

THE LANGUAGE SYSTEM IN THE BROADER LANDSCAPE OF THE HUMAN BRAIN.

16 April 2024

9: 00 am (EDT, GMT-4)


Zoom

Registration:

<https://forms.gle/cBprJFGLNjzC6V7J9>

ABSTRACT

I seek to understand how our brains understand and produce language. I will discuss three things that my lab has discovered about the "language network", a set of frontal and temporal brain areas that store thousands of words and constructions and use these representations to extract meaning from word sequences (to understand or decode linguistic messages) and to convert abstract ideas into word sequences (to produce or encode messages). First, the language network is highly selective for language processing. Language areas show little neural activity when individuals solve math problems, listen to music, or reason about others' minds. Further, some individuals with severe aphasia lose the ability to understand and produce language but can still do math, play chess, and reason about the world. Thus, language does not appear to be necessary for thinking and reasoning. Second, processing the meanings of individual words and putting words together into phrases and sentences are not spatially segregated in the language network: every region within the language network is robustly sensitive to both word meanings and linguistic structure. This finding overturns the popular idea of an abstract syntactic module but aligns with evidence from behavioral psycholinguistic work, language development, and computational modeling. And third, representations from large language models like GPT-2 predict neural responses during language processing in humans, which suggests that these language models capture something about how the human language system represents linguistic information.



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For this lecture of the **Emergentism, Ecosystem, and Expertise Talk Series**, the Discussants will be the series organizers: Catherine Caldwell-Harris, Arturo Hernandez, Ping Li, and Brian Macwhinney

Information on upcoming talks in this series can be found at https://psyling.talkbank.org/E*3.