

rTMS on DLPFC and autonomic facial feedback increase prosocial behavior

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Abstract

Engage in prosocial behavior was explored in the present research, by investigating the dorsolateral prefrontal cortex (DLPFC) role in modulation of social behavior to support other people and of the emotional attuning as it was expressed by facial feedback (electromiography, EMG). High-frequency rTMS was applied on DLPFC to subjects when they were required to choose to intervene or not in order to support other people in social situations emotionally-valenced (cooperative, non-cooperative, conflictual, neutral contexts). In comparison with sham and control condition, rTMS stimulation induced increased prosocial intervention options in both positive and negative emotional situations. Moreover, as a function of valence, zygomatic (for positive situations) and corrugator (for negative situations) muscle activity was increased, with significant effect by DLPFC stimulation which induced a “facilitation effect”. In addition, negative situations showed a higher rTMS impact for both behavioural and EMG responsiveness. Finally, prosocial behavior was found to be predicted by EMG variations, as a function of the negative vs. positive valence. The prefrontal circuit was suggested to support emotional responsiveness and facial feedback in order to facilitate the prosocial behavior.