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Hope H. Kean

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EDUCATION

Massachusetts Institute of Technology, Department of Brain & Cognitive Sciences, PhD candidate expected 2025
Princeton University A.B. in Neuroscience with Honors and Certificate in Cognitive Science June 2018

PUBLICATIONS

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- Kean HH**, Fung A, Rule J, Piantadosi S, Tenenbaum J, and Fedorenko E. (in prep) Deductive and Inductive Processing Dissociate in the Human Brain.
- Kean HH***, Wolna A*, Jinghan N, Swords S, Poliak M, Nieto-Castañón A, Shewmon A, Richardson M, and Fedorenko E (in prep) Functional specificity is preserved in highly anatomically atypical brains.
- Kean HH**, Fung A, Pramod RT, Chomik-Morales J, Kanwisher N, and Fedorenko E. (in prep) The Human Language System Is Not Engaged During Intuitive Physical Reasoning.
- Kean HH**, Fung A, Jagers P, Rule J, Piantadosi S, Tenenbaum J, Varley R, and Fedorenko E. (in prep) The Neural Representations that Underlie Inductive Reasoning (Program Induction) Do Not Have a Linguistic Format.
- Kean HH**, Fung A, Rule J, Piantadosi S, Tenenbaum J, and Fedorenko E. (in prep) The Human Language System Is Not Involved In Deductive Logical Thinking.
- Kean HH**, Fung A, Rule J, Piantadosi S, Tenenbaum J, and Fedorenko E. (in prep) The Multiple Demand System Is Not Involved In Deductive Logical Thinking.
- Kean HH**, Fung A, Rule J, Piantadosi S, Tenenbaum J, and Fedorenko E. (in prep) Induction, Deduction, Arithmetic, Intuitive Physics, and Working Memory are Neurally Distinct Subsystems within broadly Domain-general Regions of the Human Brain.
- Shain C*, **Kean HH***, Casto C, Lipkin B, Affourtit J, Siegelman M, Mollica F, and Fedorenko E. (in press) Distributed sensitivity to syntax and semantics throughout the human language network. *Journal of Cognitive Neuroscience*
- Regev T, Lipkin B, Boebinger D, Paunov A, **Kean HH**, Norman-Haignere S, and Fedorenko E. (2024) Preserved functional organization of auditory cortex in two individuals missing one temporal lobe from infancy. *iScience*
- Siegelman M, **Kean HH**, Pongos A. & Fedorenko E. (in prep). Language activations in the fronto-temporal network are robust to task manipulations.
- Li J, **Kean HH**, Fedorenko E, and Saygin Z. (2022) Intact Reading Ability despite Lacking a Canonical Visual Word Form Area in an Individual Born without the Left Superior Temporal Lobe. *Cognitive Neuropsychology*
- Lipkin B, Tuckute G, Affourtit J, Small H, Mineroff Z, **Kean HH**, Jouravlev O, Rakocevic L, Pitchett B, Siegelman M, Hoeflin C, Pongos A, Blank I, Kline M, Ivanova A, Shannon S, Sathe A, Hoffman M, Nieto-Castañón A, and Fedorenko E. (2022). LanA (Language Atlas): A probabilistic atlas for the language network based on fMRI data from >800 individuals. *Nature Scientific Data*
- Chen X, Affourtit J, Ryskin R, Regev T, Norman-Haignere S, Jouravlev O, Malik-Moraleda S, **Kean HH**, Varley R, and Fedorenko E. (2022). The human language system does not support music processing. *Cerebral Cortex*.
- Hu J, Small H, **Kean HH**, Takahashi A, Zekelman L, Kleinman D, Ryan E, Nieto-Castañón A, Ferreira V, and Fedorenko E. (2022). Precision fMRI reveals that the language-selective network supports both phrase-structure building and lexical access during language production. *Cerebral Cortex*
- Tuckute G, Paunov A, **Kean HH**, Blank I, Mineroff Z & Fedorenko E. (2022). Frontal language areas do not emerge in the absence of temporal language areas: A case study of an individual born without a left temporal lobe. *Neuropsychologia*
- Ivanova, A. A., Srikant, S., Sueoka, Y., **Kean, HH.**, Dhamala, R., O'Reilly, U.-M., Bers, M. U., & Fedorenko, E. (2020). Comprehension of computer code relies primarily on domain-general executive resources. *eLife*
- Mollica F, Siegelman M, Diachek E, Piantadosi S, Mineroff Z, Futrell R, **Kean HH**, Qian P & Fedorenko E. (2020). Composition is the core driver of the language-selective network. *Neurobiology of Language*
- Guterstam A*, **Kean HH***, Webb TW, Kean FS & Graziano MSA (2019). Implicit model of other people's visual attention as an invisible, force-carrying beam projecting from the eyes. *PNAS* *equal contributors
- Webb TW, **Kean HH**, and Graziano MSA (2016). Effects of awareness on the control of attention. *Journal of Cognitive Neurosci*

PRESENTATIONS

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- Inductive Inference and Reasoning in the Human Brain, *51st Annual Summer Insight BC Philosophy Conference* Summer 2024
- Domain-general Reasoning in the Human Brain, *Cognitive Department Lunch Series (BCS Cog Lunch)* Fall 2023
- Program Induction and Reasoning in the Human Brain, *Emerging Scholar in Psychological Science, Princeton U.* Spring 2023
- Interesting Brains, *Inauguration of the MIT Museum, Cambridge Science Festival* Fall 2022
- Temporal Receptive Windows, *Cognitive Department Lunch Series (BCS Cog Lunch)* Fall 2021
- Probabilistic Program Generation: Intuitive Physical Theory of Balance, *Brains, Minds, & Machines (CBMM)* Summer 2019
- TARP γ -8, γ -2, Cornichon, Auxiliary Binding Proteins in AMPA Receptor Trafficking, *Seoul National University* Summer 2016

- Elected as a Departmental Speaker

POSTERS

- Kean HH**, Fung A, Rule J, Tenenbaum J, Piantadosi S, and Fedorenko E. Deductive and Inductive Processing Dissociate in the Human Brain. (2022). *Computational Cognitive Neuroscience*.
- Regev T, Jhingan N, Kim HS, **Kean HH**, Casto C, and Fedorenko E. (2022) Neural Representation of Prosody. *Society for the Neurobiology of Language*.
- Hu, J., Small, H., **Kean, H. H.**, Takahashi, A., Zekelman, L., Kleinman, D., Ryan, E., Ferreira, V., & Fedorenko, E. (2020). Distributed and overlapping neural mechanisms for lexical access and syntactic encoding during language production. *Society for the Neurobiology of Language*.
- Ivanova, A. A., Siegelman, M., Cheung, C., Pongos, A. L. A., **Kean, H. H.**, & Fedorenko, E. (2020) The effect of task on sentence processing in the language and multiple demand brain networks. *Society for the Neurobiology of Language*.
- Gallée J, **Kean HH**, Fedorenko E (2020) Robust Neural Adaptation to Syntactic Structure. *Cognitive Neuroscience Society*.
- Kean HH**, Ellis CT, Webb TW, Graziano MSA (2017) Implicit biases about invisible forces that project from the eyes. *Princeton Neuroscience Institute Research Symposium*.
- Liao VTY, Webb TW, **Kean HH**, Graziano MSA (2017) Effects of Awareness on the Control of Attention: An Auditory Behavioral Paradigm. *Princeton Neuroscience Institute Research Symposium*.
- Webb TW, **Kean HH**, and Graziano MSA (2015) Awareness alters the control of attention. *Society for Neuroscience*.
- Kean HH**, Ogilvie K, Lussier M, Roche K (2014) Binding of MAGUK family proteins to Neuroligin -1 and -2. *NINDS Summer Research Symposium*. (Awarded the NIH Exceptional Summer Student Research Award)

RESEARCH EXPERIENCE

Technical Associate & Lab Manager , <i>EvLab, Brain & Cognitive Sciences, MIT</i>	2018 – 2020
Research Assistant , <i>Princeton Neuroscience Institute, Cognitive Science Fellowship</i>	2014 – 2018
Research Student , <i>Semmelweis University Medical School</i>	Summer 2016
Research Fellow , <i>Seoul National University Medical School Neuroscience Department</i>	Summer 2015
Research Intern , <i>National Institute of Neurological Disorders and Stroke NINDS/NIH</i>	Summer 2013

MOST RELEVANT COURSEWORK

Diverse Intelligences Summer Institute DISI Summer School	Summer 2022
Center for Brain, Minds, & Machines CBMM Summer School	Summer 2019
9.590 Lab in Psycholinguistics , with Prof. Ted Gibson, <i>Brain and Cognitive Sciences, MIT</i>	Spring 2019
9.660 Computational Cognitive Science , with Prof. Josh Tenenbaum, <i>Brain and Cognitive Sciences, MIT</i>	Fall 2019
Mathematical Tools for Neuroscience , with Prof. Jonathan Pillow <i>Princeton Neuroscience Institute</i>	Spring 2016
Memory & Cognition , with Prof. Ken Norman, <i>Princeton Neuroscience Institute</i>	Fall 2015

WORK EXPERIENCE

Paideia Institute , <i>Intern & Project Lead – NeuroLatin Initiative</i>	Summer 2016
Cancer Hospital Volunteer , <i>Seoul National University Hospital</i>	Summer 2015
Peer to Peer Tutor , <i>Aristotle Circle</i>	2011-2014
Neurosurgery Intern , <i>Bethesda Surgery Center</i>	Summer 2014

HONORS, AWARDS, & FELLOWSHIPS

Integrative Computational Neuroscience (ICoN) Fellowship	2024
Friends of McGovern PhD Fellowship	2023
Presidential Fellowship for incoming PhD students	2020
Streicker International Research and Culture Fellowship – fully funded summer research internship at Seoul National	2015
James Madison Program Fellowship – fully funded research project on Latin and Math/Verbal skill development	2015
Outstanding Work – Princeton Theatre Class of 2018	2015
National Merit Finalist and Scholarship Recipient	2014
Bausch & Lomb Honorary Science Award	2013
St. Michael's Book Award for Academic Achievement and Social Conscience	2013

SKILLS

Natural Languages: Spanish (proficient), Korean (reading/writing), Latin (proficient)
 Programming Languages: Matlab, Python, Java, JavaScript, R/RStudio, HTML/CSS

ACTIVITIES

Diversity, Equity, Inclusion & Justice (DEIJ) Officer BCS	Organizer, MIT Metaphysics Reading Group
Director, COL interdisciplinary campus-wide series, PU	Organizer, CAMINO Women's Art Society
Actor, Shakespeare Project for at-risk LGBT youth	Leader/Adviser, MIT Thomistic Institute
Inspiring Women in Philosophy Initiative, Scala	Peer Representative, Honor Committee
Graduate Philosophy of Science Group, PNI	Captain/Lawyer, Princeton Mock Trial
CogLunch Organizer, BCS	Founder, Nox Femina