

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).

Can our Mind emit light? A confirmatory experiment of Mental interaction at distance on a photomultiplier.

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

Patrizio Tressoldi, Dipartimento di Psicologia Generale, Università di Padova, Italy; patrizio.tressoldi@unipd.it;
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 (MI). At a predefined time, all of them will connect with the other participants via the video chat ooVoo™ and 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: 60 minute for the cooling of the PMT + 40 min pre-MI + 5 min of group MI + 35 min post-MI [experimental session] + 40 min [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 MI and control periods.

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:

a) The percentage of photons that are in bursts that have at least 10 photons detected by the PMT every half second during the 40 minutes of MI and post-MI, will exceed the corresponding percentages detected in the 40 minutes of the pre-MI and control periods.

b) When the MI and post-MI periods are divided into 40 consecutive 1 minute periods and the mean number of photons is found across sessions for each 1 minute period, we expect a significant correlation (positive or negative) between these 40 means and the corresponding means in each of the two previous experiments by Tressoldi et al., 2015. Significant correlations are not expected between the analogous means for the pre-MI and control periods.

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. Every sessions will comprise at least three participants as a minimum.

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.

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 ψ_i , 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 effect sizes with their corresponding 95% confidence intervals of the comparisons of the percentages observed in the MI and Post-MI with respect to those observed in the pre-MI and control periods will be estimated by the z-test of differences between dependent-samples proportions. A confidence interval that does not contain zero will be considered significant evidence for an effect.

The corresponding BayesFactors, will be estimated by using the Morey (2014) applet, with this predefined priors: $\mu_1, \mu_2=0$; $\sigma_1, \sigma_2=1$.

A BF above 3 will be considered as acceptable evidence.

The correlations with their 95% CIs will be estimated by using a bootstrap procedure with 10000 samples. A CI that does not contain zero will be considered significant evidence for an effect. The posterior probability High Density Interval (HDI) of the linear regression, will be estimated with the Jags-Ymet-Xmet-Mrobust.R function included in Kruschke (2014), using the default parameters.

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 final report of two experiments (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.random.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 of MI after 100 or 140 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 the 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

Kruschke, J. (2014). *Doing Bayesian data analysis: A tutorial with R, JAGS, and Stan*. Academic Press.

Morey, R.D. (2014). <https://richarddmores.shinyapps.io/bfProportions>. A technical description is presented in the Supplement to Nieuwenstein et al's (2015). On making the right choice: A meta-analysis and large-scale replication study of the unconscious thought advantage. *Judgment and Decision Making*, 10, 1-17.

Tressoldi et al. (2014) Mental Interaction at Distance on a Photomultiplier: A Pilot Study available at <http://papers.ssrn.com/abstract=2506135>

Tressoldi et al. (2015). Can Our Mind Emit Light? Mental Interaction at Distance on a Photomultiplier.http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2625527