Quantitative Biology > Neurons and Cognition

Violation of the Leggett-Garg inequality in cognitive processes

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The Leggett and Garg Inequality (LGI) is a test of the classical behaviour of an observed system, in the case of a single measurement channel monitored at different times. Here we report LGI violation in cognitive tasks consisting in the identification of mutually incompatible words with negligible semantic content; the violation is maximal at an inter-measurement time {\tau}LG around 2 sec, close to, but consistently lower than, the characteristic times associated with other, semantically rich, linguistic endeavors. The LGI violation persists over a time window of 1 sec around {\tau}LG; outside this window LGI is recovered.

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