

*Achieving Coherence: The Effects of Group Intention on Heart Rate Coherence and Heart Rhythm Synchronization*

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This study set out to establish whether a group of subjects trained in achieving high states of heart rate variability coherence (HRVC) could facilitate higher levels of HRVC in an untrained subject. This was seen to happen in about half of all trials involving same subjects (matched comparison analysis). A deeper analysis of these results revealed a statistical relationship between SENDERS' state of 'personableness' (SOC-13 and UCLA-10) and case success as was shown in the probit regression model.

Fifteen subjects were trained over a three-week period to achieve and sustain high levels of heart rhythm coherence. In groups of three, trained subjects were matched with one of 20 untrained subjects in 148 ten-minute trials to test whether HRVC facilitating energy could be transmitted across subjects. Subject heart rate time series data were collected simultaneously using four individual photopleismograph (PPG) blood volume pulse (BVP) sensors connected to a single Nexus-10 bio-encoder. Customized MATLAB routines were developed to analyze and display the data.

Evidence of HR synchronization between subjects (inter-subject) and between individuals and the other three members of the group (inter-group) was revealed through several synchronization evaluation tools, including: correlation analysis, coherence analysis, wavelet coherence analysis, and Granger causality tests. Application of these techniques revealed multiple layers of correlation, phase synchronization, as well as lag synchronization. These relationships were made particularly evident by visual inspection of both the time and frequency domains of the inter-subject and inter-group HR time series. Cross-wavelet coherence transforms revealed the strength of the inter-subject heart rhythm relationship the time- frequency domain. The inherent correlations between heart rhythms was so strong that, in many instances, one person's heart rate time-series could be predicted with lagged values of another person's, as was evident in the many instances of Granger causality pairs.

These results suggest that a coherent energy field can be generated, and/or enhanced by the intentions of small groups of subjects trained to send coherence-facilitating intentions to a target receiver. Of even greater significance, evidence of heart-to- heart synchronization across subjects was found, opening up a future field of study for heart-to-heart communications.

Keywords: heart rate variability coherence, synchronization, energetic interactions.