IIT (INTEGRATED INFORMATION THEORY)

Założenia:

1. IIT predicts that conscious content is maximal in posterior brain areas.
2. Conscious content is actively maintained by neural activity in the posterior ‘hot zone’ throughout the duration of conscious experience.
3. IIT predicts sustained short-range connectivity within the posterior cortex, linking low-level sensory (V1/V2) with high-level category selective areas (e.g. fusiform face area, lateral occipital cortex).

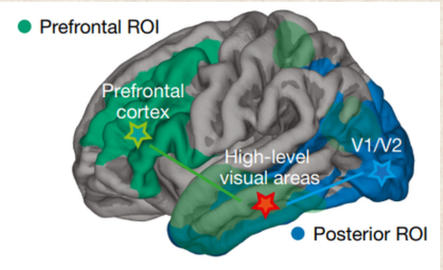
GNWT (GLOBAL NEURONAL WORKSPACE THEORY)

Założenia:

1. GNWT predicts a necessary role for PFC in holding conscious content.
2. GNWT predicts ignition events in PFC at stimulus onset and offset, updating the global workspace, with activity-silent information maintenance in between.
3. GNWT predicts long-range connectivity between high-level category selective areas and PFC.

Wyniki:

1. “Hence, across modalities, face-object decoding occurred in both posterior and prefrontal ROIs [faster through posterior cortex], consistent with IIT and GNWT predictions."



2. “Face orientation information appeared weakly in posterior ROIs at stimulus onset but was not sustained, decaying after .5s, contrary to the predictions of IIT.”
3. “These effects [category-selective synchrony] were early and brief (e.g. less than .75s), and restricted to low frequencies (2-25 Hz). [...] These results fail to align with IIT’s predictions.”

2. “However, none of the 655 electrodes measured the temporal profile predicted by GNWT (that is, onset and offset).”
3. “No content-selective PPC was found between [category-selective] electrodes and PFC electrodes in the relevant time window, contradicting the prediction of GNWT.”

Jakub Mańczak Martyna Kubiak

Cogitate Consortium., Ferrante, O., Gorska-Klimowska, U. et al. Adversarial testing of global neuronal workspace and integrated information theories of consciousness. Nature 642, 133–142 (2025). https://doi.org/10.1038/s41586-025-08888-1