation to biological and psychometric outcomes, a first step toward integration of spiritual science with biomedical research.

### **Theory**

#### O-15

A COMPLEX ADAPTIVE SYSTEMS SCIENCE MODEL FOR TRANSFORMATIONAL HEALING IN HOMEOPATHY

Iris R. Bell, MD, PhD

Program in Integrative Medicine, University of Arizona College of Medicine, Tucson, AZ

**Objective:** To describe a complex adaptive system (CAS) science model for transformational healing in homeopathy.

**Methods:** Examined homeopathic case analysis approaches and empirical evidence.

Results: Observationally, 70-90% of homeopathic patients improve; 20% report multidimensional, transformational responses. Treatment choice derives from fixed patterns/themes that permeate the patient's presentation as a whole, emphasizing mental and general symptoms. A tenet of classical homeopathy is that all disease begins at the spiritual level, manifesting at mental, emotional, and physical levels. Each person needs a single remedy from the earth's animal, mineral, or plant kingdom that expresses the intensity of a pervasive life theme, e.g., survival and competition (animals), structure (minerals), sensitivity (plants). In a qualitative study, homeopaths reported "unstuckness" from recurrent self-defeating behaviors as signaling transformational change. Change occurs in a hierarchical pattern from within outward, above downward, and in reverse order of time of appearance. Two recent quantitative studies demonstrated nonlinear, dynamical (nonstatic) patterns of responses to homeopathic remedies.

**Discussion:** Systems science accommodates the convergent clinical and empirical evidence. A person is a CAS, an open evolutionary self-organized system in which many different independent variables interact in interdependent and unpredictable ways. Each person is part of the larger dynamic network of the planet, living out, within a human experience, the challenges/themes of his/her environment's animal, mineral, or plant components. Correct homeopathic treatment triggers a cascade of sudden change, i.e., self-organized criticality, leading to healthier adaptation throughout the person and network. The model predicts homeopathic treatment of super-connected individuals should markedly improve world-network health.

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