**Tool-selective lateral temporal cortex is sensitive to event relations**

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left inferior parietal lobule (IPL) and lateral occipito-temporal cortex (LOTC) respond preferentially to images and names of tools relative to other categories of objects. Action-related knowledge is thought to explain these responses (Peelen et al 2011; Bracci et al 2017; Perini et al 2014; Valyear et al 2007; Mahon et al 2007). A less-explored but more specific property of tools is their ability to exert changes on the environment (i.e., a causal event relation). We cued causal event relations with event order using novel objects and events, and examined the responses of tool-selective regions.

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## results

**Are tool-selective areas sensitive to event relations?**

Preliminary data with n = 15, pre-registered target sample size = 32.

ROIs defined with tools > non-tools contrast, using intersection of group cluster, thresholded at p < .05 uncorrected and each individual’s data (up to 300 maximally responsive & contiguous voxels, thresholded at t>0).

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### procedure

**Training**

Each animation (2/condition) shown 45 times over 5 blocks.

Knowledge tested after each block with 12 questions probing event knowledge.

Participants are at ceiling prior to scan.

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### In-Scan Retrieval Task

Each object shown as static image 72 times over 8 blocks; 16/72 trials followed by a question probing specific and general aspects of associated event animations.

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### Tool Localizer

800 ms presentation + 200 ms fixation / trial; blocked design with 8 trials/condition.

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**conditions**

**Movement Type:** Hand-generated vs Self-generated

**Event Relation:** movement precedes (Causes) or follows (Reacts to) other events

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**Shapes assigned in counterbalanced fashion to conditions; 2 objects/condition with one of two ambient events.**

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**results**

Are tool-selective areas sensitive to event relations?

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**Main effect of event relation:**

M = 0.28, t(14) = 2.12, p = 0.05

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**Interaction between event relation and movement type:**

M = 0.62, t(12) = 2.53, p = 0.03

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**online materials**

https://osf.io/wzvn2/

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