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## TMS on prefrontal cortex influences temporal orienting but not preparation guided by rhythms

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### Abstract

A neuropsychological study suggested a role for the right prefrontal cortex in temporal orienting of attention and the left prefrontal cortex in preparation guided by rhythms (Triviño et al., 2011). We tested this hypothesis by comparing the effects of transcranial magnetic stimulation (TMS) on the performances of two temporal preparation tasks, one using symbolic cues (short vs. long lines) and the other using regular rhythms (with fast vs. slow pace) to indicate when a target was most likely to appear. Stimulation site was either the left dorsolateral prefrontal cortex (l-DLPFC), right DLPFC, or sham condition. The results showed that frontal TMS produced differential effects as a function of type of cuing. In symbolic cuing, TMS on either left or right frontal sites (vs. sham) increased validity effects by reducing reaction times in valid trials. In rhythmic cuing, however, frontal TMS did not influence performance. These findings: 1) dissociated between temporal preparation guided by cues vs. rhythms, 2) suggest a role of bilateral DLPFC (and inhibitory processes) in the ability for temporal orienting, and 3) confirmed the automatic nature of temporal regularity, which is more robust to interference than temporal orienting.

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