Article

Experimental Production of Excess Correlation across the Atlantic Ocean of Right Hemispheric Theta-Gamma Power Between Subject Pairs Sharing Circumcerebral Rotating Magnetic Fields (Part II)

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ABSTRACT

There have been multiple historical and cross-cultural reports of excess correlation of specific experiences between individuals separated by thousands of kilometers. Recently there have been experimental demonstrations of excess correlations between measurable cerebral events for small percentages of test subjects. More reliable effects can be elicited when electromagnetic fields and photons are involved. In this experiment completed during the summer of 2015, 5 pairs of volunteers separated by more than 6,000 km wore identical cerebral toroids through which patterns of phase shifting, 30 nT magnetic fields that diminished the local magnetic field in both loci by 1-5 nT were exposed to the sequences that produced excess correlation in chemiluminescent reactions and shifts in pH. Compared to the various baselines and control procedures enhanced power between the right hemispheres of pairs of participants occurred during the interval documented to produce excess correlation. Specific analyses indicated diminished coherence within the theta band only within the right temporal lobes of the pairs. Sequential block analyses revealed that the paired brains' responses to pulsed tones at 6.5 Hz occurred within the 30-40 Hz band over the caudal temporal lobes during the exposures to the effector field. Primary independent component analyses verified these patterns. During the 6.5 Hz tones there was a peak in the spectral power density (SPD) at that frequency over the right temporal lobe of the person listening but a trough in (SPD) over this region for the person who was not. Even subjective experiences, as measured by the Profile of Mood States (POMS), indicated significantly increased excess correlation for scales by which increased anger and decreased vigour are inferred. This experiment, based upon physical principles, suggests there is a technology that can generate reliable excess correlation of brain activity (and potentially consciousness and specific experiences) between two people separated by thousands of kilometers.

Part II of this two-part article includes: 4. Results and Discussion (continued); 5. General Discussion; Appendix A; and References.

Keywords: Excess correlations, entanglement, transatlantic effects, theta frequency, right temporal lobe, toroidal magnetic fields, brain coherence.

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4. Results and Discussion (Continued from Part I)

Excess Correlation Between Subjects at a Distance: Independent Component Analyses

Emergent relationships or "fields" of activity patterns can be discerned by more advanced statistical analyses that extract shared sources of variance in voltage fluctuations. Independent component analysis is an aggregate form of factor analyses. The QEEG data for the individuals from each of the pairs that were formatted for EEGLAB and transformed to MATLAB were split into Local and Non-Local arrays and truncated to the shortest array length for clustering software (20,000 ms). A total of 100 datasets were imported into the EEGLAB to discern interactions between: 1) when during the procedure, 2) which of the two people in a pair, and, 3) which locality within the brain interacted.

Cluster analyses were employed to extract patterns in the combined data. The clustering results were structured to display the differences between the primer and effector fields relative to the person who was "first-to-send" and "first-to-receive." A total of 30 datasets were entered into each analysis. Although "first to send" and "first to receive" varied with each pair of subjects and was selected arbitrarily during the experiment, we reasoned that a specific effect would represent the significance of the intention and cognitive state in entanglement processes.

The regions of the cerebrums of the pairs that exhibited the most conspicuous clustering for the differences between the primer and effector fields were discernable by visual inspection. The most significant region for the strength of clustering was the right temporal lobe for both participants simultaneously during the primer and effector field conditions. This is shown in Figure 17 which represents a colorized distribution of where the greatest strength of clustering occurred. The **right** temporal lobe (red) was the region of strongest activation within the cluster while the left prefrontal region (blue) exhibited the weakest activation within the cluster. The other colors along the spectrum represent intermediate values.

The most visual cluster pattern indicated an increase in power within the right temporal lobe during the primer field for the person who was designated in that trial as the receiver but an increase in theta power within the right temporal lobe for the sender during the effector phase. The quantitative difference when $10^* \log_{10}(\mu V^2)$ was assessed indicated the shift was from 20 to 22 units. The actual values would have involved an increase of theta power from 10 μV to 12.6 μV or an increase of about 2.6 μV. As calculated previously this value across the cerebral length would be associated with a current of $\sim 10^{-7}$ A and when divided into the diffusivity based upon the permeability constant of the magnetic field in a vacuum and conductivity of the extracellular fluid of the brain results in an equivalent magnetic field strength of about 1 pT. This is the range of the immersive Schumann Resonance, particularly the fundamental of 7 to 8 Hz.

The power curve across the frequency band for the optimal cluster measured in log base 10 of μV^2 (quantity multiplied by 10) for the effector and primer fields for the receiver and the sender as well as the orthogonal combination the primer field for the sender and receiver and the effector field for the sender and receiver are shown in Figure 18 through 21. The portions of the band that displayed the statistically significant differences were primarily within the theta and gamma ranges. This is indicated by the black bars along the horizontal axis. The reason that some separations are wider than others but were statistically significant reflects the nature of the variability of power measures for those comparisons.

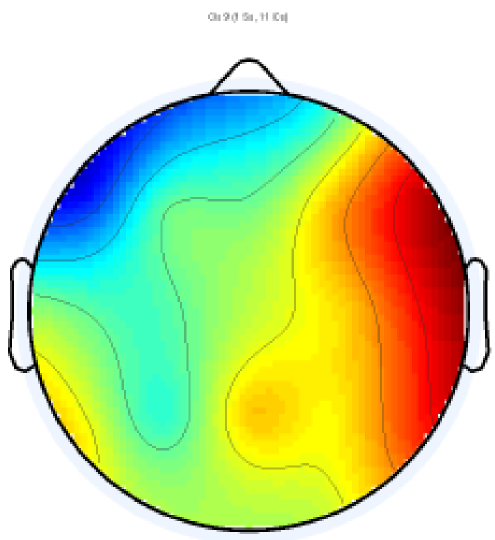

Figure 17. Colorized distribution of where according to independent component analyses the coherence in brain activity during the effector (entanglement) field the increased shared variance in the two brains separated by 6,000 km occurred. Red, the right temporal region, showed the marked enhancement. Blue refers to least power over the left prefrontal region.

For the receiver the theta power was less during the effector field than during the primer field. This difference was not statistically significant for the sender. During the primer field condition the senders' brains displayed a marked increase in power in the gamma range compared to the receivers' brains. However during the effector field condition, when "excess correlation" occurred during other experiments which involved chemiluminescent chemical reactions and shifts in pH (including a paradigm identical to the present procedure), there was decreased power within the receivers' brains within *both* the theta and gamma band. This would be consistent with an activation of the hippocampal formation-cortical pathway which is dominated by 40 Hz ripples superimposed upon a 7-8 Hz fundamental frequency. Because there is an "absolute reference" another interpretation is that the frequency bands that differed between the sender and receiver during the primer and effector fields were the theta and gamma frequencies.

Psychometric Test Results

Although psychometric tests are often considered crude indicators of brain activity their strength of association with actual EEG activity particularly over the temporal lobes is evident even with strip-chart comparisons (Makarec and Persinger, 1990). Recently, employing both

QEEG and sLORETA Collins and Persinger (2014) showed that the loosely clustered items by which egocentricism is inferred were visibly associated with increases in the cerebral cortices Default Mode Network and showed the expected hemispheric differences with respect to gender. Because we predicted a strong state of confluence between the moods of the two participants, (particular if one assumed the metaphor that the two shared circularly rotating magnetic fields at distant loci resulted in a juxtaposition of space and superposition of states) such that they behaved as if they were the *same* space this condition should be evident even by psychometric reflection.

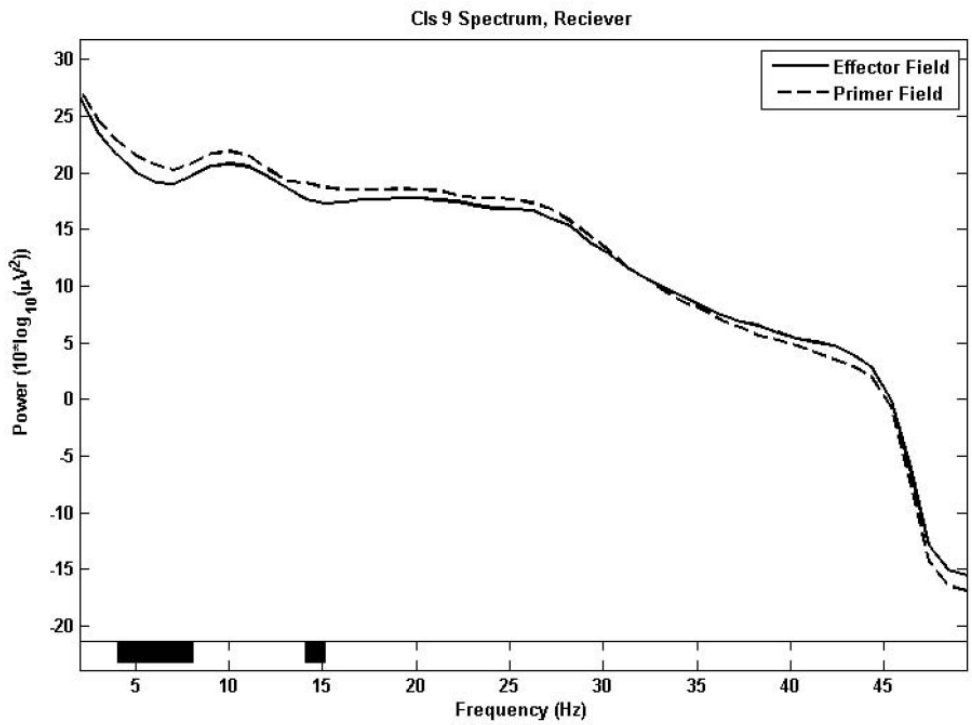

Figure 18. Power distributions over the frequency band of the EEG for the person serving as "the receiver" during the primer field (dotted line) and effector field (solid line). The black bars along the horizontal axis indicate the frequency intervals that differed significantly between the two conditions. Note the major difference in the theta (4- 7 Hz) band.

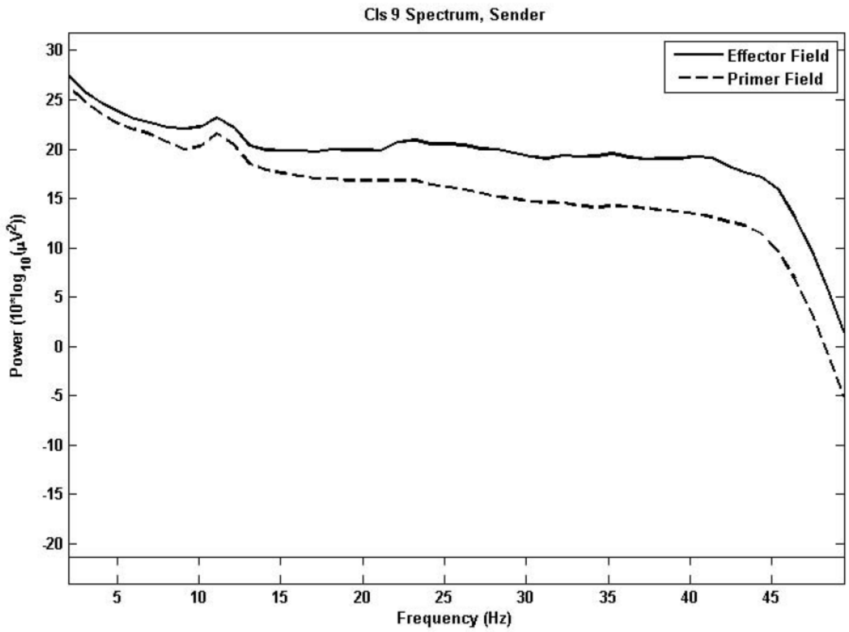

Figure 19. Power distributions over the frequency band of the EEG for the person serving as "the sender" during the primer field (dotted line) and effector field (solid line). There was no statistically significant difference.

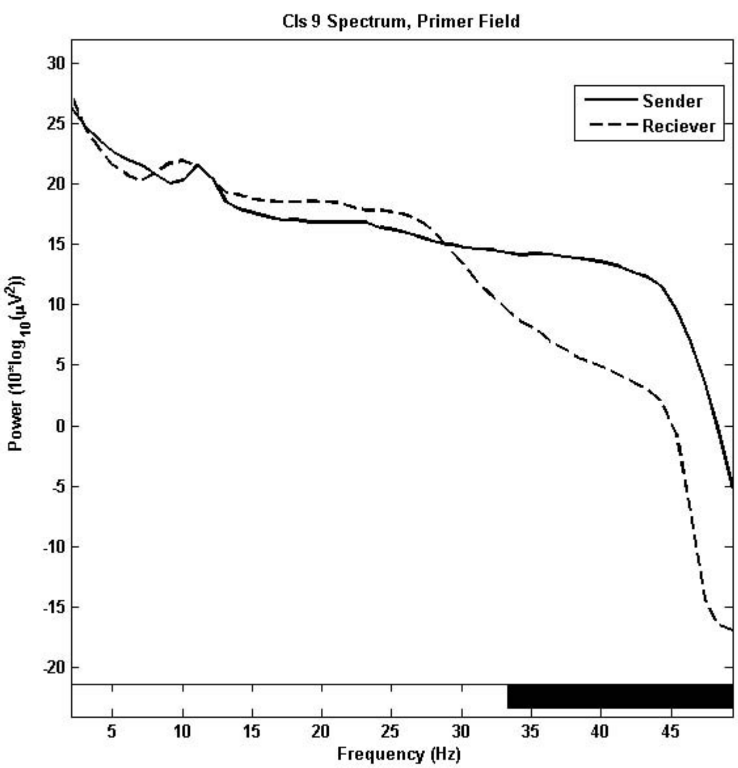

Figure 20. Power distributions over the frequency band during the primer field for the person serving as the sender and the receiver. The statistically significant effect was lower power in for the receiver within the gamma band (> 35 Hz).

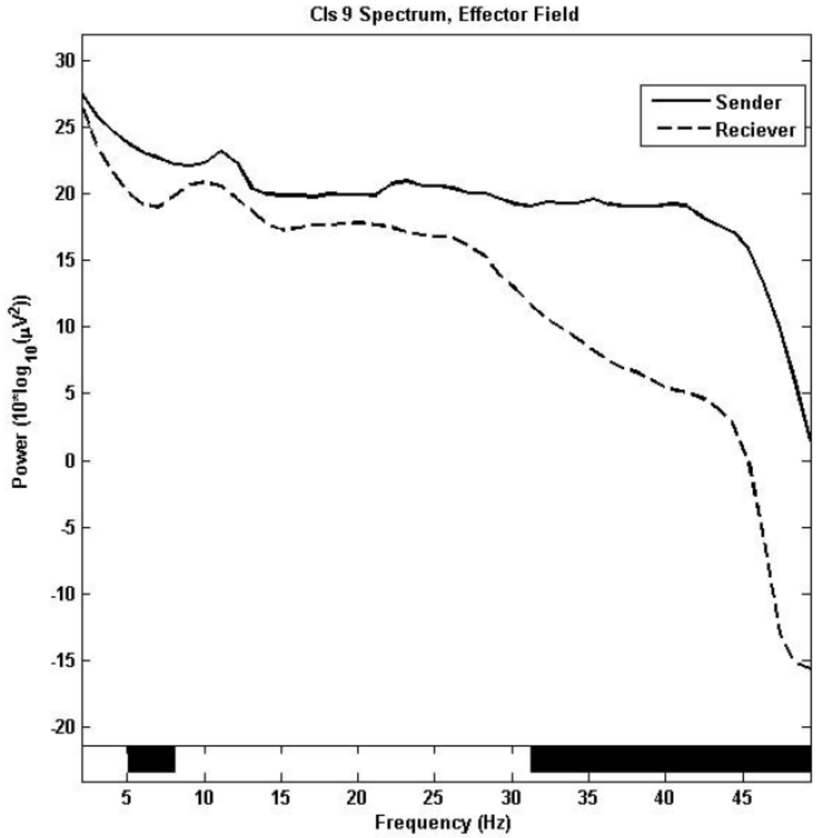

Figure 21. Power distribution across the frequency bands during the effector field for the persons serving as the sender or the receiver. The sender exhibited more power compared to the receiver within the theta band and well as in the gamma band.

The results supported the prediction. As shown in Table 6, the correlation between the scaled scores for the five pairs during the post baseline, after the excess correlation had been shown by QEEG profiles, was statistically significant for the scales of anger and vigour. The results are presented as Spearman rho coefficients instead of Pearson r values (although they were comparable) in order to reduce the potential effects from outliers. Compared to the pre-baseline when the correlations between the pairs' scores for anger and vigour were not statistically significant, the values for these two scales increased to 0.97 and -0.87 after the entanglement paradigm. The scores for the other four scales were not significantly correlated between the pairs separated by ~6,000 km.

Table 6. Spearman Rho correlations between each of the six scales from the Profile of Mood States (POMS) for the pairs (A and B) of people who shared the excess correlation magnetic field procedure during the pre- and post exposure conditions.

Scale	**Pre (A-B)**	**Post (A-B)**
Tension	-0.75	0.56
Depression	0.58	0.72
Anger	0.00	0.97**
Vigour	-0.32	-0.87*
Fatigue	-0.62	0.22
Confusion	0.08	0.40

p <.05; ** p <.01

Is the Superposition Isomorphic or Translational?

The excess correlation between separated brains for specific bands of cerebral activity and locations does not necessarily reveal how the information is being transformed or transposed. The simplest possibility is that the tonal pulse is transposed as an energetic pattern non-locally. That frequency or temporal pattern is the primary code by which sensory information from different modalities is integrated or translated into “the language of the brain” has been known for decades. For example the brilliant E. R. John (1967) in his seminal text *Mechanisms of Memory* had shown that the generalization of learning from one sensory context (auditory) to another (visual) could occur error-free if the two discriminant stimuli shared the same frequency. Recent principles of neuroscience indicate that the “line codes” for different sensory modalities are transformed to a more common code that allows intermodal integration. The locus for this transformation for intermodal confluence is within the parahippocampal gyrus (Gloor, 1997).

If the excess correlations between distal cerebrums operate in this manner then the 6.5 Hz tones presented to the sender should produce an increase in theta activity (4 to 7 Hz) within his or her brain. A complementary change in power within this theta band should also occur in the receiver’s brain even though he or she was not exposed to the 6.5 Hz tone. If “entanglement” was present an increase in power within the 6.5 Hz range in the brain of the person receiving the tone should be coincident with a decrease in power with the other person who was not listening to the pulsed tone. In order to ensure there were no subject effects individuals in the A or B position alternated as senders (tone pulse) or receivers (non tone) during the various sequences of the experiment for the different types of baseline, primer, and effector field conditions.

Raw extractions (10 s increments) were performed for every instance of a tone presentation for each sequence of the experiment (i.e. Pre, Primer1, Primer2, Effector1, Effector2, and Post). Data were standardized by z-transformation and spectral analyzed. Data were coded to identify individuals receiving burst patterned tones or a primer tone followed by silence. Because the previous analyses had indicated the primary role of the right temporal lobe and the task was an auditory, only the power data from T4 and T6 were analyzed for the three, 1 Hz increments that included the 6.5 Hz tone pulse. They were 4-5 Hz, 5-6 Hz, and 7-8 Hz. As can be see in Figures 22 there were no statistically significant differences between the sender or the receiver condition for the 6 Hz-7 Hz band (the one corresponding to the pulse of the tone) over the T6 regions. A similar pattern was noted for T4. There were no significant differences for either the 5-6 Hz or 7-8 Hz increments for either region.

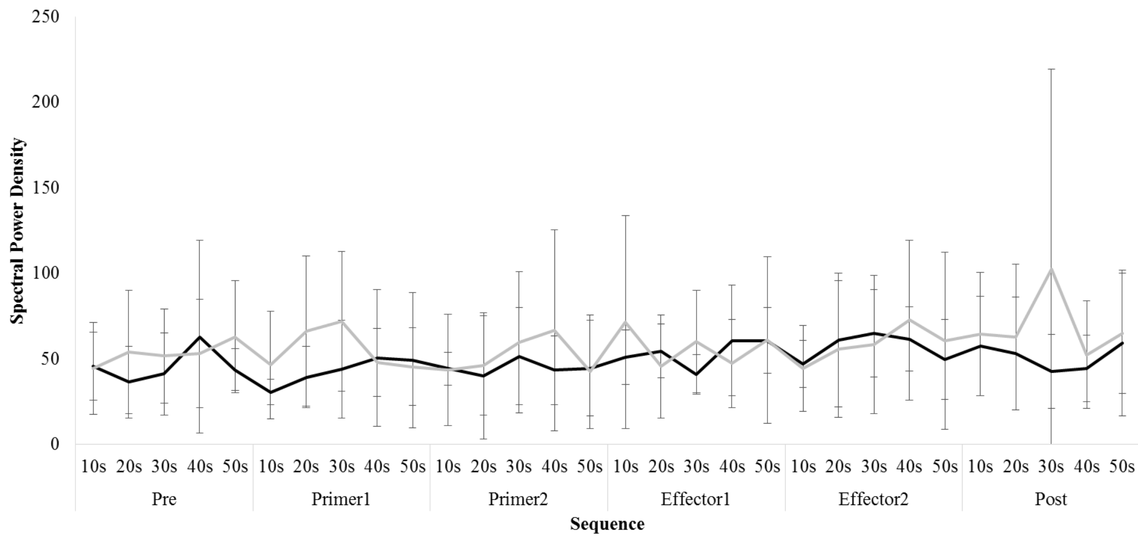

Figure 22. Spectral Power Densities within the 6 to 7 Hz range over T6 for senders (dark line) and receivers (light line). No significant differences were observed during the entanglement period.

However if the information was being mediated through a process strongly associated with consciousness then the changes would occur within the gamma band or the “40 Hz” band. To test this possibility spectral power densities (SPD) within the gamma or 30Hz to 40Hz band were averaged and loaded into SPSS. In addition to general increases in gamma-band SPDs (r^2= .87) over T6 for those receiving pulsed burst tones (M= 8.80, SE= .53) relative to those in silence (M= 2.60, SE= .15), if taken over the course of all tone presentations (n=30), a number of punctate features were apparent. The results are shown in Figure 23.

First, significant differences between sender (dark line; n=5) and receiver (light line; n=5) gamma activity over T6 could only be identified within Effector and Post-Field baseline sequences. The first of such instances was between 20-30

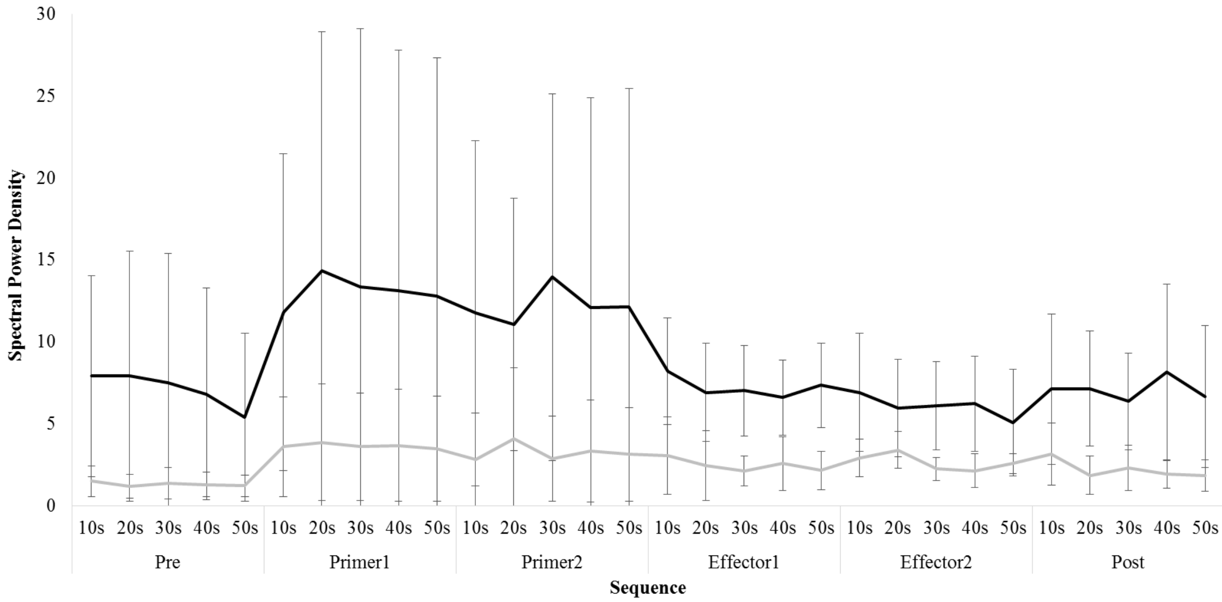

Figure 23. Mean 30-40Hz Spectral Power Densities (SPDs) and standard deviations over T6 for 10 second increments within tone presentations across sequences of the experiment.

seconds after the initiation of the burst tone pattern within the Effector 1 sequence, $t(4) = 5.53$, $p=.005$, $r^2= .86$. Differences persisted transiently within the Effector 1 sequence, re-emerging once again 20-30 seconds after the initiation of the burst tone pattern within the Effector 2 sequence, $t(4)= 3.21$, $p<.05$, $r^2= .72$. This pattern re-emerged for a third and final instance between 20-30 seconds after the initiation of the burst tone pattern within the Post-Field baseline sequence, $t(4)= 3.21$, $p<.05$, $r^2= .72$. In other words the discrepancies from chance occurred only during the effector field which has been associated with "excess correlation". That the effect was not likely to be spurious is strongly suggested by the absence of significant differences between senders and receivers for SPDs over T4 (see Figure 24), a more rostral region of the right hemisphere. T6 on the other hand is more directly correlated with activity changes within the right parahippocampal region.

The standard deviations were unusually high but might be expected normally because individuals often respond differentially to tonal inputs depending upon processing pathways, attention variations, and threshold sensitivities. The significant differences shown in effector field portions of Figure 23 were likely due decrease in variability of the gamma-band activity over T6 associated with the Effector sequences. Differences were not identified within Pre, Primer 1, or Primer 2 sequences ($p>.05$). As shown in Figure 25, this diminishment is conspicuous. The standard deviations of the SPD for the sender's profile decreased to that of the receiver's profile only during the effector field. If the metaphor that non-locality or excess correlation indicates that two loci behave as if they have been superimposed into the same space, then this type of convergence would be congruent.

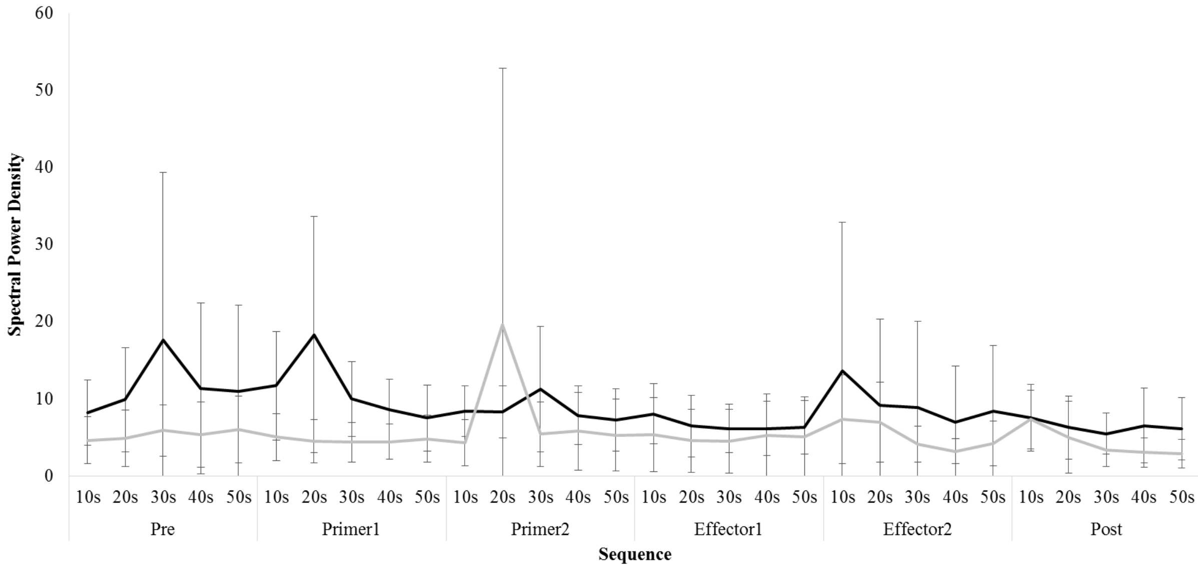

Figure 24. SPDs within the gamma or 30Hz-40Hz range over T4 for senders (dark line) and receivers (light line). No statistically significant differences were observed.

Precision Analyses With 250 Hz Sampling: Demonstration of Excess Correlation Parity

One of the typical indicators of the demonstration of entanglement between two objects in non-local settings is that the polarity of a property shared by the two components can change more or less simultaneously. If this were occurring between the two brains paired with the toroids then the presentation of the 6.5 Hz tone to one of the persons in the pair should be associated with an increased Spectral Power Density (SPD) around that frequency. On the other hand the receptive person, not listening to any sound, should show a diminished trough or "mirror" image of SPD around this frequency.

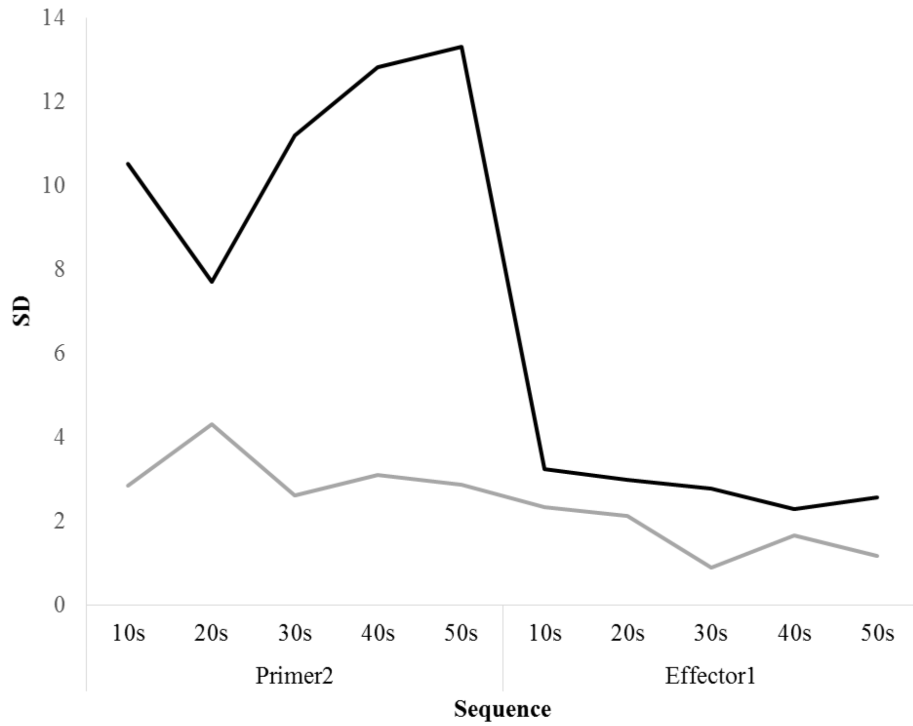

Figure 25. SDs of gamma-band SPDs at the point of transition between Primer 2 and Effector 1 sequence-associated tone presentations. The black line is the person in the pair listening to the pulsed tone; the grey line is the person in the pair receiving the continuous tone or silence.

To test this prediction the 2,500, 4 ms (250 Hz sampling rate) raw data from T6 from each of the individuals of the five pairs were obtained for successive intervals of 10 to 20 s, 20 to 30 s, 30 to 40 s and 40 to 50 s during the first and second 6.5 Hz presentations (to one of the two in each pair) during the effector field. During the second tone presentation the other person (the one who had been the "receiver") received the pulsed tone sequence. The data were then spectral analyzed by SPSS PC Spectra. We selected the increments of SPD between 4 and 9 Hz with the centroid being 6. 5 Hz (the pulse frequency) to demonstrate the effect it were present. The results were clear and present in each of the 5 pairs during the second pulsed tone presentations. Examples of two of the pairs are shown in Figures 26 and 27. These effects emerged between 20 and 40 s after the tonal pulses began.

As expected from normal neuroelectrophysiology, the subjects directly receiving the 6.5 Hz tone stimuli showed increased SPD around this frequency (blue dots). The other subject who was not listening to the tone displayed a diminishment of SPD within a trough around 6.5 Hz. Not all pairs showed these aesthetic, symmetrically distributed patterns but all showed the parity of response at this frequency. In other words the power spectral density over the caudal right temporal lobe showed the opposite effect between the "sender" and the "receiver" when a stimulus was presented to the sender but only when both brains were exposed to the effector fields.

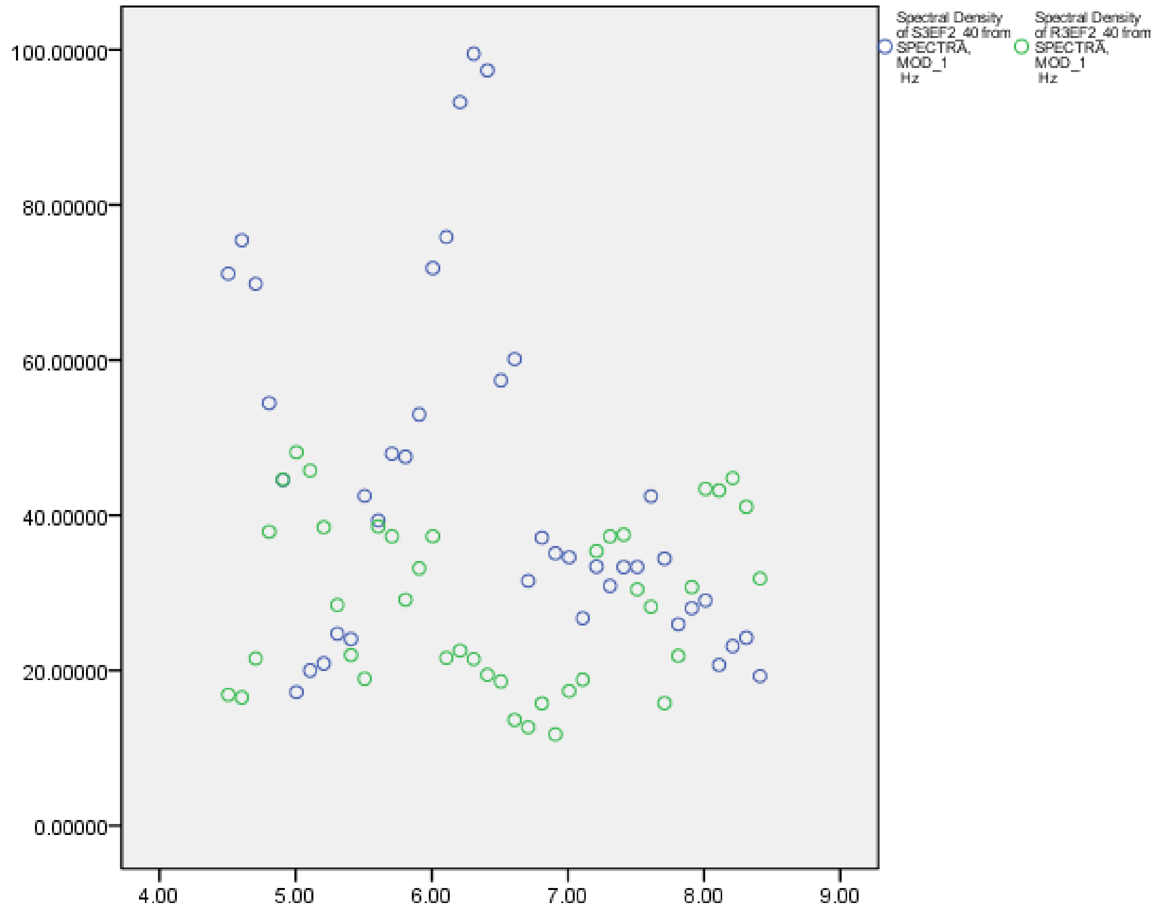

Figure 26. SPD (Spectral Power Density) for the amplitude shifts (vertical axis)from the raw QEEG voltages over T6 (right temporal lobe) between 4 and 9 Hz for the person hearing the 6.5 Hz tone (blue circles) and the person not hearing (green circles) the pulsed tones (Pair 3) when both shared the effector fields. Note the opposite direction around 6.5 Hz. This is only occurred between 40 and 50 s after the onset of the tone.

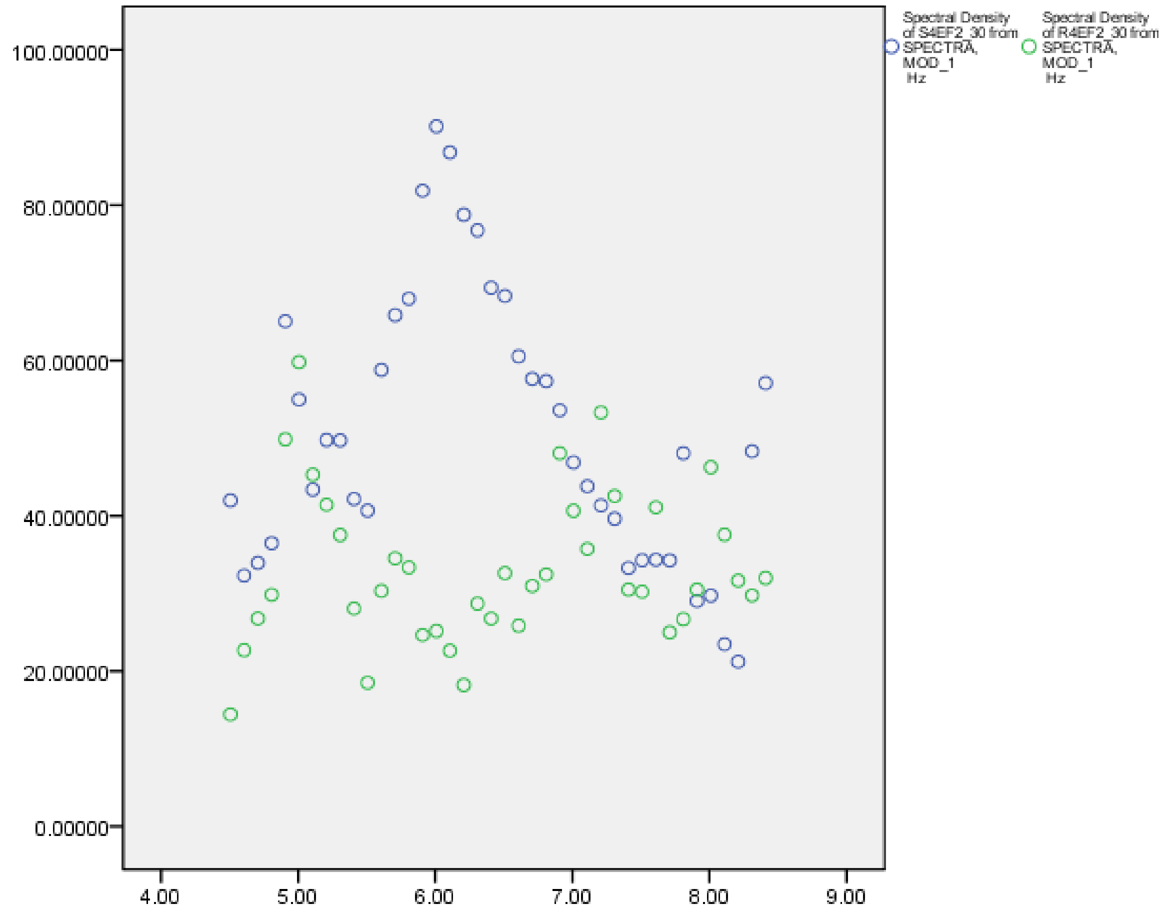

Figure 27. SPD (Spectral Power Density) for the amplitude shifts (vertical axis) from the raw QEEG voltages over T6 (right temporal lobe) between 4 and 9 Hz for the person hearing the 6.5 Hz tone (blue circles) and the person not hearing (green circles) the pulsed tones (Pair 4) when both shared the effector fields. Note the opposite direction around 6.5 Hz. This is only occurred between 30 and 40 s after the onset of the tone.

5. General Discussion

To our knowledge this is the first experiment that has demonstrated that sharing counterclockwise, rotating magnetic fields around the cephalic region resulted in shifts in quantitative brain parameters that are consistent with excess correlation or "entanglement" over such long distances. The predominance of the indicators of coherence in cerebral activity over the right hemispheres of paired participants, particularly their temporal lobes, is consistent with the inferences and indirect measurements reported by several experimenters for at least a century (Gurney et al, 1886; Harrington, 1995).

The right hemisphere's contribution to related "mystical" states has chemical correlates (Kurup and Kurup, 2003). The primary role of the right hemisphere in the production of phenomena that suggest excess correlation has been a limiting feature for systematic exploration in the laboratory. After novel phenomena are verbally encoded following sometimes even a single presentation, subsequent presentation of another of the "same" stimulus is more proportionally processed by the left hemisphere that exhibits different properties and limitations. This may explain the frustrating history in this area of investigation whereby the first trial generates powerful indicators of excess correlation between individuals separated by non-traditional distances but subsequent trials manifest exponentially diminishing displays.

The probability that the shared coherences of right hemisphere activity between the pairs were artifacts of the circumcerebral magnetic fields is minimal. The specificity of the effects only during the effector field but not the primer field suggests the excess correlations of specific brain activities during the exposure to the effector field was not secondary to simply being exposed to these weak magnetic fields. In addition the effects were specific to the right hemisphere and two specific bands of power, the theta and gamma range, that are classically associated with consciousness and memory (Whitman et al, 2013; Henke et al, 1997) as well as complex, virtual maze navigation (Kahana et al, 1999). Finally, although the effects during the effector or excess correlation phase were displayed by all five pairs of subjects, there were distinct pair differences that would not be expected by electronic artifacts.

The decrease in coherence during the entanglement phase would be consistent with the more recent observations by Ecker et al (2010) who studied the recordings of multiple adjacent neurons in the primary visual cortex of awake macaques. Neurons with similar orientation tuning exhibited virtually no correlated variability. Ecker et al (2010) concluded that adjacent neurons shared only a few percent of their inputs or the activity was being activity decorrelated. Both conditions would be expected features of dense and multiple information processing. Highly correlated activity between neurons would suggest they all share the same (redundant) input. Lower correlations indicated that the pathways were processing at different rates which could be mediation of different information. If larger aggregates of neurons (such as that measured by QEEG activity) reflect a similar process, then the diminished coherence of theta power within the right temporal lobes represented by T4 only of the two subjects during the entanglement phase would be consistent with an exchange of information.

The predominance of the theta and gamma effects is important because this is a central mode by which the hippocampus through the entorhinal cortices within the parahippocampal gyrus interacts within the entire neocortical manifold. Consciousness and awareness involve an interaction between the inputs from the immediate sensory input and the comparison with representations of previous experiences, that is, memory (Bear, 1996). Electrophysiological measurements indicate that the theta fundamentals contain ripples of gamma frequency such that hippocampal information might be more congruent with the 40 Hz cerebral state (Buzaki, 2002).

When the specific isomorphic potential for entanglement was assessed by spectral analyses the person of the pair who received the 6.5 Hz pulse tones exhibited increased spectral power density over the right parahippocampal region where as the person of the pair who did not receive the tone displayed the opposite effect. This type of parity is quintessential entanglement (Aczel, 2002). However the effect was most evident for all five pairs during the second sound pulse presentations during the effector phase. The approximate time between the first and second sound pulse presentations was 4 min. This suggests that a type of learning occurred within the pairs of subjects during the first presentation of the tonal pulses.

One interpretation of this interesting enhancement is that entanglement phenomena for this paradigm within the pairs of human brains we studied were mediated through memory-related processes. If this is valid, the conspicuous occurrence of right caudal temporal and presumably parahippocampal involvement indicates that "memory consolidation" is the process that has been entangled. A very similar idea was developed by Gurney et al (1886) during the late 19th century to explain their carefully collected "spontaneous" cases of excess correlation between pairs of people where entanglement was strongly probable. The human hippocampus is central to establishing associations (Henke, et al, 2007). For the "memories" to be represented within any single person's cerebral cortices approximately 10 to 20 min would be required for the dendritic spines to emerge into the spatial structure that is the memory. However permanent electrical changes can occur within portions of the hippocampus within 3 to 4 minutes after stimulus presentations.

Multiple experimental studies have demonstrated that only 1 s of a particular pattern of activation that elicits long term potentiation (LTP) is sufficient to initiate the processes that result in the formation of dendritic spines. In some temporal lobes maintained electrical stimulation can result in synaptic reorganization (Sutula et al, 1989). Because these spine matrices **are** the person's memories that contribute to "personality" alterations not coupled to classical sensory input such subtle entanglement manifestations could alter the patterns that are reconstructed as "personal (episodic) memories" during recall which often involves the right prefrontal region. Persistent deep temporal lobe stimulation could alter the person's behavioural patterns or "personality".

The multiple similarities between the temporal and electromagnetic properties of the human brain during the conditions associated with consciousness and the Schumann Resonances are not likely to be spurious. The prescient ideation and interdisciplinary applications of Nunez (1995) anticipated the significance of this convergence. The neurons within layer II of the entorhinal cortices within the parahippocampal lobe, the primary input to the hippocampus proper, display a rhythmic character of subthreshold oscillations of ~ 8 Hz (Alonso and Klink, 1993). The range is between 5.5 and 14.5 Hz. At the most typical membrane potential of -55 mV, the mean amplitude of the oscillation ranges between 0.5 and 9.7 mV (the mean is 2.6 mV). Even the times to traverse the respective spatial boundaries, in the order of 20 ms, are similar for bulk velocities of lighting and that of the rostral-caudal cerebral electromagnetic fields associated with consciousness. Nickolaenko and Hayakawa (2014) noted that satellite data at altitudes between 400 and 850 km have often measured up to 8 harmonics that would include the equivalents of the theta and gamma regions of cerebral activity.

The physical mechanisms by which the excess correlation occurred between two pairs of individuals whose cerebrums both shared similar toroidal magnetic fields might be reflected by the Lorenz Lemma. The required similarities of magnitudes of the magnetic and electric components of human cerebral cortical activity and the Schumann Resonances as well as their temporal properties exist. The Lemma's solution results in flux density that is within the range of photon emissions measured from the right but not the left temporal lobes in experimental settings

(Dotta et al, 2012). These emissions were associated with imaginative cognitive processes. Simplistically this suggests that the Schumann-human brain resonance, photon emissions, and the neurocognitive patterns associated with imagination display a persistent capacity for excess correlation. As stated by Vaziri et al (2002), “photons will for a long time remain the only means of quantum communication.”

If spin-spin interactions are a major component of excess correlation involved with consciousness as suggested by Hu and Wu (2006a) then the earth itself may contribute to the condition for this “entanglement”. Hunter et al (2013) described the earth as a polarized electron source that could mediate long-range spin-spin interactions. They found experimental evidence for possible long-range interactions spin polarize electrons and nucleons in laboratories and spin-polarized geoelectrons. These researchers established the boundary conditions for torsion gravity and the long-range spin-spin forces that could be associated with the virtual exchange of “bosons” or “unparticles”.

The potential contributions of gravitational energies to the excess correlations we measured in the present experiments have been discussed by Rouleau and Persinger (2015) and Persinger and St-Pierre (2014). The rotational features of the toroidal pattern are superpositioned with those of the cerebral cortices and Schumann Resonances. In addition the diminishment of 1 to 5 nT in the geomagnetic field intensity along the east-west direction (primarily) when the toroids were activated would provide magnetic energies in the order of the mass equivalent of an electron. It may be relevant that the ratio of the earth’s rotation velocity at the latitude in which the experiments were conducted divided by g (9.8 $m \cdot s^{-2}$) is within the range of 30 to 40 s. This was the time interval in which the strongest evidence of entanglement was manifested after the onset of the 6.5 Hs pulsing tones.

Appendix A

Instructional Script

[Verbatim to Participant]

Thank you for participating in this study exploring the synchronous brain activity of pairs of individuals separated by a distance. This means that during your participation in the study, at the very same time another individual located thousands of kilometers from you is also being exposed to the same paradigm. Your participation in this experiment will involve you sitting at rest, first with your eyes open to gather your resting baseline brain activity, and then with eyes closed for the remainder of the experiment (approx. 30min) until you will be asked to open your eyes again for your post-experiment baseline measure.

During the experiment you will periodically hear tones being played. These tones indicate it is time to rest and relax while keeping your eyes closed. You will also be cued verbally throughout the experiment to either send or receive white light. When verbally cued to “Send,” imagine creating a ball or beam of light and sending it directly to the other participant in the study. It is not important that you know who this person is or what they look like, only that they are also engaged in the same experiment at a location thousands of kilometers from you.

During the "Send" condition you can imagine they are sitting in front of you as you imagine sending light. When verbally cued to "Receive," simply be open to receiving white light from the other participant. You can use visualization/imagination during this condition as well, by imagining the person is sitting across from you and sending you light as you receive it into yourself. Conditions of sending and receiving light will be separated by rest periods. Again, when you hear the tones played, that is your cue to stop sending/receiving and to simply rest. Please listen for the cues and respond appropriately (i.e. During Send/Receive do not stop until you are cued otherwise, either verbally or with the tones).

To review:

- At the start of the experiment, you will be cued to sit with "*Eyes open, gaze facing forward*"
- You will be cued to close your eyes: at this time you will simply relax
- You will hear tones played: this is your cue to relax with eyes closed
- You will hear my voice cuing you to SEND: imagine sending white light until cued
- You will hear my voice cuing you to RECEIVE: imagine receiving white light until cued
- At the end of the final send/receive condition, you will be cued to stop and rest with eyes closed.

Experimental Conditions, with Verbal and Audio Cues

	Time			**Verbal Cue**	
#	**(min)**	**Condition**	**Field**	**Local (A)**	**Non-Local (B)**
1	0:00	Baseline EO-pre	NF	Eyes open, gaze facing forward	
2	3:00	Baseline EC-pre	NF	Eyes closed	
3	6:00	Rest	NF	*(burst tone)*	*(solid tone + silence)*
4	7:00	AB	NF	Send	Receive
5	9:00	BA	NF	Receive	Send
6	11:00	Rest	PF	*(solid tone + silence)*	*(burst tone)*
7	12:00	AB	PF	Send	Receive
8	14:00	BA	PF	Receive	Send
9	16:00	Rest	PF	*(burst tone)*	*(solid tone + silence)*
10	17:00	AB	EF	Send	Receive
11	19:00	BA	EF	Receive	Send
12	21:00	Rest	EF	*(solid tone + silence)*	*(burst tone)*
13	22:00	AB	EF	Send	Receive
14	24:00	BA	EF	Receive	Send
15	26:00	Rest	EF	*(burst tone)*	*(solid tone + silence)*
16	27:00	AB	EF	Send	Receive
17	29:00	BA	EF	Receive	Send
18	31:00	Rest	NF	*(solid tone + silence)*	*(burst tone)*
19	32:00	AB	NF	Send	Receive
20	34:00	BA	NF	Receive	Send

21	36:00	Baseline EC-post	NF	Please relax with eyes closed
22	39:00	Baseline EO-post	NF	Eyes open

Pre and post baseline conditions involved 3min each EO: eyes open, and EC: eyes closed. Rest periods (1min): passive send-receive conditions where participants were instructed to rest upon hearing the audio cue / tones. Intentional Send-Receive condition involved AB: the local participant (first to send) sends white light to the non-local participant, and BA: the non-local participant sends white light to the local participant. Field conditions included NF: no field, PF: primer field, and EF: effector field. Audio cues (i.e. tones, noted in italics) were either a burst tone pulsed at 6.5Hz for the passive sender condition during the Rest periods, or a solid (3sec) tone + silence for the passive receiver conditions also during the Rest periods.

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