

Study Registration For the KPU Study Registry

The registration information for the study is given below. Each section can be expanded as needed.

1. The title or name of the experiment (for listing the experiment in the registry).

Biophotons as physical correlates of mental interaction at distance: a confirmatory study.

2. The name, affiliation, and email address for the lead experimenter(s) for the study.

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3. A short description or abstract of the purpose and design of the experiment.

With this pre-registered confirmatory study, we aim at demonstrating that biophotons are present during the process of producing mental interaction at a distance and that they may be the physical carriers of mental interaction (MI) at distance. Five selected participants for their experience in mental control and strong motivation for this line of research, will try to increase the number of photons detected by a photomultiplier (PMT) located approximately 7300 km far from their location using their mental intention. At a predefined time, each of them will focus mentally on the PMT for five minutes by using personalized strategies. Each of the five participants will contribute to two experimental sessions carried out in different days for a total of ten experimental sessions. Ten control sessions without mental interaction will be compared with the experimental sessions. These sessions lasting five minutes, will be recorded the same day of the experimental sessions both before and after the periods of MI separated by a time lag of 15 minutes to avoid potential carry over effects.

As a further control that MI influences the PMT by biophotons and not by altering the functioning of its internal electronic components, within each session the participants will be asked to influence the PMT with the shutter closed. To avoid a decrease of participants' motivation and the quality of their MI, the timing when the shutter will be open or closed, will be randomized.

To summarize, a typical session will consist of:

30 minutes for the stabilization of the electronic components of the PMT, 5m for the control session before the MI, 15m before the MI, 5m of MI focused on the PMT, 15m post MI, 5m control session post MI, 15m between sessions, 5m control session before the second MI, 15m before the second MI, 5m of MI focused on the PMT, 15m post MI and 5m control for a total of 135m. Schematically:

30-5contr-15-**5MI**-15-5contr-15-5contr-15-**5MI**-15-5contr

As exploratory investigation we will study if the MI with the PMT will also modify the expected output of a random event generator (RNG) located close to the PMT.

4. A statement or list of the specific hypothesis or hypotheses being tested, and whether each hypothesis is confirmatory or exploratory. ([confirm/explore guidance](#))

Confirmatory hypothesis: The number of photons detected by the PMT in the experimental sessions will outperform those detected in the control sessions with an expected standardized effect size of 1.5 and a raw difference of 0.3 photons x second.

Exploratory hypothesis: the minimum or the maximum deviations z values recorded from the REG outputs, will be higher during the experimental than in the control sessions.

5. The planned number of participants and the number of trials per participant.

Five selected participants will each contribute two experimental sessions lasting five minutes on two different days.

6. A statement that the registration is submitted prior to testing the first participant, or indicating the number of participants tested when the registration (or revision to the registration) was submitted.

the registration will be submitted prior to testing the first participant

In addition to the minimum content above, further information is highly recommended—particularly for well-planned confirmatory experiments. The additional information includes the following:

7. The specific statistical test method that is planned for each hypothesis, including dependent and independent variables, any data transformations or adjustments, any criteria for excluding or deleting data, which statistical test will be used, whether the statistical test (or confidence interval) is one or two-tailed, whether the unit of analysis is the participant or the individual random event, what p value (or confidence interval level) is considered significant, and any

adjustment for multiple analyses. For example, “to analyze overall psi, a z-score binomial test with continuity correction will evaluate whether the overall rate of direct hits for all trials in the experiment is greater than 25%, with significance set at $p \leq .05$ one-tailed,” or “the difference between the two conditions will be analyzed with a two-sample *t*-test with the number of hits for each participant as the unit of analysis and significance set at $p \leq .05$ two-tailed.” (This information can be included in section 4 above.)

All comparisons between the results of the experimental and the control sessions will be done with a paired estimation of the means and the standardized effect size *d* by using the 95% confidence intervals obtained by a bootstrap procedure with 5000 samples and the calculation of the BayesFactor_{H1/H0}, using the ttestBF from the package BayesFactor and varying the rscale parameter from .01 to 0.5. A BF above 20 will be considered as acceptable evidence.

8. The power analysis or other justification for the number of participants and trials.

The choice of the number of participants and the number of experimental and control sessions were determined by the results of a pilot study (Tressoldi et al. 2014)

9. The methods for randomization in the experiment.

The randomization of the sequence with the PMT shutter close or open, will be determined by using the www.randfom.org online service.

10. A detailed description of the experimental procedure.

Participants will agreed with the co-author John Kruth(JK) of the Rhine Research Center Bioenergy Lab, the day and the time to start and end each session. In the agreed day, JK, will activate the PMT and the participants will starte their mental interaction.

All sessions will be carried out in a single place, a sound and visual attenuated room in the EvanLab, located in Florence, Italy or in the participant’s home.

Before the beginning of the session all participants will see some images of the Rhine Research Center, the Bioenergy Lab and of the PMT to have a representation of the site and the apparatus to influence.

Even if free to adopt every strategies, the general instructions to influence the PMT will be that of getting mentally within it trying to emit light feeling completely at ease, protected from external disturbances.

References

Tressoldi et a. (2014) available on <http://papers.ssrn.com/abstract=2506135>