

Psychophysics

Abstract

Many people suffer because of severe mood disorders. The causes of these disorders are largely unknown and treatments ineffective when the illness meets certain criteria.

If the mood variations are periodic, it is called cyclothymia, and treatment can sometimes be effective. In other cases, mood can vary in an erratic manner and is unpredictable. These cases and for the moment medicine is mostly clueless, faced with patients who suffer massively, in most cases their whole life, antidepressants having no effect on the illness.

Our hypothesis is that these mood fluctuations are less linked to dysfunction in the transmission of information through the neuronal network but linked to instabilities because of the structure of the network itself.

To test our hypothesis, we created a relatively simple neuronal network in the form of a computer program, mimicking a human brain, and we are studying the instabilities based on the different parameters like the number of connections for each neuron, the level of the activation threshold, the amount of sensory neurons.

Already and henceforth, our model has revealed a few tendencies:

- If the brain is more active the closer it gets to becoming unstable
- The more sensitive to external stimuli it is the more risk there is of it being unstable

Furthermore, in psychology hypersensitive people are more likely to be diagnosed with a mood disorder...

This leaves to interpretation leads for new therapeutic avenues targeting the structural parameters in the network rather than synaptic transmission...