

[Generalization of information - integrative encoding or category-based inference?](#)

> [zoom webinar link](#) | [sli.do for advance Q&A submission](#)

<**Thursday, October 22nd, 2020, 10:00pm - 01:00am Japan time**

2:00pm - 5:00pm London / 9:00am - 12:00pm New York / 6:00am -9:00am Los Angeles

Workshop organizers: Jessica Taylor, Helen Barron, Xiaochuan Pan, Dasa Zeithamova, Masamichi Sakagami, & Aurelio Cortese

OVERVIEW

How do biological organisms generalize previously-learned information for adaptive behaviour in novel experiences? Two leading theories argue for two different mechanisms behind such behavioural flexibility. Integrative encoding postulates that coactivation of (a) representations of novel experiences, and (b) related episodic memories, allows for integration and re-encoding of information. This means that information from related episodic memories can be applied in novel situations. Category inference instead takes the position that the brain constructs abstract categories based on regularities (e.g., in perception, function, etc). If information is learned for one category member then this can be inferred to apply to other members of the same category, without the need for direct experience or direct one-to-one memory associations. In this workshop we will discuss evidence for each theory, potential evidence for a hybrid implementation of the two, and the means by which we might best resolve inconsistencies.

KEY QUESTIONS

1. Is generalization really just a simple memory association process? Or are further 'higher order' inference processes required?
2. Do previous experimental tasks used to investigate generalization actually all 'tap' the same underlying cognitive and neural processes?
3. Do we use the same underlying processes when generalization is made based on similarities in perception compared to similarities in function?
4. Do we use the same underlying processes when generalization is made based on well-established associations/categories compared to based on newly formed associations/categories?
5. In which cases does generalization depend more on neural activity during the learning of the initial association/category compared to neural activity at the time of the generalization response?

SCHEDULE

1. Introduction: Theoretical + experimental sessions (45 mins)

A Cortese and J Taylor will give an overview of the topic to define important terms and how they are used, to raise key questions, and to discuss existing experimental approaches and conflicting

results (30 mins)

Keywords: generalization, inference, category, integrated memories, encoding, retrieval

Audience discussion (15mins)

2. Debate: Hippocampus and prefrontal cortex, memory vs category, learned vs over-learned, perceptual vs functional (55 min)

D Zeithamova, H Barron, X Pan + M Sakagami will give a ~5 min pitch of their view

This will be followed by a brief discussion between our group members (10 mins)

Audience questions/discussion (25 mins)

3. Experimental proposals + discussion (~60 mins)

H Barron, D Zeithamova, J Taylor + A Cortese, X Pan will present proposals for experiments designed to examine key questions (max 40 mins in total)

Audience questions/discussion (20 mins)

4. Concluding remarks (~10-15 mins)

Initial key questions will be readdressed. What did we find to best answer them? How can we tackle the issues? EtcRead more on OpenReview here: <https://openreview.net/forum?id=bYTPqOKLVmO>

Full proposal here: <https://openreview.net/pdf?id=bYTPqOKLVmO>



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