PROJECT REPORT
August 27, 2019

FLFE Experiment Report

Dean Radin PhD
Institute of Noetic Sciences, Chief Scientist

Introduction

Project Summary: An experiment was conducted on behalf of FLFE in the Institute of Noetic Sciences (IONS) electromagnetically shielded chamber, a solid steel, double-walled, 8-foot cube (i.e. 8 × 8 × 8). IONS provided GPS coordinates (38.175259, -122.605026) and the location of the chamber in the building (with pictures). QNG (quantum number generator) data were collected during a series of 13 15-minute periods. FLFE provided the IONS science team with the timing of changes to the field.

This report summarizes the results of the experiment. All analyses reported here were conducted blind with respect to the conditions being "transmitted" to the lab by FLFE.

The test protocol was defined by FLFE as follows, where the condition in each 15-minute period refers to David Hawkins' levels of consciousness.

Time (Pacific)	Code	Condition
5:45:00 PM	A	Baseline
6:00:00 PM	B	560
6:15:00 PM	C	500
6:30:00 PM	D	325
6:45:00 PM	E	500
7:00:00 PM	F	560
7:15:00 PM	G	590
7:30:00 PM	H	600
7:45:00 PM	I	700
8:00:00 PM	J	800
8:15:00 PM	K	900
8:30:00 PM	L	1000
8:45:00 PM	M	10000

The method used to detect the transmitted "consciousness influences" involved a custom-designed quantum noise generator (QNG) device. The device contains 16 parallel electronic circuits, each generating quantum-based noise produced by the phenomenon of electron-tunneling in Zener diodes. The noise in each circuit is continuously sampled at 1,000 samples per second, producing a total of 16,000 samples per second. The data are stored on a 32 GB microSD card; each card can hold about a week's worth of data.

Method

Data are analyzed in two ways, then normalized and combined. Each analysis is on a per-second basis. The goal of the two analyses is to detect hypothesized "entropic ripples" in spacetime associated with external events. In the present case, those events are the levels of consciousness said to be transmitted by the FLFE procedure. The analytical methods used here were first described in Radin (2018).[1]

The "spatial" analysis examines the mean cross-correlation among the 16 parallel data streams. That is, each second consists of 16 data streams x 1000 samples/stream. All unique pairs of these per second data streams are linearly correlated, and then the overall mean correlation is determined. This provides a per-second measure of the interrelationships of the 16 QNG outputs. The idea is that if an external event causes an entropic ripple in space, then the 16 QNG outputs may deviate together in the same direction, and if that happens this can be detected as an increase in the mean correlation.

The "temporal" analysis examines time-dependencies between samples within each second of data. Specifically, for each second of data this method (a) creates a grand mean vector across all 16 data streams, (b) the per-second mean is linearly detrended, then (c) the first 50 autocorrelations are calculated, and (d) the mean of autocorrelations 24 to 40 is determined. This procedure provides a way to examine temporal dependencies from 24 to 40 milliseconds in each second of data. The range 24 to 40 was determined as optimal based on previous studies (Radin 2018). This approach is designed to detect fluctuations in the flow of time. Truly independent random samples should not display any temporal dependencies.

After the spatial and temporal analyses are determined for each second over the course of the day, the day-long vectors are individually z-score normalized, and then combined as a Stouffer $Z = (z_s + z_t)/\sqrt{2}$, where z_s and z_t are the per-second values calculated for the spatial and temporal vectors, respectively. This Stouffer Z now provides a measure of potential entropic ripples in spacetime over the course of the day.

Results

Data were preprocessed using Matlab 2019a and further analyzed using Statistica 13.3. Figure 1 shows the means and 95% confidence intervals for the *spatial* analysis for each of the thirteen 15-minute segments. A one-way ANOVA applied to these 13 segments indicates that the means are significantly different, $p = 0.03$. This means that when we look at all the conditions as a whole, the spatial analysis variables are statistically different from each other.

[1] Radin, D. (2018). *Real magic*. New York: Penguin Random House, p. 144

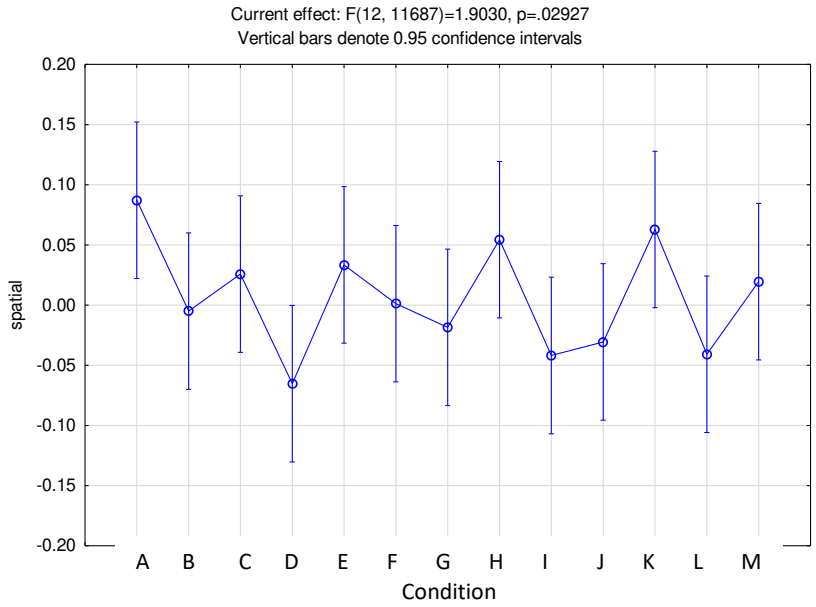

Figure 1. Spatial analysis and results of one-way ANOVA.

Figure 2 shows the same results for the *temporal* analysis, with the one-way ANOVA indicating that these means do not differ, $p = 0.15$.

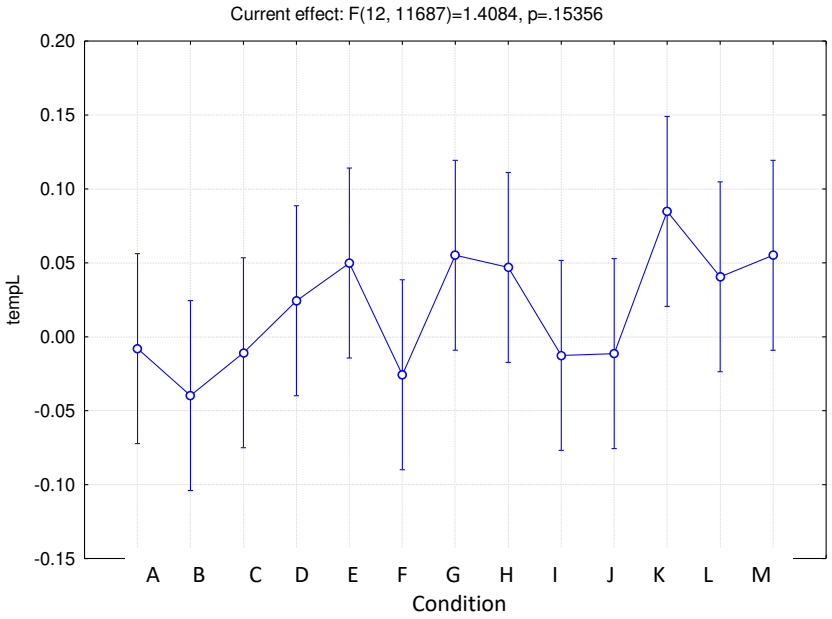

Figure 2. Temporal analysis and results of one-way ANOVA.

Figure 3 shows the results of the combined spatial/temporal analysis; the ANOVA indicates that these means differ, $p = 0.004$.

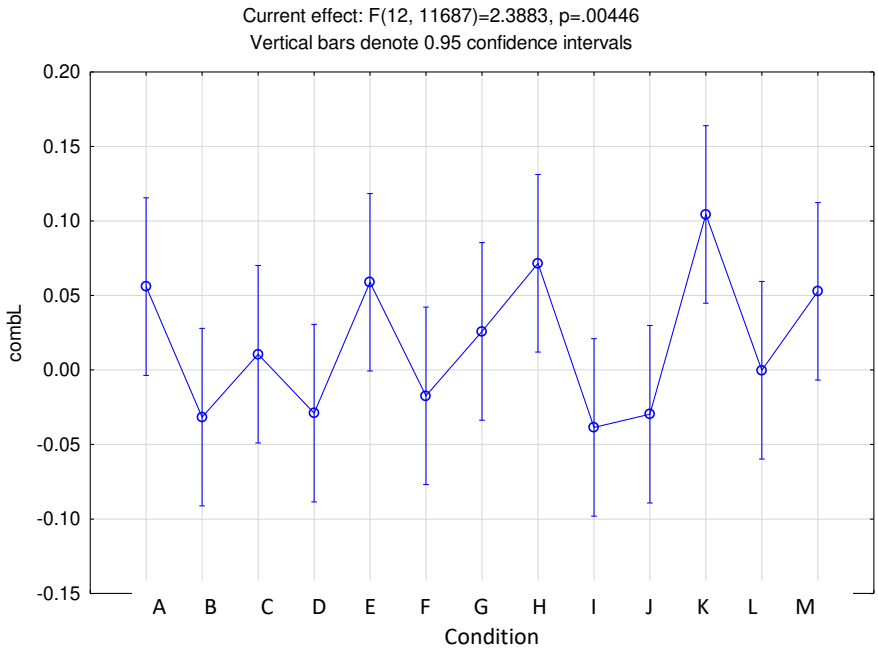

Figure 3. Combined spatiotemporal ANOVA for data collected in the FLFE experiment.

We can gain more information about which conditions differ from each other by computing all pair-wise comparisons for the combined spatiotemporal data. Table 1 shows these comparisons in terms of two-tailed *p*-values (technically these are a liberal paired comparison known as Fisher LSD tests). Statistically significant values of $p < 0.05$ are noted in red font. In a formal test, one would adjust for multiple comparisons when examining post-hoc p-values such as these; after that adjustment a conservative level of $p < 0.05/78$ (because there are 78 possible pairs) or $p < 0.0006$ would be required for a comparison to be declared statistically significant. But because this is an exploratory study, such formal adjustments are less important. Thus, comparisons with $p < 0.05$ are highlighted for expository convenience.

Analysis #1 compared the Baseline vs 560 FLFE: significant at $p < 0.05$.

Analysis #2 compared Baseline vs FLFE EMF Mitigation program, Brain Optimization program and a 500 minimum level of consciousness: not significant.

Analysis #3 compared the Baseline vs all other levels and also compared to each other. At $p < 0.05$, 22 of these pairs were statistically significant.

Analysis #4 compared Baseline vs 10,000 FLFE: not significant.

Table 1. Paired comparisons for all 13 conditions of combined spatial & temporal data.

	Probabilities for Post Hoc Tests Error: Between MS = .83198, df = 11687.													
Cell No.	condition	A base	B 560	C 500	D 325	E 500	F 560	G 590	H 600	I 700	J 800	K 900	L 1000	M 10K

1	A													
2	B	0.042												
3	C	0.291	0.326											
4	D	0.048	0.950	0.358										
5	E	0.946	0.035	0.262	0.041									
6	F	0.088	0.739	0.516	0.787	0.076								
7	G	0.484	0.181	0.722	0.202	0.443	0.315							
8	H	0.716	0.016	0.156	0.019	0.767	0.039	0.288						
9	I	0.028	0.873	0.253	0.824	0.024	0.622	0.134	0.010					
10	J	0.046	0.963	0.349	0.987	0.040	0.774	0.196	0.019	0.837				
11	K	0.260	0.002	0.029	0.002	0.290	0.005	0.068	0.446	0.001	0.002			
12	L	0.191	0.465	0.802	0.504	0.170	0.690	0.544	0.095	0.373	0.493	0.015		
13	M	0.941	0.050	0.326	0.057	0.887	0.103	0.532	0.661	0.034	0.055	0.230	0.218	

Table 2. Mean and standard error for combined spatial/temporal analysis all 13 conditions.

Cell No.	condition; Unweighted Means (FLFE_spacetime.sta) Current effect: F(12, 11687)=2.3883, p=.00446 Effective hypothesis decomposition					
	condition	Mean	Std.Err.	-95.00%	+95.00%	N
1	A	0.0560	0.0304	-0.0036	0.1156	900
2	B	-0.0316	0.0304	-0.0912	0.0280	900
3	C	0.0106	0.0304	-0.0490	0.0702	900
4	D	-0.0289	0.0304	-0.0885	0.0307	900
5	E	0.0589	0.0304	-0.0007	0.1185	900
6	F	-0.0173	0.0304	-0.0769	0.0423	900
7	G	0.0259	0.0304	-0.0337	0.0855	900
8	H	0.0716	0.0304	0.0120	0.1312	900
9	I	-0.0385	0.0304	-0.0981	0.0211	900
10	J	-0.0296	0.0304	-0.0892	0.0300	900
11	K	0.1044	0.0304	0.0448	0.1640	900
12	L	-0.0002	0.0304	-0.0598	0.0594	900
13	M	0.0528	0.0304	-0.0068	0.1124	900

Control Conditions

As a check on these results, data equal in length to the experimental period, but starting at the beginning of the day rather than when the experiment actually began, were analyzed in the same

manner. The results for combined data are shown in Figure 4 and Table 3. For control data the ANOVA was not significant and only 10 of the paired-tests were significant. This indicates that when the QNGs were not subject to influence by the FLFE transmission, there was substantially less evidence for entropic deviations.

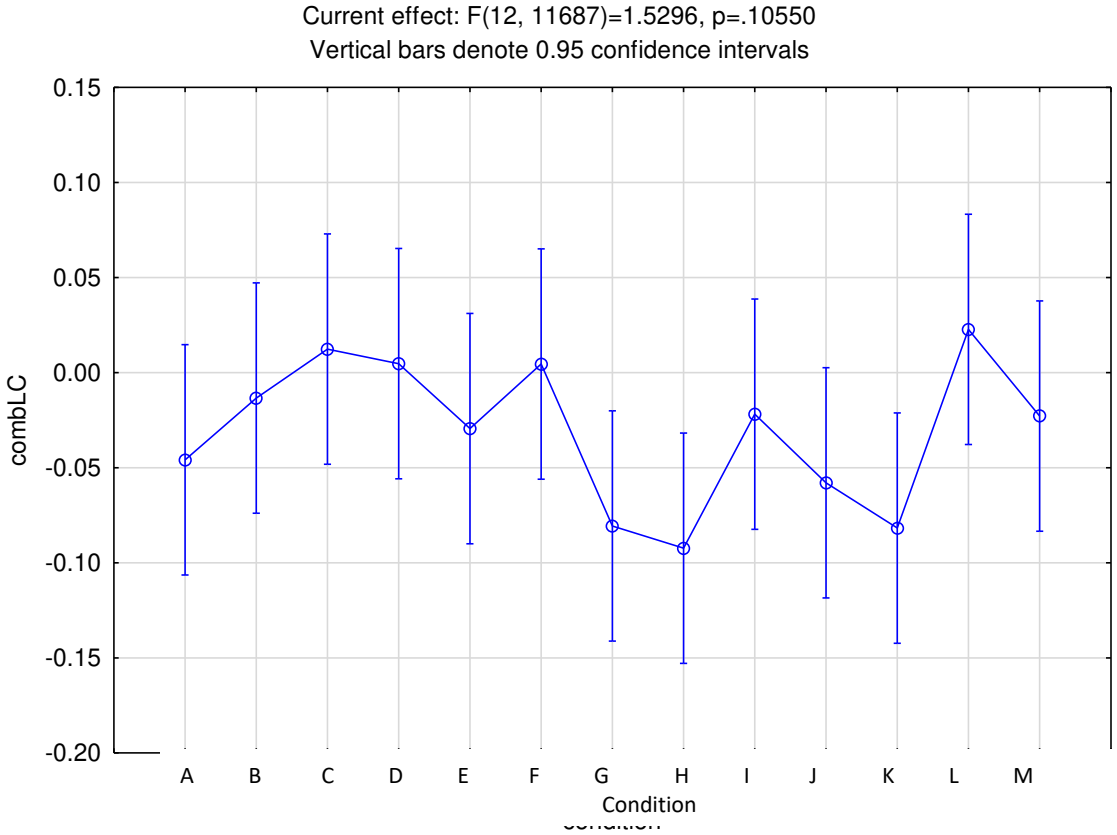

Figure 4. Combined spatial and temporal analysis and results of 1-way ANOVA for control data.

Table 3. Paired comparisons for all 13 conditions for control data.

Cell No.	Probabilities for Post Hoc Tests Error: Between MS = .85896, df = 11687.													
	condition	A base	B 560	C 500	D 325	E 600	F 560	G 590	H 600	I 700	J 800	K 900	L 1000	M 10K
1	A													
2	B	0.457												
3	C	0.183	0.556											
4	D	0.247	0.679	0.861										
5	E	0.707	0.714	0.339	0.435									
6	F	0.249	0.682	0.858	0.997	0.437								
7	G	0.426	0.124	0.033	0.051	0.241	0.051							
8	H	0.287	0.071	0.017	0.026	0.150	0.027	0.789						
9	I	0.583	0.847	0.434	0.544	0.862	0.546	0.178	0.107					
10	J	0.782	0.308	0.108	0.152	0.514	0.153	0.603	0.431	0.408				
11	K	0.411	0.118	0.031	0.048	0.231	0.048	0.980	0.809	0.170	0.586			
12	L	0.117	0.409	0.812	0.680	0.233	0.677	0.018	0.008	0.308	0.065	0.017		
13	M	0.598	0.829	0.421	0.528	0.880	0.531	0.186	0.112	0.982	0.422	0.178	0.297	

A second control test examined QNG data the day after the FLFE experiment. The results are shown in Figure 5 and Table 4. Again, the results were not significant and only 6 of the paired-tests are significant.

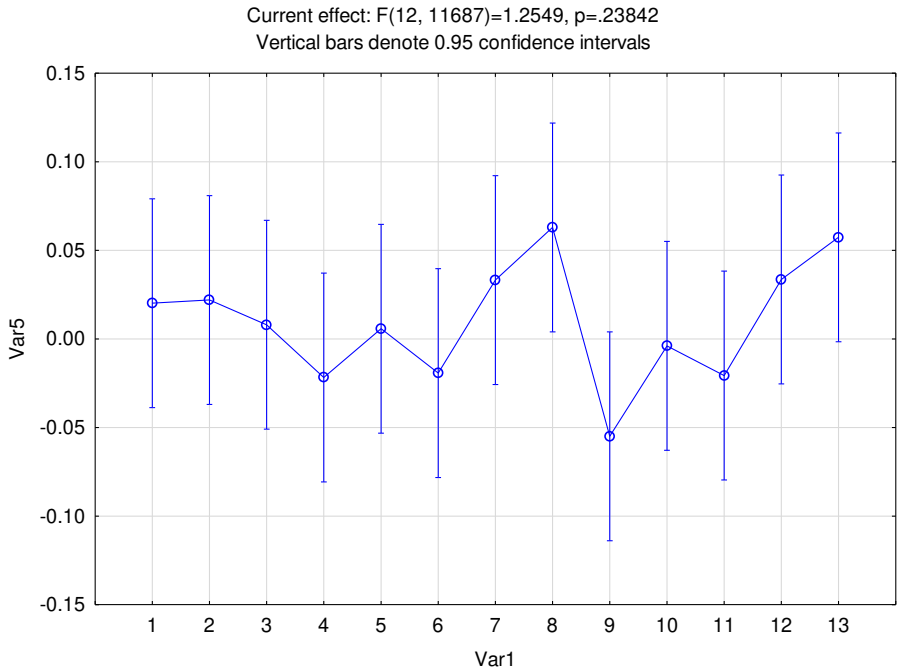

Figure 5. Combined spatial and temporal analysis and results of 1-way ANOVA for second control data.

Table 4. Paired comparisons for all 13 spatiotemporal conditions for second control data.

Cell No.	LSD test; variable Var5 (FLFE_spacetime_cntl2.sta) Probabilities for Post Hoc Tests Error: Between MS = .81418, df = 11687.													
	Var1	{1} .02020	{2} .02200	{3} .00802	{4} -.0217	{5} .00578	{6} -.0193	{7} .03323	{8} .06296	{9} -.0549	{10} -.0039	{11} -.0206	{12} .03359	{13} .05739
1	1													
2	2	0.966												
3	3	0.775	0.742											
4	4	0.324	0.304	0.484										
5	5	0.735	0.703	0.958	0.518									
6	6	0.354	0.332	0.521	0.953	0.556								
7	7	0.759	0.792	0.553	0.196	0.519	0.217							
8	8	0.315	0.336	0.196	0.046	0.179	0.053	0.485						
9	9	0.077	0.071	0.139	0.435	0.154	0.402	0.038	0.006					
10	10	0.571	0.543	0.780	0.675	0.820	0.718	0.383	0.116	0.230				
11	11	0.337	0.316	0.501	0.979	0.535	0.974	0.205	0.049	0.420	0.694			
12	12	0.753	0.785	0.548	0.193	0.513	0.214	0.993	0.490	0.037	0.378	0.202		
13	13	0.382	0.405	0.246	0.063	0.225	0.072	0.570	0.896	0.008	0.150	0.067	0.576	

A third control test was performed by applying the ANOVA analysis to 13 contiguous 15-minute segments (i.e. 900 seconds per segment) starting one hour before to one hour after the actual experiment began. The results shown in Figure 6 show that the maximal odds against chance occurred one minute after the experiment began, suggesting that it may take about a minute for the effect to "kick in." The periodic odds spikes observed in this figure are 900 seconds apart. This occurred because each condition segment was 900 seconds long, and some of the data tested prior to and after the start of the experiment overlapped with the timing of the actual experiment. A genuine effect would be expected to show peak odds at or near the start time of the experiment, which is what we observe.

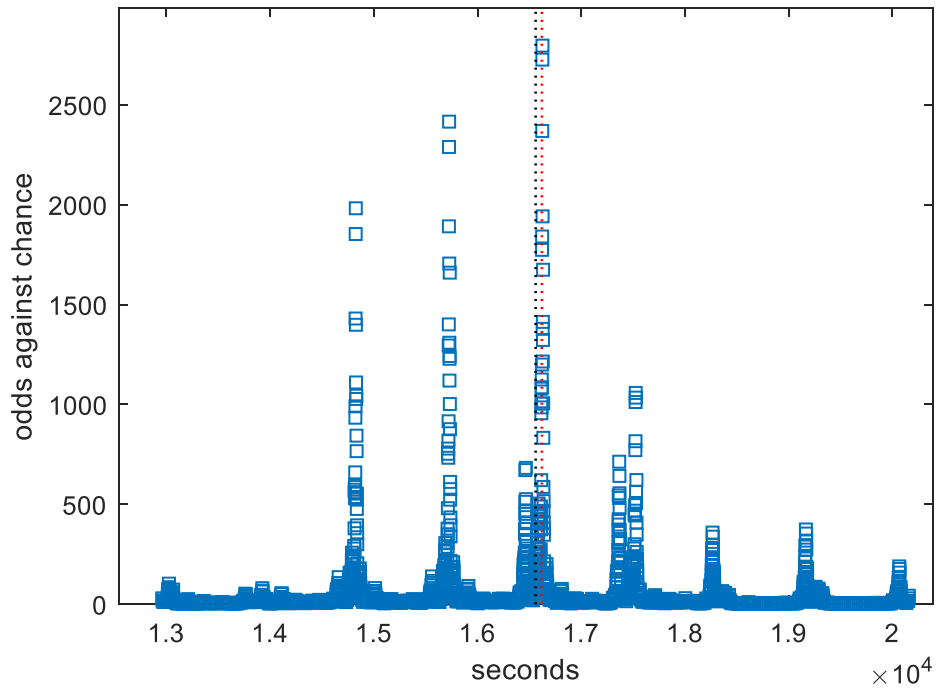

Figure 6. Odds against chance for one-way ANOVA run one hour before to after the actual FLFE experiment, reevaluated per second. The dotted blue line in the center of the graph indicates the start of the experiment. The dotted red line is the peak statistical response, which occurs one minute later.

Conclusions

This experiment indicates that the output of the QNGs unexpectedly responded to *something* during the 3.25 hours of the FLFE experiment. One way to interpret the observed deviations is in the form of "entropic ripples" in spacetime. These results do not indicate that the observed deviations corresponded in a linear relationship with respect to the various consciousness levels, but several control tests did confirm that the deviations observed during the experiment were beyond chance expectation. Given these results, further tests are warranted.