

Exploring the spontaneous creative process: an EEG study in musical composers.

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BACKGROUND

There is a limited understanding of the neural mechanisms of spontaneous creative behaviors. Music serves as a unique tool to study these behaviors as it can be notated and experienced in real time compared to other creative feats.

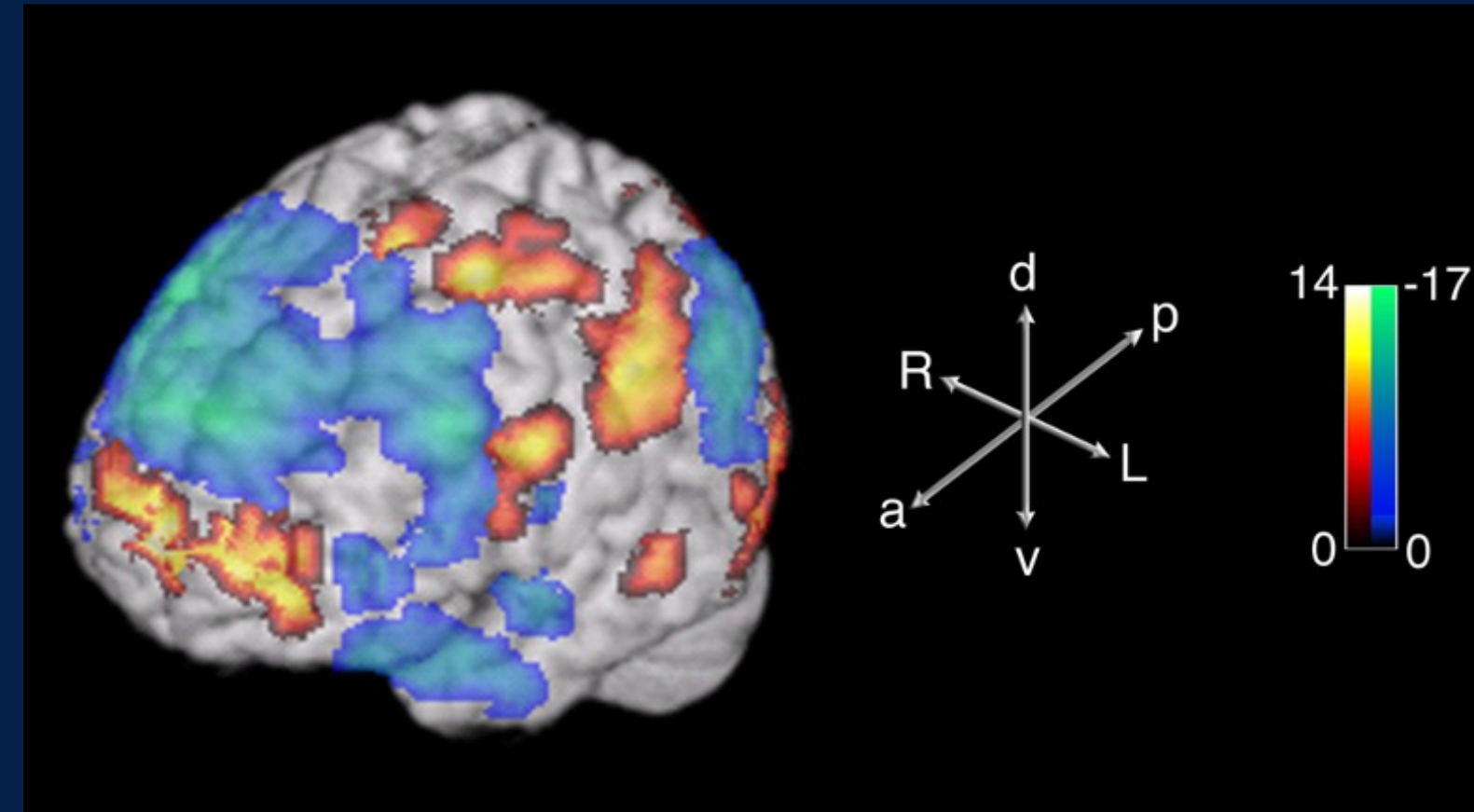
METHODS

- 1. Two arms: 1) Case study with renowned composer SA and 2) cohort study using 11 composers (SFCM)
- 2. 64 channel EEG was used to compare brain activity during composition, scales, and resting states.
- 3. ICA and source localization analysis was used to identify nodes associated with brain rhythms of interest.

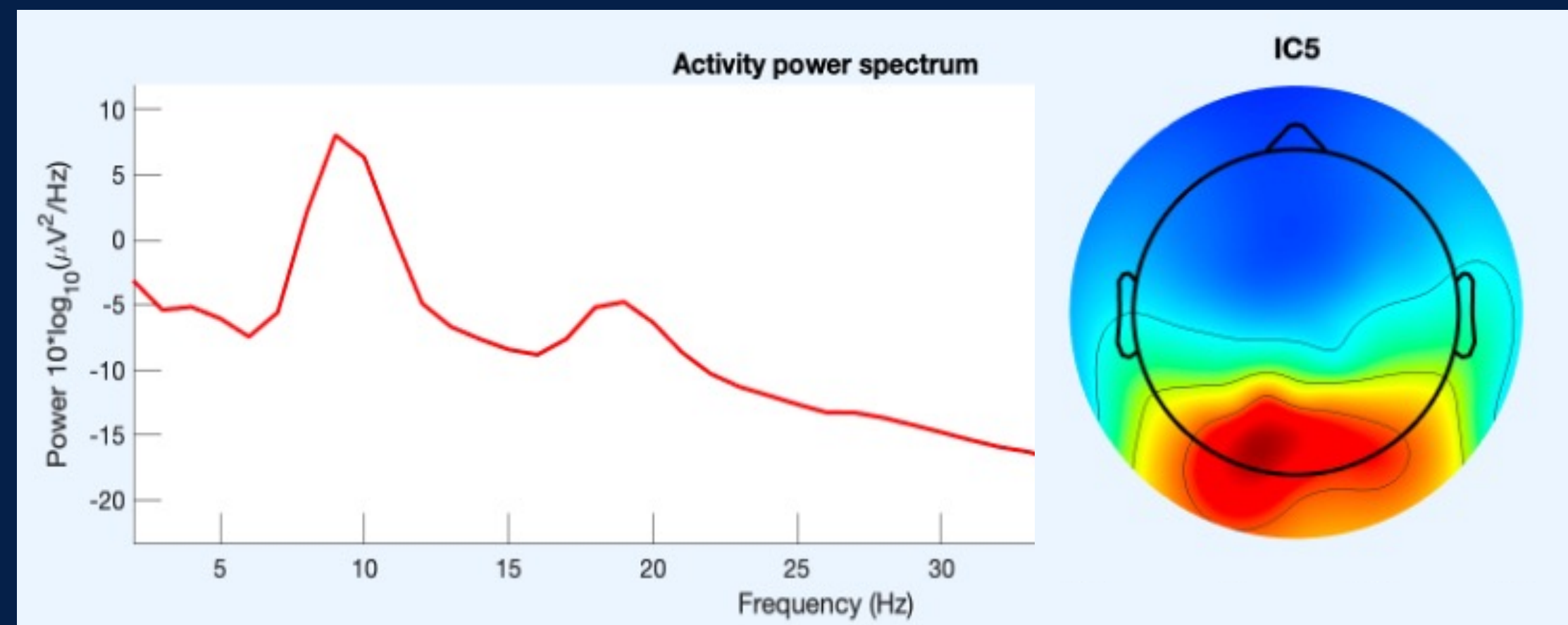
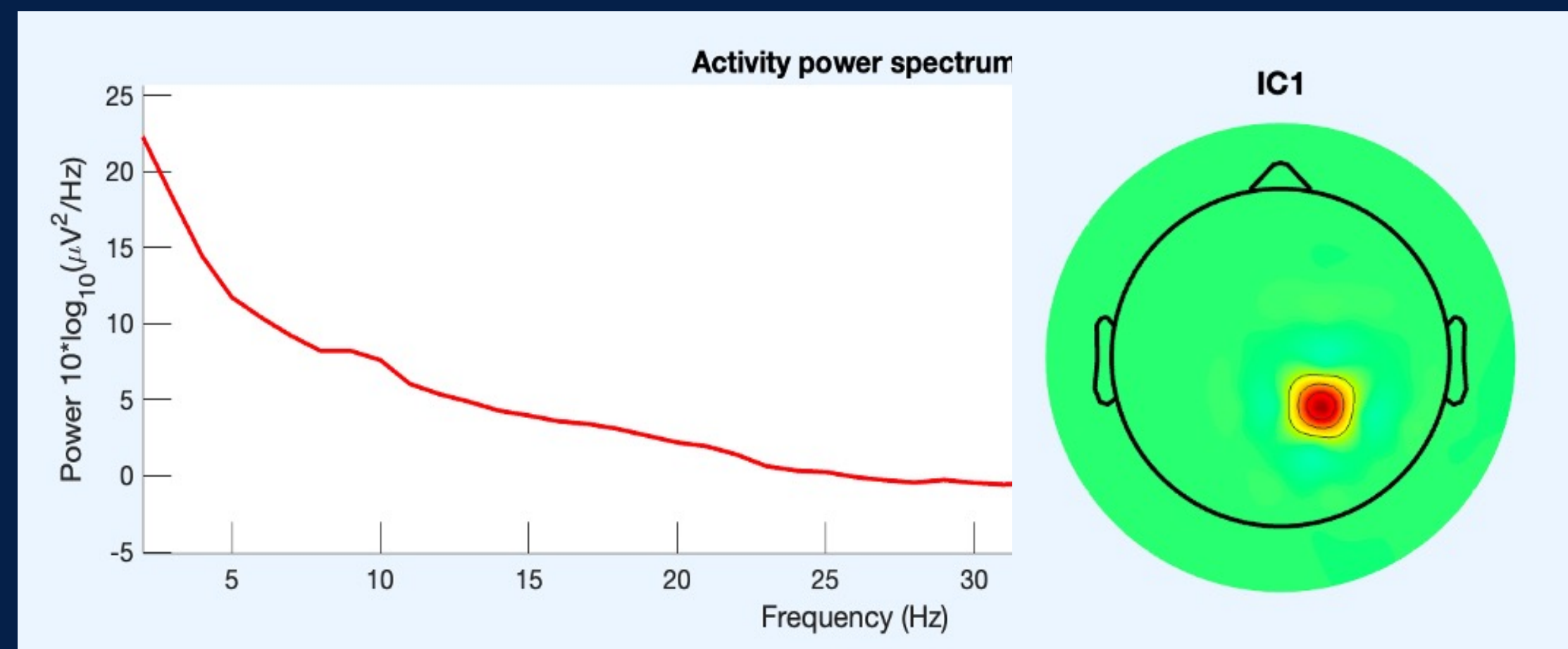
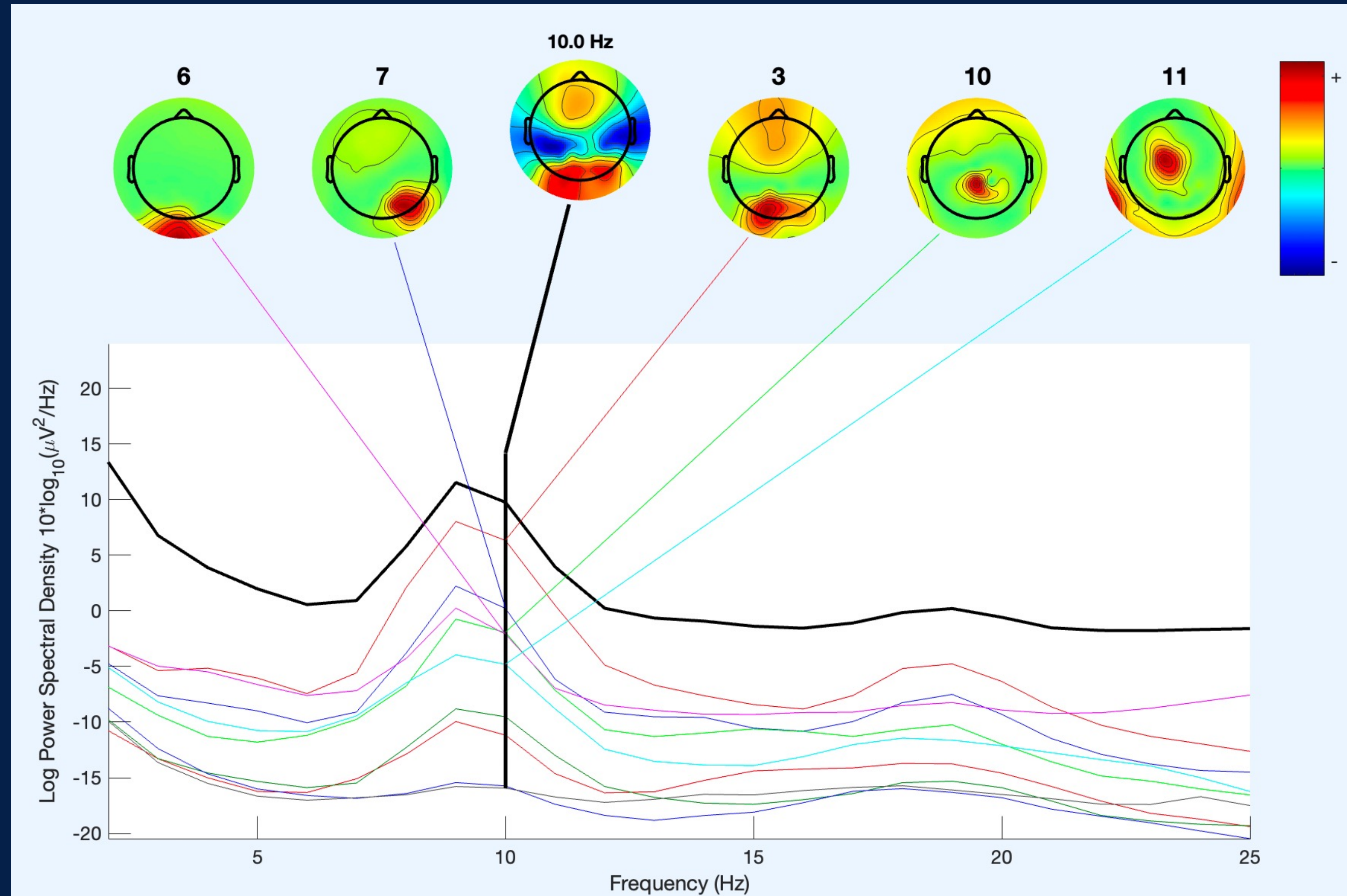
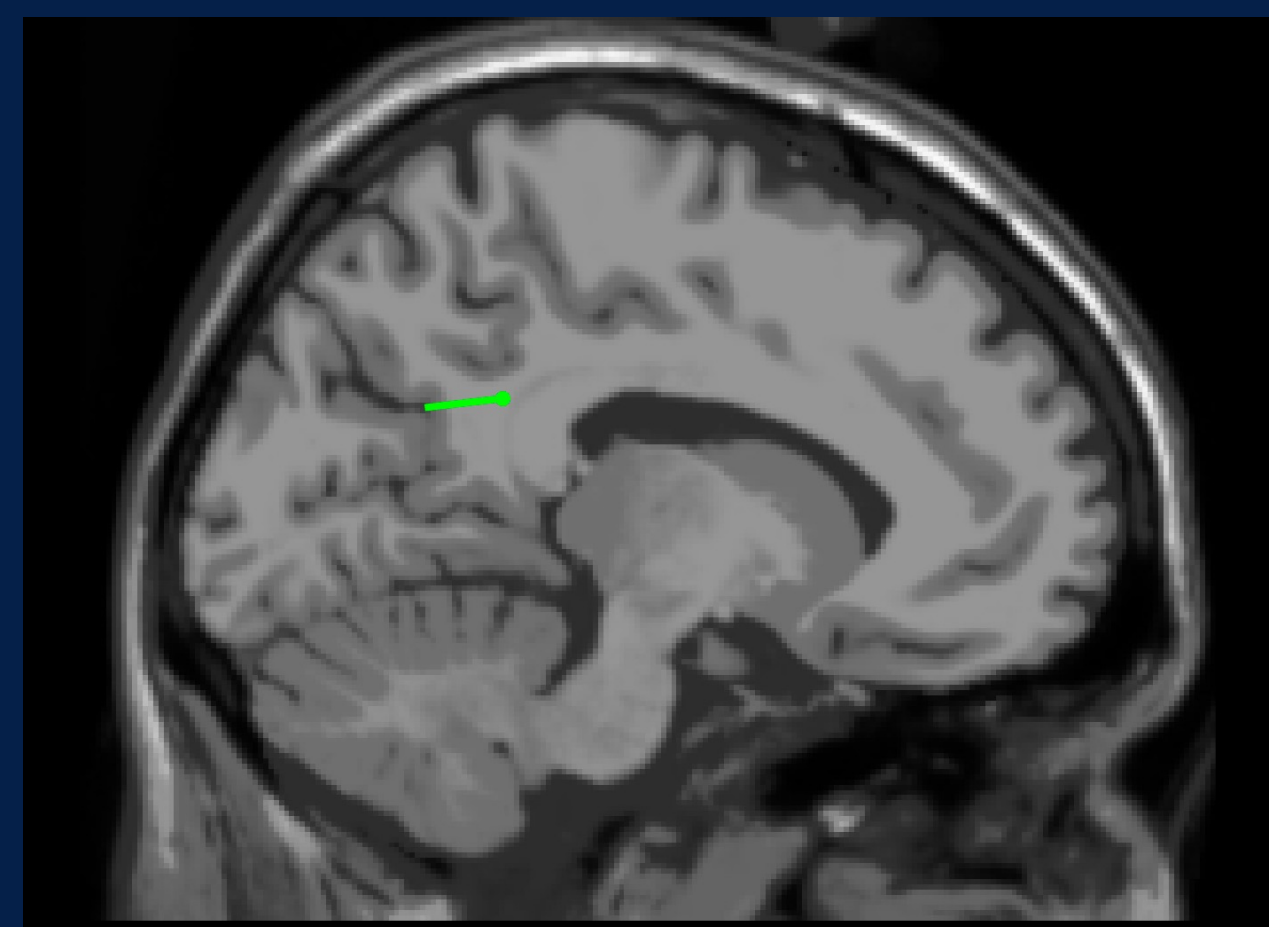
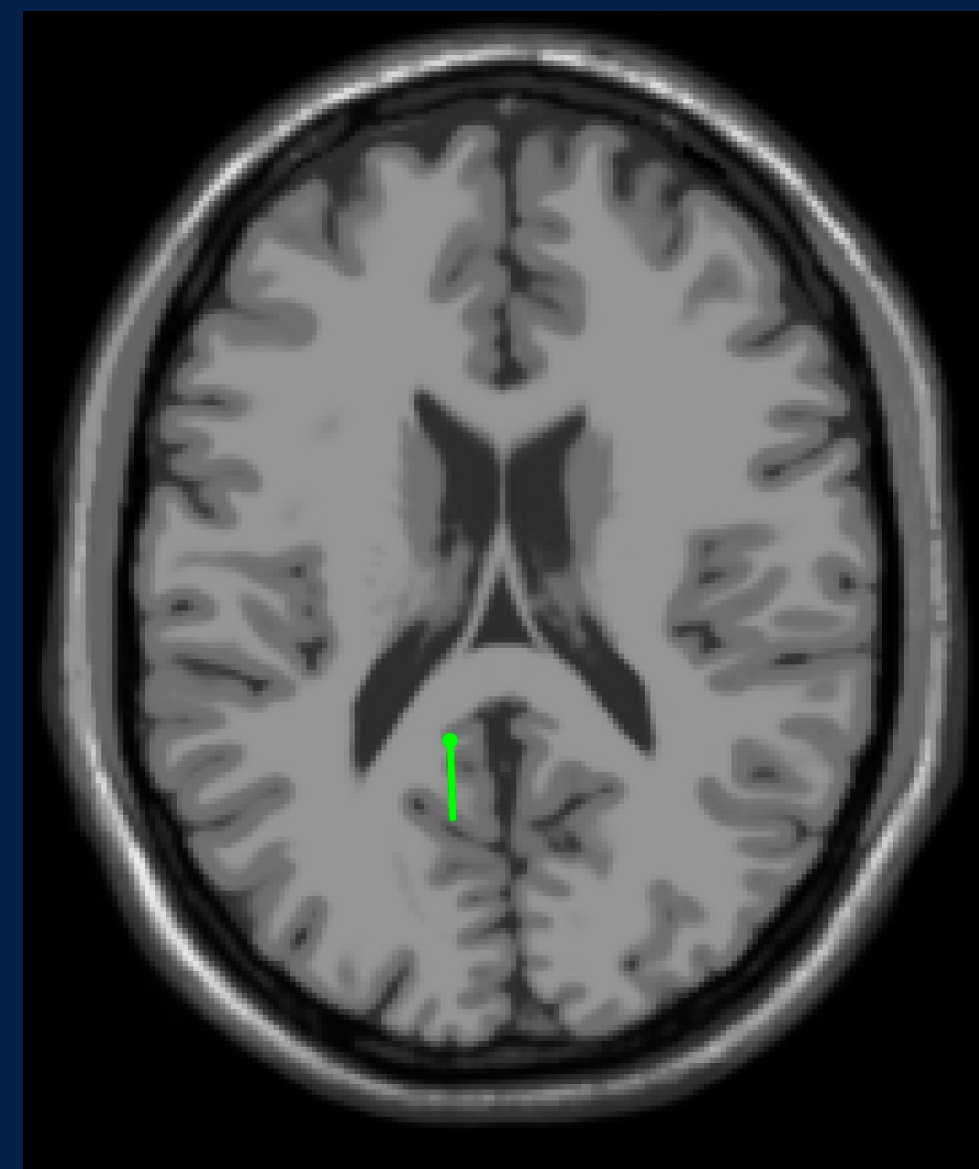
RESULTS

- Independent Component 5 functioned as an alpha generator accounting for 91% of the alpha oscillations in the composition session in SA
- Also seen in 7 of the 11 composers in the cohort study

Alpha generator node associated with creative behaviors identified in Posterior Cingulate Cortex.



Lateral prefrontal deactivation: self monitoring
Medial prefrontal activation: self expression



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RESULTS CONT.

- Composition state was associated with increased alpha, beta, and theta power compared to rest
- Increased activity in mPFC, preSMA, and SMA (self initiated actions)

DISCUSSION

Insight into key nodes of neural networks involved in creative states. EEG findings should guide more granular methodology using electrocorticography or single neuron studies in humans.

