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## **PSI, NONLOCALITY, AND ENTANGLED PHOTONS**

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### **Grant 58/16**

**Background:** The experiment funded by this grant tested the hypothesis that quantum theory is a special case of a more comprehensive theory that would include aspects of consciousness. To our knowledge, this mind-matter interaction study was the first to investigate possible psychophysical interactions between nonlocal mind and nonlocal matter, the latter in the form of quantum entanglement.

**Aims:** The first aim was to see if focused attention and intention could modulate the strength of entanglement between photons. The second aim was to see if entanglement could be pushed above the Tsirelson Bound, the theoretical upper limit to entanglement strength based on orthodox quantum theory.

**Method:** A commercial optical system was used to generate about 1,000 entangled photons per second. Using this apparatus, three experiments were conducted at the Institute of Noetic Sciences (IONS) laboratory and one experiment in France. IONS also ran an online version of the experiment. The experimental task asked participants, in an alternating fashion, to focus their attention toward a line graph that showed the real time strength of quantum entanglement in pairs of photons, with intention to increase the line. Or they were asked to withdraw their attention and intention. A differential metric compared entanglement strength between these two conditions.

**Results:** The results of the experiments in the IONS lab were highly significant ( $p = 0.0002$ ); the test conducted in France was not significant. Control runs in both locations, which used the same equipment but without anyone watching the apparatus, were uniformly nonsignificant. The online experiment also showed a modestly significant result ( $p < 0.05$ ) in a high-quality subset of entanglement data.

**Conclusions:** The results suggest that human attention and intention can modulate the strength of quantum entanglement, but none of our experiments were able to push entanglement strength beyond the Tsirelson Bound. Based on these results, we do not know if exceeding this boundary is simply not possible, or if the apparatus we used was simply not capable of achieving that level of entanglement fidelity.

**Keywords:** Mind-matter interaction; Entangled photons; Quantum theory

### **Publications:**

Radin, D., Bancel, P., Delorme, A. (2021) Psychophysical interactions with entangled photons: Five exploratory experiments. *Journal of Anomalous Experience and Cognition*. 1 (1-2), 9-54.

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