Enhancing Creative Cognition with tDCS

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Creativity

Geneplore Model

Divergent Thinking

Alternative Uses Task (AUT; Guilford, 1967)
Think of as many creative uses for a cued object

e.g. Brick
   weapon
doors stop
doll coffin
...

Finke et al. (1992)
Brain Activity (fMRI) during AUT Task

Beaty et al. (2018)
Brain Activity (fMRI) during AUT Task

Beaty et al. (2018)
Forward Flow Task

Gray et al. (2019)
High-Definition Anodal Transcranial Direct Current Stimulation (tDCS)

Datta et al (2009)
Study Design

1. Consent
2. Eligibility
3. Baseline Cognitive Measures

Assigned to tDCS condition and outfitted with electrodes

1. 20 min Anodal HD-tDCS or Sham
2. participants complete the AUT and Forward Flow

1. AUT: calculated fluency, semantic distance and rated creativity
2. Forward Flow: calculate Average Semantic Distance
Results – Alternative Uses Task (AUT)

**Cue to Response Semantic Distance**

- Sham
- PCC
- Left DLPFC
- Right DLPFC
- Left AG
- Right AG

**Response Fluency**

- Sham
- PCC
- Left DLPFC
- Right DLPFC
- Left AG
- Right AG
Results – Forward Flow

Average Semantic Distance

Condition: F=1.61, p=.17
Future Directions

• Collect human rated creativity scores for AUT
• Replicate study with larger sample size
• Use tACS which was recently show to stimulate connectivity in DMN
• Measure EEG during stimulation to show that changes in neural correlates mediate changes in creativity
Thank you

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