

HALIE A. OLSON

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EMPLOYMENT

Postdoctoral Researcher 2023 –
McGovern Institute for Brain Research
Massachusetts Institute of Technology, Cambridge MA
PIs: Evelina Fedorenko and Rebecca Saxe

EDUCATION

Massachusetts Institute of Technology, Cambridge MA 2017 – 2023
Ph.D. in Neuroscience
Advisors: John Gabrieli and Rebecca Saxe
Dissertation: *Development of language in the minds and brains of children.*
Available at: <https://dspace.mit.edu/handle/1721.1/152561>

Harvard College, Cambridge MA 2013 – 2017
A.B. in Neurobiology (Mind, Brain, and Behavior track), *summa cum laude*
Honors Thesis Advisor: Charles Nelson
Undergraduate Thesis: *Early Biomarkers for Anxiety: An event-related potential study on emotional face processing and internalizing behaviors in three-year-olds.*

GRANTS & FUNDING

NIH F32 Ruth L. Kirschstein Postdoctoral Individual National Research Service Award (NRSA) 2025 – 2028
National Institutes of Health

NSF Graduate Research Fellowship (GRFP) 2018 – 2023
National Science Foundation

Garvey Graduate Student Fellowship 2019 – 2020
Brain & Cognitive Sciences, Massachusetts Institute of Technology

Singleton Fellowship 2017 – 2018, 2018 – 2019
Brain & Cognitive Sciences, Massachusetts Institute of Technology

Mary Gordon Roberts Mind/Brain/Behavior Summer Research Fellow (\$1700) 2016
Harvard College

Harvard College Research Program Grant (\$1700) 2016
Harvard College

National Merit Scholarship (\$2500) 2013

AWARDS

McGovern Travel & Technology Award (\$2500) 2024
MIT Open Data Prize (\$2500) 2023
MIT UROP Outstanding Mentor Award – Graduate Student 2023
Walle Nauta Award for Excellence in Undergraduate Teaching 2020
MIT Spot Award 2020, 2022
Sophia Freund Prize, for highest grade point average in graduating class (\$1000) 2017
Highest Honors in Neurobiology 2017
Phi Beta Kappa 2016
Detur Book Prize 2014
John Harvard Scholar 2013 – 14, 2014 – 15, 2015 – 16

PUBLICATIONS

*Joint first authorship; †Undergraduate mentee

PEER-REVIEWED PUBLICATIONS

***Olson, H. A.**, *Camacho, M. C., Abdurkhmonova, G., Ahmad, S., Chen, E. M., Chung, H., Di Lorenzo, R., Dineen, Á. T., Ganz, M., Licandro, R., Magnain, C., Marrus, N., McCormick, S. A., Rutter, T. M., Wagner, L., Woodruff Carr, K., Zöllei, L., §Vaughn, K. A., §Skak Madsen, K. (2025). Measuring and interpreting individual differences in fetal, infant, and toddler neurodevelopment. *Developmental Cognitive Neuroscience*, 101539. <https://doi.org/10.1016/j.dcn.2025.101539>

§ indicates shared senior authorship

*Margolis, E. T., *Nelson, P. M., Fiske, A., Champaud, J. L. Y., **Olson, H. A.**, Gomez, M. J. C., Dineen, Á. T., Bulgarelli, C., Troller-Renfree, S., V., Donald, K. A., Spann, M. N., Howell, B., Scheinost, D., Korom, M. (2025). Modality-Level Obstacles and Initiatives to Improve Representation in Fetal, Infant, and Toddler Neuroimaging Research Samples. *Developmental Cognitive Neuroscience*, 101505. <https://doi.org/10.1016/j.dcn.2024.101505>

***Olson, H. A.**, *Johnson, K. T., Nishith, S., Frosch, I. R., Gabrieli, J. D. E., & D'Mello, A. M. (2024). Personalized Neuroimaging Reveals the Impact of Children's Interests on Language Processing in the Brain. *Imaging Neuroscience*, 2: 1–14. https://doi.org/10.1162/imag_a_00339

Olson, H. A., Chen, E. M., Lydic, K. O., & Saxe, R. R. (2023). Left-hemisphere cortical language regions respond equally to observed dialogue and monologue. *Neurobiology of Language*, 4(4), 575-610. https://doi.org/10.1162/nol_a_00123

Treves, I. N., **Olson, H. A.**, Ozernov-Palchik, O., Li, C. E., Wang, K. L., Arechiga, X. M., Goldberg, S. B., & Gabrieli, J. D. E. (2023). At-home use of app-based mindfulness for children: A randomized active-controlled trial. *Mindfulness*, 14(11), 2728-2744. <https://doi.org/10.1007/s12671-023-02231-3>

Treves, I. N., Li, C. E., Wang, K. L., Ozernov-Palchik, O., **Olson, H. A.**, & Gabrieli, J. D. E. (2023). Mindfulness supports emotional resilience in children during the COVID-19 pandemic. *Plos one*, 18(7), e0278501. <https://doi.org/10.1371/journal.pone.0278501>

*Ozernov-Palchik, O., ***Olson, H. A.**, Arechiga, X. M., Kentala, H., †Solorio-Fielder, J. L., Wang, K. L., Torres, Y. C., Gardino, N. D., Dieffenbach, J. R., & Gabrieli, J. D. E. (2022). Implementing Remote Developmental Research: A Case Study of a Randomized Controlled Trial Language Intervention During COVID-19. *Frontiers in Psychology*, 12, 6163. <https://doi.org/10.3389/fpsyg.2021.734375>

Olson, H. & D'Mello, A. (2022). The social brain. In *Oxford Research Encyclopedia of Psychology*. <https://doi.org/10.1093/acrefore/9780190236557.013.781>

Romeo, R. R., Perrachione, T. K., **Olson, H. A.**, Halverson, K. K., Gabrieli, J. D. E., & Christodoulou, J. A. (2022). Socioeconomic dissociations in the neural and cognitive bases of reading disorders. *Developmental Cognitive Neuroscience*, 58, 101175. <https://doi.org/10.1016/j.dcn.2022.101175>

Richardson, H., Koster-Hale, J., Caselli, N., Magid, R., Benedict, R., **Olson, H.**, Pyers, J., & Saxe, R. (2020). Reduced neural selectivity for mental states in deaf children with delayed exposure to sign language. *Nature Communications*, 11(1), 1-13. <https://doi.org/10.1038/s41467-020-17004-y>

PREPRINTS & ADDITIONAL MANUSCRIPTS CURRENTLY UNDER REVIEW

***Olson, H.**, *Ozernov-Palchik, O., Arechiga, X., & Gabrieli, J. (*revise & resubmit*). Remote text-supplemented audiobook intervention supports children's explicit and incidental vocabulary learning.

Preprint: https://osf.io/preprints/psyarxiv/w89ea_v2 (2024)

†Santi, B., †Soza, M., Tuckute, G., Sathe, A., Fedorenko, E., & **Olson, H.** (submitted). An automated pipeline for efficiently generating standardized, child-friendly audiovisual stimuli.

Preprint: https://osf.io/preprints/psyarxiv/8gcn7_v1 (2025)

Olson, H. A., Johnson, K. T., Nishith, S., Gabrieli, J. D. E., & D’Mello, A. M. (submitted). Incorporating special interests to investigate the language system in autism: A feasibility pilot fMRI study.

Preprint: <https://www.biorxiv.org/content/10.1101/2025.04.04.647117v1> (2025)

Behm, L., Yates, T. S., Trach, J. E., Choi, D., Du, H., Osumah, C., Deen, B., Kosakowski, H. L., Chen, E. M., Kamps, F. S., **Olson, H. A.**, Ellis, C. T., Saxe, R., & Turk-Browne, N. B. (submitted). Data retention in awake infant fMRI: Lessons from more than 750 scanning sessions.

Preprint: <https://www.biorxiv.org/content/10.1101/2025.02.20.636736v1> (2025)

PUBLICLY SHARED DATASETS

Olson, H., Chen, E., Lydic, K., & Saxe, R. (2023). MRI data from 20 adults in response to videos of dialogue and monologue from Sesame Street. OpenNeuro. [Dataset] doi:10.18112/openneuro.ds004467.v1.0.0

PRESENTATIONS

INVITED TALKS

Olson, H. (2025). *Language in the developing brain.*

Center for Vital Longevity’s Science Luncheon Series, University of Texas at Dallas, Dallas, TX.

Olson, H. (2025). *Language in the developing mind and brain.*

Cognitive Brown Bag Talk Series, Dartmouth College, Hanover, NH.

Olson, H. (2025). *Language in the developing brain.*

Integrated Language Science and Technology Seminar, University of Pennsylvania, Philadelphia, PA.

Mankarious, L. & **Olson, H.** (2025). Hearing loss and language development: How the neural underpinnings can inform our practices.

Grand Rounds, Mass Eye and Ear, Boston, MA.

Olson, H. (2024). *Conversation in the brain.*

Consortium for Interacting Minds Talk Series, Dartmouth College, Hanover, NH.

Olson, H. (2024). *Language in the developing brain.*

Fetal-Neonatal Neuroimaging Developmental Science Center Lecture Series, Boston Children’s Hospital, Boston, MA.

Olson, H. (2024). *Language in the developing brain.*

Invited lab meeting speaker. Cameron Ellis Lab, Stanford University, Stanford, CA. (Virtual)

Olson, H. (2024). *Language in the developing brain.*

Invited speaker. Lloyd Institute, Trinity College, Dublin, Ireland.

Olson, H. (2024). *Effects of personal interest on the brain’s response to language.*

Invited lab meeting speaker. Tali Sharot Lab, University College London/MIT, Cambridge, MA. (Virtual)

Olson, H. (2024). *Language in the developing mind and brain.*

Language & Cognition Series, Harvard University, Cambridge, MA.

Olson, H. (2023). Conversation in the brain.
Simons Center for the Social Brain Lunch Series, MIT, Cambridge, MA.

Olson, H. (2023). Conversation in the toddler brain.
Invited lab meeting speaker. Hilary Richardson Lab, University of Edinburgh, Scotland, UK. (Virtual)

Olson, H. (2022). Using Sesame Street to study language processing: Combining experimental control with naturalistic neuroimaging.
Invited lab meeting speaker. Nick Turk-Browne Lab, Yale University, New Haven, CT.

Olson, H. (2022). Combining experimental control with naturalistic neuroimaging to study language processing.
Invited lab meeting speaker. Sigal Zilcha-Mano Lab, Haifa University, Israel.

Olson, H. (2022). Let's Talk about Trains: Stories about Special Interests Increase Language Network Activation in Children with and without ASD.
Yang-Tan Research Centers Retreat. MIT, Cambridge, MA.

Olson, H. (2022). Experimentally-controlled naturalistic neuroimaging: Using Sesame Street to examine language processing in the brain.
Invited lab meeting speaker. Casey Lew-Williams Lab, Princeton University, Princeton, NJ. (Virtual)

Olson, H. (2021). Let's talk about trains: Using special interests to study the language network in children.
Lightning Talk: Brains on Brains. MIT, Cambridge, MA. (Virtual)

Olson, H. (2021). Let's talk about trains: Using special interests to study the language network in children.
Short Talk: MIT Brain and Cognitive Sciences Interview Days. MIT, Cambridge, MA. (Virtual)

Olson, H. (2020). ASL and English in the brain: Examining effects of modality and delayed access to language.
Invited lab meeting speaker. Ev Fedorenko Lab, MIT, Cambridge, MA. (Virtual)

Olson, H. (2019). Individual differences in the neural basis of learning from language.
Invited lab meeting speaker. Ev Fedorenko Lab, MIT, Cambridge, MA.

OTHER TALKS & CONFERENCE SYMPOSIA

Olson, H. (2024). Using fMRI to Study Language Comprehension in Awake Toddlers. Symposium Title: Innovations in Toddler Functional MRI. *Flux Congress 2024. Baltimore, MD.*

- *Role: Chair, Presenter, Moderator*

Olson, H. (2023). Language-evoked activation in the brains of awake toddlers. Symposium Title: Unveiling the Neural Substrates of Early Language Development through Precision fMRI. *Society for the Neurobiology of Language Conference 2023. Marseille, France.*

- *Role: Presenter*

Ozernov-Palchik, O. & **Olson, H.** (2022). Implementing Remote Developmental Research: A Case Study of an RCT Language Intervention During COVID-19.
Implementation Science IS For All: A CSD Practice-Research Exchange Conference. Lightning Talk: Virtual Conference.

Olson, H. (2022). Experimentally-controlled naturalistic neuroimaging: Using Sesame Street to examine language processing in the brain.
Cog Lunch Seminar Series. MIT, Cambridge, MA.

Olson, H. (2021) Impact of delayed access to language on the brain's language network.

Cog Lunch Seminar Series. MIT, Cambridge, MA. (Virtual)

Olson, H. (2019) Neural correlates of infant statistical learning.
Cog Lunch Seminar Series. MIT, Cambridge, MA.

Olson, H. (2018) Audiovisual Synchrony Preference and Prefrontal Cortical Activity in Infants: an fNIRS study.
Cog Lunch Seminar Series. MIT, Cambridge, MA.

SELECTED POSTERS

*Joint first authorship; †Undergraduate or high schooler mentee

†Santi, B., **Olson, H.**, †Soza, M., †Seitz-Shewmon, S., Tuckute, G., Sathe, A., & Fedorenko, E. (2024). A Pipeline for Creating Standardized, Child-Friendly Audiovisual Language Stimuli for Neuroimaging Experiments. *Flux Congress 2024. Baltimore, MD.*

Olson, H., Chen, E., †Saba, S., & Saxe, R. (2023). Measuring language-evoked activation in the brains of awake toddlers using fMRI. *Fetal, Infant, & Toddler Neuroimaging Group Conference 2023. Santa Rosa, CA.*

Olson, H., Chen, E., Lydic, K., †Saba, S., & Saxe, R. (2022). Using fMRI to study language regions in a conversational context. *Society for the Neurobiology of Language Conference 2022. Philadelphia, PA.*
- Selected for Poster Slam.

*D'Mello, A. M., ***Olson, H. A.**, *Johnson, K. T., & Gabrieli, J. D. E. (2022). Personalized neuroimaging sheds insight into the role of motivation in language processing. *Society for the Neurobiology of Language Conference 2022. Philadelphia, PA.*

Olson, H., Chen, E., Lydic, K., †Saba, S., & Saxe, R. (2022). LIT: An awake fMRI language task for toddlers. *Fetal, Infant, & Toddler Neuroimaging Group Conference 2022. Paris, France.*

Olson, H., Chen, E., Lydic, K., †Saba, S., & Saxe, R. (2022). Experimentally-controlled and naturalistic neuroimaging task to study language development. *Poster: Flux Congress 2022. Paris, France.*

***Olson, H.**, *Ozernov-Palchik, O., Arechiga, X., Wang, K., Dieffenbach, J., & Gabrieli, J. D. E. (2022). A Remote Randomized Controlled Trial Audiobook Intervention. *International Mind, Brain, & Education Society Conference 2022. Poster: Montreal, Canada.*

Olson, H., Chen, E., †Ro, H., †Saba, S., Lydic, K., & Saxe, R. (2022). Validating child-friendly neuroimaging language localizer in adults. *42nd Annual Virtual Meeting of the Cognitive Science Society. Poster: Toronto, Canada.*

*D'Mello, A. M., ***Olson, H. A.**, *Johnson, K. T., & Gabrieli, J. D. E. (2022). Let's Talk about Trains: Personalized Stories about Special Interests Increase Language Network Activation in Children with and without ASD. *2022 International Meeting for Autism Research. Poster: Austin, TX.*

Olson, H., Powell, L., & Saxe, R. (2020). Measuring neural correlates of infant statistical learning using functional near-infrared spectroscopy. *42nd Annual Virtual Meeting of the Cognitive Science Society. Poster: Virtual conference due to COVID-19.*

Olson, H., Richardson, H., Koster-Hale, J., Caselli, N., Magid, R., Benedict, R., Pyers, J., & Saxe, R. (2020). Child and adult cortical selectivity for English and American Sign Language using fMRI. *Cognitive Neuroscience Society. Poster: Virtual conference due to COVID-19.*

Olson, H. (2017). Early Biomarkers for Anxiety: An event-related potential study on emotional face processing and internalizing behaviors in three-year-olds. *Mind, Brain, Behavior Poster Session. Poster: Harvard University, Cambridge, MA.*

Olson, H. (2017). Early Biomarkers for Anxiety: An event-related potential study on emotional face processing and internalizing behaviors in three-year-olds. *Neuroscience and Mental Health Poster Session. Poster: Harvard University, Cambridge, MA.*

TEACHING

Guest Lectures

Harvard University, "Stress & Cognition" Undergraduate Seminar

- Lecture title: "Stress and the developing brain" 2025

Georgia Institute of Technology, "Human Language Processing" Undergraduate Course

- Lecture title: "Language development and the brain" 2024, 2025

University of Texas at Dallas, "Brain and Language" Graduate Seminar

- Lecture title: "Language in the developing brain" 2024

Northeastern University, "Neuroscience of Language" Undergraduate Seminar

- Lecture title: "Language in the developing brain" 2023

MIT: Teaching Assistant

2019, 2020, 2021

- Course: "Introduction to Psychological Science"

MIT: BCS Teaching Development Fellow

2021 – 2022

Provided teaching support for graduate students in the Brain and Cognitive Sciences department. Organized check ins with Teaching Assistants, workshops, and other initiatives to develop teaching and mentorship skills, including:

- **Brain and Cognitive Sciences Teach Off**, MIT 2022
- **Effective Teaching Toolkit Workshop**, MIT 2022
- **Undergraduate Research Mentorship Workshop**, MIT 2021

MIT 9.00x: Course Developer

2019 - 2022

Developed an online three-lecture mini-module for MIT course 9.00: Introduction to Psychological Science through the MITx platform. Responsibilities include curriculum design, content development, and classroom implementation in Spring 2020 and Spring 2021.

MIT ESP: Volunteer Teacher

2017 - 2019

Organized and co-taught various courses for middle and high school students in the greater Boston community, including:

- "Babies and Brains" – MIT Splash (high school students, weekend course, Fall 2017 & 2018)
- "Babies and Brains" – MIT Spark (middle school students, weekend course, Spring 2018)
- "Memory and Mind Control: An Introduction to Neuroscience" – MIT Spring HSSP (middle school students, 7-session course, Spring 2018)
- "The Foundations of Intelligence: An Introduction to Neuroscience" – MIT Summer HSSP (middle and high school, 7-session course, Summer 2018)
- "Sensational Neuroscience" – MIT Summer HSSP (middle school, Summer 2019)

SERVICE & OUTREACH

Fetal Infant Toddler Neuroimaging Society (FIT'NG): Trainee Committee Co-Chair

2022 – 2024

Work with members of the Trainee Committee to plan monthly FIT'NG Together virtual events and annual conference events geared toward junior researchers. As chair, help to run trainee committee meetings and attend broader committee meetings. Select notable events include:

- **'Elephants in the Room' Think Tank**, FIT'NG Conference
- **'Modality Introduction' Talk Series**, FIT'NG Together virtual events
- **'Elephants in the Room' Talk Series**, FIT'NG Together virtual events

MIT: BCS Education Committee Member 2021 – 2022

Graduate student member of the Brain and Cognitive Sciences education committee.

BCS Cog Lunch Series: Organizer 2019 – 2020

Organized weekly Cog Lunch Series for members of the MIT Brain and Cognitive Sciences department. Coordinated transition to virtual talks in Summer 2020.

Tours of Neuroimaging Center: Neuroscientist Representative, MIT

Assisted with various tours of the neuroimaging facilities at the Martinos Imaging Center at MIT, including:

- Summer Workshop for High School Biology Teachers 2019
- Learning and the Brain Conference 2019, 2021, 2022, 2023, 2024

BCS Application Assistance Program: Mentor 2019 – 2022

Mentor applicants interested in MIT Brain and Cognitive Sciences PhD program. Correspond via email and webinar about various aspects of admissions process, including giving advice on CVs and personal statements.

Gabrieli and Saxe Labs: Summer Journal Club 2018 – 2020

Organized weekly journal club for undergraduate and high school interns.

BCS Big Sib Program: Mentor 2018 – 2019

Mentored undergraduates in the Brain and Cognitive Sciences department, including advising on academics and research.

Harvard College: Alumni Interviewer 2017 – 2022

Interviewed up to 10 high school seniors per admissions cycle.

OUTREACH TALKS

Olson, H. (2024). Language in the Developing Brain.

Invited speaker for the Commonwealth High School all-school assembly. Boston, MA.

Olson, H. (2024). Interests in your brain.

Talk for middle school students. MIT Museum, Cambridge, MA.

Olson, H. & Camacho, M. C. (2023). Introduction to Functional MRI.

Part of the Fetal Infant Toddler Neuroimaging Group's Modality Series, through FIT'NG Together. Virtual.

Olson, H. (2019). Imaging the brain to understand the mind.

Invited speaker for "Technology and the Mind" event for high school students. MIT Museum Teen Science Café, Cambridge, MA.

OTHER WRITING & SCIENCE COMMUNICATION

Stanford Psychology Podcast, Ep. 128

2024

Interviewed for a podcast based on my research related to interests and the brain.

<https://www.stanfordpsychologypodcast.com/episodes/episode/7bc7c631/128-halie-olson-how-our-brains-care-about-our-personal-interests>

Olson, H. Blog Post: "Can I rewire my brain?" 2019
Guest blog post for the "Ask the Brain" series in the McGovern Institute for Brain Research Newsletter.
<https://mcgovern.mit.edu/2019/09/06/can-i-rewire-my-brain/>

PRESS

MIT News, "Personal interests can influence how children's brains respond to language" 2025
<https://news.mit.edu/2025/personal-interests-can-influence-how-childrens-brains-respond-language-0107>

Spectrum News, "The benefits of special interests in autism" 2021
Covered findings from on-going research into using special interests to potentiate the language network in children with autism spectrum disorders.
<https://www.spectrumnews.org/features/deep-dive/the-benefits-of-special-interests-in-autism/>

Brain Scan, "Embracing neurodiversity to better understand autism" 2020
Quarterly newsletter by the McGovern Center for Brain Research at MIT which covered ongoing research on the ability of special interests to potentiate the language network in children with autism.
<https://mcgovern.mit.edu/2020/03/02/embracing-neurodiversity-to-better-understand-autism/>

PROFESSIONAL DEVELOPMENT, CERTIFICATIONS, & EXTERNAL COURSEWORK

Genetics & Neurobiology of Language Summer Course, Cold Spring Harbor Laboratory 2024
Ivy+ Teaching Transformation Summit 2021, 2022
Path to Professorship Workshop, MIT 2021
Kaufman Teaching Certificate Program, Teaching + Learning Lab, MIT 2021
Cambridge Writing Workshop: Member 2020 – 2023
Cognitive Neuroscience of Thought Summer Course, Neuroscience School of Advanced Studies 2019
fNIRS Training Workshop, Neurophotonics Center, Boston University 2018
Magnetic Resonance Imaging Certification, Athinoula A. Martinos Imaging Center, MIT 2018

SOCIETY MEMBERSHIPS

Current and Past Memberships: Fetal Infant and Toddler Neuroimaging Group (FIT'NG); Society for the Neurobiology of Language (SNL); Developmental Cognitive Neuroscience (Flux); International Congress of Infant Studies (ICIS); Cognitive Neuroscience Society (CNS); Cognitive Science Society (CogSci); International Society for Autism Research (INSAR)