

An Uncommon Masking Effect on Visual Perception with TMS

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Abstract— It is well established that occipitally applied TMS can disrupt normal information processing leading to poorer performance on visual tasks. We were able to show, however, that this phenomenon occurs even if TMS is directed to the frontal cortex. In our study TMS or SHAM stimulation was targeted to the right frontal cortex while subjects performed a simple visual discrimination task. Single pulses were delivered -140, -60 or +20 ms relative to stimulus onset. Discrimination performance decreased with TMS compared to SHAM stimulation, but only if the pulse occurred 60 ms prior to

stimulus onset. Importantly, the extent of this effect per subject was strongly correlated with the individual peak latency of a late positive TMS-evoked potential. Although this component overlapped with the visually evoked N200 no modulation of N200 amplitude in the -60 ms TMS condition could be identified. Our results thus suggest that frontal TMS at 60 ms prior to stimulus onset does produce masking effects, but perhaps not through direct interaction with critical visual processes.

Keywords— *TMS, visual masking, ERP*