KPU Registry ID Number: 1012 Date Submitted: 29th April 2015

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 new confirmatory study

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

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John G. Kruth, Rhine Research Center, Durham, NC, USA, john.kruth@rhine.org

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 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, all of them will focus mentally on the PMT for five minutes by using personalized strategies. These group of participants will contribute to ten experimental sessions carried out in different days. Ten control sessions without mental interaction recorded on the same days of the experimental ones, will be compared with the experimental sessions.

A typical session will consist of: 80 minute for the cooling of the PMT + 40 m pre MI + 5 m of group MI + 55 m post-MI [experimental session] + 40 m + 60 m [control session]. To avoid any experimenter effect, the control and experimental periods will be randomized with the experimenter acting on the PMT blind about the period of the MI.

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 hypotheses: The number of photons detected by the PMT in the 30 minutes after the MI will outperform those detected in the 30 minutes before the MI.

These differences will hold subtracting the number of photons in the corresponding 60 minutes of the control sessions.

Exploratory hypotheses: check if the above differences hold for shorter periods: 5,10,15,20,25 minutes and longer periods:35,40,45,50,55,60 minutes.

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

Five selected participants will contribute to ten experimental sessions as a group.

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 is submitted before the start of the first session.

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.)

The comparison between the means of the photons x sec detected in the pre and post MI experimental periods and these differences with respect to the control periods 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 BayesFactorH1/H0, using the ttestBF from the package BayesFactor and fixing the prior effect size rscale parameter to 0.3. Furthermore the BayesFactor will be repeated varying the rscale parameter from .01 to 0.5 to check the robusteness of the effect. A BF above 3 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 and a first pre-registered confirmatory study (Tressoldi et al. 2014; Tressoldi et al. 2015)

9. The methods for randomization in the experiment.

The randomization of the experimental and control periods will be determined by using the www.ranfom.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 start their 5 minutes mental interaction after 120 or 220 minutes in randomized way from the start of the recording time.

All MI periods will be carried out in the participants' home. All participants will be connected each other by using ooVoo™ video chat.

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 al. (2014) available on http://papers.ssrn.com/abstract=2506135

Tressoldi et al. (2015) Mental interaction at distance on a photomultiplier: a pre-registered confirmatory study. Preliminary Report. Available on request from patrizio.tressoldi@unipd.it