

Shared interpretation of an auditory narrative increases BOLD-synchrony between subjects

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1. Introduction

- The interpretation of an identical narrative varies between listeners, because of differences in their life histories (e.g. cultural traditions, political orientation of news channels)
- We investigated how such differences in interpretation are reflected in brain activity.

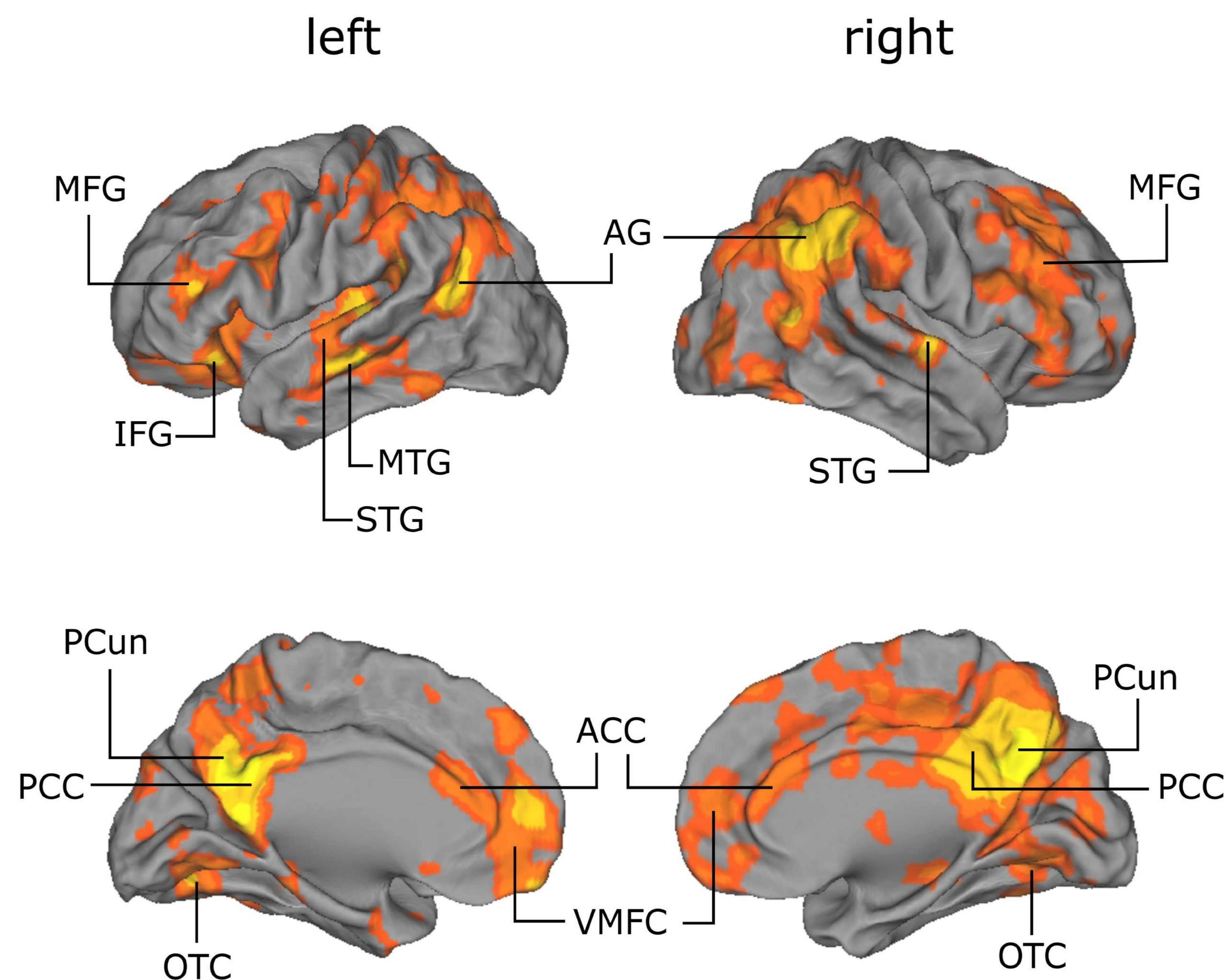
2. Methods

Subjects:

- 24 with Finnish background (12 females), 24 with Russian background (12 females)
- mean age 24.7 ± 4.7 years
- right-handed
- fluent in Finnish
- participated in three separate experiments:
 - 1) Ultra-fast fMRI (TR = 0.1 sec)
 - 2) MEG/EEG (results not shown here)
 - 3) Behavioral associations

3. Results

Brain areas where activity co-varied with individual differences in narrative interpretation



Representational similarity analysis between BOLD-similarities and semantic similarities, 5000 permutations, FWER corrected at cluster-level, $p < 0.05$

correlation values: 0.07 0.35

4. Conclusions

- The analysis revealed a subset of the brain areas associated with semantic processing in previous studies [1]
- More bilateral brain areas than in the "classical" semantic network, as found also in previous studies using a narrative stimulus [2]
- These brain areas likely contribute to individuality of interpretations and related mental imagery during narrative listening.
- our study: the similarities in interpretation reflect normal variation between subjects
previous studies: similarities obtained by manipulating interpretation of the story (e.g. by directing attention [3], changing psychological perspective [4], biasing with contextual information [5])
- More extended brain areas than in the previous studies that used the same analysis and related experimental paradigms [6,7] -> our new findings: the left IFG, bilateral STG, PCun, ACC and VMFC

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