

The effect of conscious states of neural activity

Results:

The research project searched for empirical evidence related to the interactions of conscious perception and neural activity. The study developed and used two experimental approaches. The first was based on the use of a patterned neuronal culture, and the second on an EEG measured during a two-person interaction in a computer game. In both approaches the experiment tested the possible effect of conscious state of the person playing the computer game on the level of neuronal activity. The experiments were designed such that an effect of this type would be detected by a difference in the measured neural activity during game playing time compared with a reference pause period.

In the neuronal culture setup, the number of experiments was limited by the number of neurally responsive cultures. In one culture, activity during game periods was significantly higher than during reference period. In a second active culture, the activity was lower during game playing compared to the reference period, but the difference was relatively small. In the EEG setup, considerable efforts were devoted to the development of a stable measurement protocol and algorithms to automatically select the most appropriate electrode signals. The results of the two-person setup have not shown so far conclusive consciousness effects, but the amount of data collected so far is too limited to draw final conclusions. It will be possible to use the approach we developed to efficiently collect additional data and analyze the problem in greater detail. The results also show that the application of learning algorithms to automatically identify and use the most appropriate signals will be highly beneficial in future studies.

Published work:

No publication submitted so far

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