

January 20, 1994

TMI LABORATORY INVESTIGATIVE REPORT

Background:

On November 19, 1993, a laboratory investigation of "Cell Singing," a form of Resonant Kinesiology, was conducted. This investigation was carried out with the intent of examining EEG and other physiological parameters of a subject, Dave Wallis, in conjunction with the activities of Liza Callen, a massage therapist who practices an alternative technique which she calls Cell Singing. Cell Singing involves toning or singing notes directly over or adjacent to various parts of the physical body.

Subject Information:

Liza Callen provided the following information about herself:

I am a licensed massage practitioner with 10 years of international experience working with a variety of natural therapies. These include: Bodywork, massage, rebirthing, counselling, nutrition and creating special group and individual programs for hundreds of people. My most powerful technique is Cell Singing.

In the past six years, I developed the technique of Cell Singing with the belief that sound affects the cellular vibration of the human body. Intuitive notes and tones are sung over the body. These sounds, in pure tones, move throughout the nervous system opening the flow of energy. This allows a deep release of physical, mental and emotional blocks and associated symptoms. I feel the frequency of the cellular vibration of the body is changed after treatment. Stress, toxins and disease can no longer be a part of the biological condition.

Every Cell Singing session is different. Notes and tones vary greatly. I am able to sense, through hearing and feeling resonance, the particular pattern of sounds required for the individual person.

Investigative Protocol:

For the laboratory investigation, a protocol was used that was the least intrusive possible. We did not want to extinguish valid responses in pursuit of scientific data. We wanted to make a record of EEG brain-wave data and certain physiological responses of the subject, Dave Wallis, during various behaviors performed by Liza Callen. No monitoring of Ms. Callen was conducted but she was under the observation of Dean Lusted, MD, during the entire course of the investigation. The Cell Singing was performed on Mr. Wallis while he was while lying supine on a waterbed in an isolated, shielded environment. Mr. Wallis was connected to a 20-channel, NRS-24 computerized EEG (Neurosearch-24, LEXICOR,

Boulder, Colorado) using V151 software and a J&J physiological monitoring system using an I-330 interface and software with a T-601 temperature module for measuring peripheral skin temperature, a T-601 electrodermograph module for measuring galvanic skin response, and an A-101 direct current (DC) amplifier module for measuring skin potential voltage. All of the J&J modules were connected to Dave's fingers. Skin potential voltage was measured on the right hand on the interior pads of the second finger joints between the ring and index fingers with the middle finger serving as reference/ground. Galvanic skin response was measured on the left hand on the interior pads of the second finger joints from the ring to the index finger. Temperature was measured on interior pad of the first joint of the middle finger of the left hand. All physiological data was recorded and saved on an IBM compatible 286 AT computer. With the NRS-24, the entire 10/20 International system of electrodes was used (Electro-Cap), with linked-ears serving as reference and the midline vertex as a ground. The NRS-24 sampling rate of 256 Hz was used, which provided a frequency response for brain-waves of 1-64 Hz with a frequency resolution of 1 Hz and a temporal resolution of one second. All EEG data was recorded and saved on an IBM compatible 386 AT computer in raw form accessible only by LEXICOR's proprietary software and hardware. Dave's baseline physiological and EEG data were recorded prior to Liza's being asked to initiate her own processes of Cell Singing. After the baseline recordings were completed, Liza was asked to begin her procedure. Continuous data recordings were made during this experimental trial period. After the trial period, post-baseline recording were made.

Data Analysis:

Peripheral skin temperature, galvanic skin resistance, and DC skin potential voltage measurements were examined from the baseline period across the trial condition (26 min. 16 sec.) and through the post-baseline period. Composite graphs of these parameters were extrapolated.

During analysis, raw brain-wave data was screened for artifacts and all epochs with over 70uV spikes in FP1 or FP2 (eye movement) were discarded. Averaged Fast Fourier Transform (FFT) ninety-epoch histograms were produced for the baseline period, the trial condition, and the post-baseline period. Color topograms were derived from each FFT histogram. Activity in the entire neocortex was partitioned into four quadrants for further analysis. Linear Channel Combination (LCC) ninety-epoch Trends were computed and for baseline, the trial condition, and the post-baseline period. Examination of the above data dictated the need for further analysis of gamma (34 Hz - 55 Hz) activity in the left LCC quadrant (electrodes F7, T3, T5, & C3, distance weighted). A Trend was computed and graphed for gamma activity during the 26+ minute trial period. Significant perturbances in gamma activity were correlated with areas of the body exposed to the Cell Singing stimulus.

Results:

Peripheral skin temperature declined slightly during the evaluation. This was not considered a significant change. It does mean that Dave did not experience a physical body

relaxation response to the Cell Singing process. Galvanic skin conductance decreased (increased resistance) during the evaluation. This indicates that Dave experienced a reduced level of mental arousal during the process. Recorded DC skin potential voltage changes were attributable to the variation in skin resistance and did not provide further insight. (See Illustrations 1a, 1b, and 1c.)

Dave's baseline brain-wave data revealed that he produced robust alpha (8 Hz-12 Hz) behind the Sylvian sulcus (back of the head), a normal formation during this resting state. This alpha activity was accompanied by standard levels of delta (1 Hz-4 Hz) and theta (4 Hz-8 Hz) brain waves. (See Illustrations 2a, the LCC Trend, and 2b, the FFT derived topograms.) Dave's baseline data differed somewhat from a previously recorded (3-11-93) baseline. (Compare Illustrations 2a and 2c.) The increased gamma activity in the more recent baseline recording cannot be attributed to artifact. Detailed examination of this peculiar baseline gamma showed that the temporal cortex was most active. Such activity is thought to reflect subcortical, Limbic animation and Limbic neurological processes are associated with emotional processing.

During the Cell Singing trial period Dave's resting-state-alpha was suppressed an average of 35% when compared to baseline. Although the significance of this in relation to Cell Singing remains unknown, biofeedback researchers believe that alpha suppression identifies or is required to "trigger" or "initiate" altered-state episodes characterized by the loss of identification with the personal ego -- transcendent experiences. The characteristic EEG parameters of resting-state-alpha reveal an individual's temperament, the way in which the individual processes and interacts with the world he or she perceives. *Unsuppressed* alpha may be a stabilizing force, providing one with familiar modes of processing perceived data. Perhaps Dave's suppressed alpha during the trial period is in some way an indication of his receptive intent or resonance with the Cell Singing process. (See Illustrations 3a through 3i, FFT derived topograms.)

The suppression of alpha during the trial period was the only significant detectable lower-frequency EEG (delta, theta, and alpha) variation from baseline data. There was some indication, however, that gamma activity in the left LCC quadrant might reveal something significant. (See Illustrations 4a through 4r, LCC Trend graphs.) Detailed examination of the trial period gamma activity in the left LCC quadrant revealed the presence of non-artifact amplitude spikes associated with specific areas of Dave's body being treated by the Cell Singing process. An unusual number of these gamma amplitude spikes occurred when Dave's chest area was exposed to focused Cell Singing. (See Illustration 5.) The significance of these gamma amplitude spikes is unknown and warrants further study.

Regional gamma is most often seen either laterally or bilaterally in the temporal regions. Gamma brain-wave activity is associated pathologically with seizures, schizophrenia, and temporal lobe epilepsy. It is also related to mystical and transcendent experiences during meditation. Such activity may represent a loss of ego boundaries; a sense of merging with other people; a sense of universal knowing. Temporal gamma is thought to reflect Limbic

neurological processes which are associated with emotions. Perhaps Dave's gamma amplitude spikes signature points of strong empathy or resonance with the Cell Singing process.

Discussion:

Dave's baseline EEG data exhibits a normal pattern of activity with the exception of the elevation of gamma activity as compared to his previously recorded baseline data. The suppression of resting-state-alpha during the trial period reflects well-understood EEG parameters pertaining to altered states of consciousness. A more extensive examination reveals that Dave's EEG contains behavior-specific gamma activity. His gamma amplitude spikes occur in conjunction with a monitored stimulus -- Cell Singing.

During an interview after the evaluation process, Dave reported feeling energized and refreshed after the Cell Singing treatment. He appeared animated and enthusiastic. Dave said that he would like others to experience the process because it made him feel good.

Conclusion:

This limited investigation appears to show that the form of Resonant Kinesiology known as Cell Singing practiced by Liza Callen, altered the brain wave activity and associated states of consciousness of the experimental subject. These transformations seemed to benefit the subject. From the analysis of objective EEG data, the trial period data reflected significant changes when compared to baseline data. Of special interest are EEG gamma spikes which occurred during specific foci of the Cell Singing process.



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Session Graph

Gamma (34-55)

