

The role of the IFG in divergent and convergent thinking: A tDCS study.

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Divergent and convergent thinking are considered the two sides of creativity: the first being more related to idea generation; the second more focused on reaching one well-defined solution. Being one of the most complex of human behaviors, previous research underlined that creativity is supported by different neural circuits which involve both controlled and spontaneous cognitive processes. However, some areas have yielded a relatively consistent pattern of results, including the right inferior frontal gyrus (rIFG), which seems involved in the production of new ideas, but also during meditation. Thus, the aim of the present study was to stimulate the activity of this region in combination with meditation (e-meditation) to investigate its effects over divergent and convergent thinking. 33 healthy volunteers participated in the study, subdivided into three experimental groups: participants in group A (N=12) received anodal tDCS (a-tDCS) of the right IFG and real meditation. Participants in group B (N=10) received sham stimulation of the right IFG and real meditation, while participants in group C (N=11) received a-tDCS of the right IFG and fake meditation. They were recruited for 4 consecutive days, with the first and the last one also involving cognitive and creative assessment. Results revealed that A stimulation was the most successful in improving convergent thinking, while stimulation C, also real but with fake stimulation, was more effective in modulating divergent thinking. We hypothesized that fake meditation may have counteracted the effect of the stimulation prompting mind-wandering and the involvement of the Default Mode Network (DMN).

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