

Gregory B. Cogan

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Duke University, Durham NC 27710
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Durham, NC 27701
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RESEARCH INTERESTS

Human electrophysiology (ECoG, μ ECoG, EEG, MEG), Speech perception, speech production, sensory-motor integration, neuronal speech representations, language processing, relation between neuroscience and cognition, epilepsy

CURRENT WORK

Director of Research

Duke Comprehensive Epilepsy Center, Duke University

2019-

Assistant Professor

Department of Neurosurgery, Duke University

2017-

PREVIOUS WORK

Postdoctoral Research Associate

Advisor: Jonathan Viventi

Department of Biomedical Engineering, Duke University

2015-2017

Postdoctoral Research Scientist

Advisor: Bijan Pesaran

Center for Neural Science, New York University

2011-2015

EDUCATION

PhD

Neuroscience and Cognitive Science

University of Maryland, College Park, USA

Advisor: David Poeppel

Thesis: *Temporal dynamics of MEG phase information during speech perception: Segmentation and neural communication using mutual information and phase locking*

2006-2011

MSc

Linguistics: Evolution of Language and Cognition

University of Edinburgh, Edinburgh, Scotland

Advisor: Alice Turk

Thesis: *Selective adaptation using locally reversed speech*

2005-2006

BA Honours

Psychology

Queen's University, Kingston, Canada

Advisor: Brian Butler

Thesis: *Word length effects in visual hemifields: A cross-language study*

1999-2004

PAPERS

Published

- Cogan, G. B.**, Iyer, A., Thesen, T., Friedman, D., Doyle, W. K., Devinsky, O., & Pesaran, B. (in press). *Manipulating store phonological input during verbal working memory*. **Nature Neuroscience**, 20, 279-286.
- Cogan, G. B.** (2016). *I see what you are saying*. **eLife** 5: e17693
- Cogan, G. B.**, Thesen, T., Carlson, C., Doyle, W. K., Devinsky, O., & Pesaran, B. (2014). *Sensory-motor transformations for speech occur bilaterally*. **Nature**, 507(7490), 94-98.
- Zion-Golumbic, E., **Cogan, G. B.**, Schroeder, C. E., & Poeppel, D. (2013). *Visual input enhances selective speech envelope tracking in auditory cortex at a "cocktail party"*. **Journal of Neuroscience**, 33(4), 1417-1426.
- Cogan, G. B.**, & Poeppel, D. (2011) *Mutual information analysis of neural coding of speech by low frequency MEG phase information*. **Journal of Neurophysiology**, 106(2), 554-563.
- Riley, J.A., & **Cogan, G.B.** (2007). *A Two Mechanism Model of Pure Word Deafness*. **University of Maryland Working Papers in Linguistics** 16th ed. A. Omaki, I. Ortega-Santos, J. Sprouse and M. Wagers, pp. 201-221. College Park, MD: UMWPI.

Submitted

- Teng, X., **Cogan, G. B.**, & Poeppel, D. *Speech fine structure contains critical temporal cues to support speech segmentation*. **BioRxiv**

In Prep

- Cogan, G. B.**, Thesen, T., Friedman, D., Doyle, W. K., Devinsky, O., & Pesaran, B. *Abstract and sensory-specific Sensory-Motor Speech processing*.
- Cogan, G. B.**, & Pesaran, B. *Sensory-Motor transformations and working memory*.
- Cogan, G. B.**, & Poeppel, D. *Multiple timescales for segmentation and communication in speech perception*.

BOOK CHAPTERS

- Poeppel, D., **Cogan G. B.**, Davidesco, I., & Flinker, A. (2018). *Speech Perception: a perspective from lateralisation, motorisation, and oscillation*. Oxford Handbook of Neurolinguistics: Oxford, UK.

UNPUBLISHED PRESENTATIONS

- Rahimpour, S, Haglund, M. M., Sinha, S. R., Muh, C. R., & **Cogan, G. B.** (2018). *Understanding word representations in the brain using ECoG*. Society for Neuroscience, San Diego. Nov 3-7.
- Caruso, V. C., **Cogan, G. B.**, Pearson, J. M., Overath, T., Haglund, M. M., Sinha, S. R., Muh, C. R., & Groh, J. M. (2018). *The neural representation of number-noun phrases: An ECoG study*. Society for Neuroscience, San Diego. Nov 3-7.

- Cogan, G.B.**, Pearson, J. M., Haglund, M. M., Sinha, S. R., & Overath, T. (2017). *High gamma neural responses disassociate between the acoustic and linguistic analysis of temporal speech structure*. Society for Neuroscience, Washington DC. Nov. 11-15.
- Cogan, G. B.**, Iyer, A., Thesen, T., Friedman, D., Doyle, W. K., Devinsky, O., & Pesaran, B. (2014). *Verbal working memory recruits distinct manipulation and maintenance neural processes*. Neurobiology of Language, Amsterdam, NL. Aug. 27-29.
- Cogan, G. B.**, Thesen, T., Friedman, D., Doyle, W. K., Devinsky, O., & Pesaran, B. (2013). *Low-frequency long range coherence during speech sensory motor processing*. Society for Neuroscience, San Diego, CA. Nov. 9-13.
- Cogan, G. B.**, Thesen, T., Friedman, D., Doyle, W. K., Devinsky, O., & Pesaran, B. (2013). *Low-frequency long range coherence during speech sensory motor processing*. Neurobiology of Language, San Diego, CA. Nov. 6-8.
- Cogan, G. B.**, Thesen, T., Carlson, C., Doyle, W. K., Devinsky, O., & Pesaran, B. (2012). *Sensory-motor classifications of speech: Selectivity at the interface between speech perception and production*. Society for Neuroscience, New Orleans, LA. Nov. 13-17.
- Cogan, G. B.**, Thesen, T., Carlson, C., Doyle, W. K., Devinsky, O., & Pesaran, B. (2011). *Speech sensory-motor transformations occur bilaterally in the dorsal stream*. Society for Neuroscience, Washington, DC. Nov. 12-16.
- Cogan, G. B.**, Thesen, T., Carlson, C., Doyle, W. K., Devinsky, O., & Pesaran, B. (2011). *Speech sensory-motor transformations occur bilaterally in the dorsal stream*. Neurobiology of Language, Washington, DC. Nov. 10-11.
- Figuroa, V., Howard, M., **Cogan, G. B.**, Ghitza, O., & Poeppel, D. (2010). Brain rhythms and speech rate: Theta band response to compressed speech. Cognitive Neuroscience Society, Montreal, PQ. April 17-20.
- Cogan, G. B.**, & Poeppel, D. (2009). *Mutual information analysis with magnetoencephalography: Sentence level speech*. Society for Neuroscience, Chicago, IL. Nov. 13-17.
- Cogan, G.B.**, Figuroa, V., Idsardi, W.H., & Poeppel, D. (2008). *Neural correlates of syllable structure: Differentiating between rhythm classes of languages*. Society for Neuroscience, Washington DC. Nov. 15-19.

INVITED TALKS

2019. *Sensory-motor transformations for speech*. University of Texas Health Science Center at Houston, February 28.
2017. *Using ECoG to study Speech*. Neurology Grand Rounds, Department of Neurology, Duke University, January 31.
2016. *Sensory-motor transformations for speech*. Epilepsy Research Symposium, Department of Neurology, Duke University. May 23.
2015. *Sensory-motor transformations for speech*. UCSF School of Medicine, UCSF. June 26.
2015. *Sensory-motor transformations for speech*. Department of Biomedical Engineering, Duke University. June 12.
2014. *Hemispheric asymmetries and temporal patterns in speech perception*. Brain Rhythms and Cortical Computations, NYU. Oct. 24.
2014. *Sensory-motor transformations for speech occur bilaterally*. Yale School of Medicine, April 28.

2013. *Sensory-motor transformations for speech*. Brain Rhythms and Cortical Computations, NYU. Sept. 20.
2013. *Sensory-motor transformations for speech occur bilaterally*. NYU Langone Medical Center, Feb. 20.
2012. *Mutual Information analyses of speech using MEG*. Biomag, Paris, France. Aug. 26-30.
2012. *Sensory-motor transformations for speech occur bilaterally*. NYU Langone Medical Center Retreat, April 18.
2011. *Mutual information analysis of speech: New insights in to speech perception*. Brain Rhythms and Cortical Computations, NYU. Nov. 18.
2009. *Mutual information analysis of speech*. Theta-Phase Workshop, NYU, Nov. 5-6.

SUPERVISION

- | | |
|---|------------------|
| Suseendrakumar Duraivel
PhD Student, Biomedical Engineering, Duke University
(Co-supervised with Jon Viventi) | 2018- |
| Seth Foster
Research Tech, Duke University | 2017- |
| Anna Thirakul
Research Tech, Duke University | 2017- |
| Robert Gramer
Medical Student | 2017-2018 |
| Sahana Giridharan
Undergraduate Volunteer | 2018-2019 |
| Sarah Hodges
Medical Student | 2018- |
| Shervin Rahimpour
Research Year, Residency, Duke University | 2017- |
| Andrew Bartuska
Undergrad Thesis Committee, Neuroscience with Distinction, Duke University | 2017 |

TEACHING EXPERIENCE

- 2011 Guest lecturer, Sensory-motor integration V80.0302 NYU
- 2009 Guest lecturer, Auditory Perception and Cognition G89.3392 NYU
- 2007 Teaching Assistant, Phonetics and Phonology LING 322 UMD
- 2007 Instructor, Introduction to Linguistics LING 200 UMD
- 2006 Teaching Assistant, Introduction to Linguistics LING 200 UMD

PROFESSIONAL EXPERIENCE

Ad-hoc reviewer: Annals of the New York Academy of Science, Brain and Language, Cerebral Cortex, Cognitive Neuropsychology, Current Biology, eLife, Frontiers in Neuroscience, Human Brain Mapping, Journal of Cognitive Neuroscience, Journal of Neurolinguistics, Journal of Neurophysiology, Journal of Neuroscience, Nature Communications, Nature Neuroscience,

NeuroCase, Neuron, PLoS Biology, Proceedings of the National Academy of Sciences, Scientific Reports

PROFESSIONAL ORGANIZATIONS

Society for Neuroscience, Society for the Neurobiology of Language

PROFESSIONAL SERVICE

2007-2009 NACS executive committee student representative UMD

2007 Mayfest Linguistics Conference organizer UMD

AWARDS

2006 NACS Scholarship UMD

2006 NACS Fellowship UMD