Contribution ID: **941**   Type: **Talk in simposio**

Neural correlates of the semantization process: graph-like construction of social knowledge from TV series encoding

Thursday, September 11, 2025 12:13 PM (17 minutes)

Traditional accounts describe semantic memory as static and crystallized, often overlooking its episodic origins. Recent theories suggest that conceptual knowledge may emerge from low-dimensional, Cartesian-like representational space (Bellmund, 2018), potentially supported by medial parietal regions (Bottini&Doeller, 2020). However, empirical evidence, especially with high-dimensional, naturalistic inputs, remains limited. We addressed this gap by developing an ecological paradigm to investigate the transformation of episodic experiences into semantic representations.

In an fMRI experiment, participants passively viewed characters from two TV series during an incidental task. After watching TV-series1, they underwent an identical fMRI session and then completed a behavioral task assessing perceived social proximity among TV-series1 characters. We ran separate GLMs for pre- and post-encoding sessions, contrasting TV-series1 characters (familiar only post-encoding) with those from TV-series2. Representational Similarity Analysis (RSA) quantified changes in neural pattern similarity (post-pre) between character pairs. The neural dissimilarity matrix was then correlated with behavioral proximity ratings.

The pre-session contrast showed medial occipital activation, while the post-session contrast revealed medial parietal involvement. RSA showed a significant negative correlation between neural dissimilarity in right precuneus/PCC and perceived social proximity (rho= −0.05, p= 0.007), indicating more similar patterns for socially closer characters.

These findings suggest that an initial perceptual distinction between character sets, which emerged by the occipital activation of the pre-encoding session, becomes a semantic one represented in medial parietal regions. Multivariate results extend previous evidence of geometric encoding (temporal distance) in episodic memory in the hippocampus (Deuker, 2016) to that of semantic (social distance) in the medial parietal cortices.

If you're submitting a symposium talk, what's the symposium title?

Neural signatures of complex and real-life memories

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?

No

Primary author: SANTACROCE, Federica (G. d'Annunzio University)

Co-authors: COMMITTERI, Giorgia (Dipartimento di Psicologia, G. d'Annunzio University); TULLO, Maria Giulia (Dipartimento di Neuroscienze, Imaging e Scienze Cliniche, G. d'Annunzio University); DI CENSO, Davide (Dipartimento di Neuroscienze, Imaging e Scienze Cliniche, G. d'Annunzio University); DI MATTEO, Rosalia (Dipartimento di Psicologia, G. d'Annunzio University); SESTIERI, Carlo (Dipartimento di Neuroscienze, Imaging e Scienze Cliniche, G. d'Annunzio University); Dr TOSONI, Annalisa (Dipartimento di Psicologi, Università di Chieti-Pescara)

Presenter: SANTACROCE, Federica (G. d'Annunzio University)

Session Classification: Neural signatures of complex and real-life memories

Track Classification: Memory