**BACKGROUND**

- In current views of semantic memory, conceptual knowledge about objects is represented across brain regions that are active when those objects are perceived (Adolph, 1985).
- E.g., the shape and roar of a lion is represented in visual and auditory areas, respectively.

How are different types of information (e.g., visual and auditory) integrated into a coherent whole?

- Synchronized firing of neurons may support binding features of concepts into a coherent whole (Singo & Gross, 1995).
- More early gamma activity for congruent vs. incongruent stimuli (e.g., a lion roaring vs. a lion mooing; Schneider et al., 2000; Yuval-Greenberg & Deouell, 2007).
- More late theta activity for crossmodal compared to unimodal integration (e.g., silver + loud, for whistle vs. silver + shiny, for whistle) with lexical stimuli (van Ackeren & Rueschemeyer, 2014; van Ackeren et al., 2014).

- Different frequency bands may have different roles in binding:
  - Gamma for interactions between local cell assemblies
  - Lower frequencies for long-distance interactions (van Stein & van Rensbergen, 2010; Donner & Siegel, 2011).

**RESULTS**

**Time-frequency analyses:**

When all item pairs analyzed, no effects of congruency in gamma or theta (results not shown)

**METHODS**

- Data collected with 256-channel EEG (EGI) cap at 500 Hz
- Preprocessing and analysis in Fieldtrip
- Average reference and FASTER channel repair and ICA functions (Nolan et al., 2010)
- Gamma analyzed with multitapers with windows of 200ms
- Theta analyzed with Morlet wavelets with a fixed width of 3 cycles

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