

## **Recursive consciousness training: Using neurofeedback to induce altered states**

### **ABSTRACT:**

We aimed to better understand how we can use real-time brain imaging to train individuals to actively modify their neural processes and, in turn, achieve specialized states of consciousness. Throughout history, effective brain self-regulation has been the purview of a select few (e.g., expert meditators, hypnotic virtuosos). We investigated whether it is possible to leverage brain imaging to guide naïve participants to adopt expert brain states.

Both hypnosis and meditation demand particular body postures. And yet, when researchers brain image these states of consciousness, they often overlook postural constraints. We brain imaged participants in a variety of common postures (standing, sitting, reclined, lying) and found that posture influences brain activity sufficiently that future efforts would benefit from accounting for this variable.

Upon seeking to identify the best neural targets for using neurofeedback to induce altered states of consciousness, we identified that neurofeedback relies heavily on non-specific effects. That is to say, oftentimes, the act of receiving neural feedback itself has little effect compared to all other elements involved in the procedure of neurofeedback (e.g., expectation and motivation).

To continue to advance the field of neurofeedback it would behoove researchers to employ robust control groups and accounts for various confounding factors such as body posture.

### **Keywords**

Neurofeedback, Self-regulation, fMRI, Meditation, Hypnosis

### **Published Work:**

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