

Dartmouth College
Department of Psychological & Brain Sciences
Moore Hall
Hanover, NH, 03755

March 2, 2023

To the editors of *Nature Neuroscience*:

We have enclosed our manuscript entitled *High-order cognition is supported by information-rich but compressible brain activity patterns* to be considered for publication as an *Article*. Our manuscript uses dimensionality reduction algorithms and pattern classifiers to explore how informative and compressible (in the information theory senses of those words) brain activity patterns are, under different cognitive circumstances.

We developed a computational framework for evaluating our two measures of interest (informativeness and compressibility), and we applied the framework to a public fMRI dataset. In the dataset's experiment, participants either listened to an auditory recording of a story, listened to temporally scrambled recordings of the story, or underwent a resting state scan. Each condition is designed to engage cognitive processing and engagement at different depths. For example, listening to the intact story leads participants to mentally engage with the narrative, and to deeply process and connect narrative events in a way that leads to a rich understanding of the story. Listening to temporally scrambled versions of the story might lead to understanding individual words....

Thank you for considering this manuscript, and I hope you will find it suitable for publication in *Nature Neuroscience*.

Sincerely,

Jeremy R. Manning