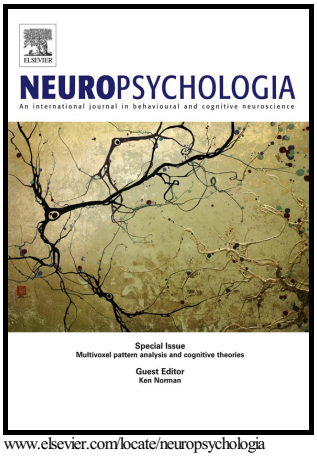

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Abstract

In a typical go/no-go task a single imperative stimulus is presented each trial, either a go or no-go stimulus. Participants are instructed to initiate a known response upon appearance of the go-signal and withhold the response if the no-go signal is presented. It is unclear whether the go-response is prepared in advance of the imperative stimulus in a go/no-go task. Moreover, it is unclear if inhibitory control processes suppress preparatory go-activation. The purpose of the present experiment was 1) to determine whether the go-response is prepared in advance of stimulus identification with the use of a startling acoustic stimulus (SAS), and 2) investigate the inhibitory role of the right inferior frontal gyrus (rIFG) and pre-supplementary motor area (preSMA) during the performance of a go/no-go task with the use of continuous theta burst stimulation (cTBS). The experiment consisted of three phases; a pre-cTBS phase in which participants completed a go/no-go and simple-RT task, followed by offline cTBS to temporarily deactivate either rIFG or preSMA (with a sham control), then a post-cTBS phase which was identical to the pre-cTBS phase. Results revealed that stimulation to both cortical sites impaired participants' ability to withhold movements during no-go trials. Notably, rIFG or preSMA stimulation did not affect the latency of voluntary go-responses and did not enable the SAS to involuntarily trigger responses. These findings suggest that preparation and initiation of the go-response occurs after the