

# Matthew K. Leonard, Ph.D

## Curriculum Vitae

Assistant Adjunct Professor  
Department of Neurological Surgery  
Weill Institute for Neurosciences  
University of California, San Francisco  
675 Nelson Rising Lane, Room 535  
San Francisco, CA 94158  
[Matthew.Leonard@ucsf.edu](mailto:Matthew.Leonard@ucsf.edu)

[Google Scholar](#)  
[ORCID](#)

### EDUCATION

2006-2011	<b>Ph.D. Cognitive Science</b>	University of California, San Diego
2006-2008	<b>M.S. Cognitive Science</b>	University of California, San Diego
2002-2006	<b>B.A. Cognitive Science</b>	Occidental College ( <i>Magna Cum Laude, Honors</i> )

### POSITIONS

2016-Present	<b>Assistant Adjunct Professor</b>	UCSF
2012-2016	<b>Postdoctoral Fellow</b>	UCSF: Chang Lab
2011-2012	<b>Postdoctoral Scholar</b>	UCSD: Multimodal Imaging Laboratory
2005-2007	<b>Research Assistant</b>	Caltech: Adolphs Lab

### MISSION STATEMENT

To understand how the human brain transforms dynamic sensory signals like spoken, written, and signed words into meaningful, abstract, and rich linguistic representations. My research uses a wide array of invasive and non-invasive neurophysiological, behavioral, and neuromodulation techniques.

### PUBLICATIONS (\*Equally contributing authors)

**Leonard, M.K.**, Lucas, B., Blau, S., Corina, D.P.\*, & Chang, E.F.\* (2020). Cortical encoding of manual articulatory and linguistic features in sign language. *Current Biology*. 30. doi:10.1016/j.cub.2020.08.048.

Fox, N.P., **Leonard, M.K.**, Sjerps, M.J., & Chang, E.F. (2020). Transformation of a temporal speech cue to a spatial neural code in human auditory cortex. *eLife*. 2020;9:e53051. doi:10.7554/eLife.53051.

Llanos, F., McHaney, J.R., Schuerman, W.L. Yi, H.G., **Leonard, M.K.\***, & Chandrasekaran, B.\*. (2020). Non-invasive peripheral nerve stimulation selectively enhances speech category learning in adults. *npj Science of Learning*. 5, 12. doi:10.1038/s41539-020-0070-0

Ammanuel, B.S., Kleen, J.K., **Leonard, M.K.**, & Chang, E.F. (2020). Perspective: Interictal epileptiform discharges and the quality of human intracranial neurophysiology data. *Frontiers in Human Neuroscience*. 14, 44. doi:10.3389/fnhum.2020.00044

Desai, M., Sorrells, R., **Leonard, M.K.**, Chang, E.F., & Hamilton, L.S. (2020). Brain stimulation to help us understand music and language. *Frontiers for Young Minds*. 8:16. doi: 10.3389/frym.2020.00016.

- Moses, D.A., **Leonard, M.K.**, Makin, J.G., & Chang, E.F. (2019). Real-time decoding of question-and-answer speech dialogue using human cortical activity. *Nature Communications*, 10, 3096, doi:10.1038/s41467-019-10994-4.
- Yi, H.G.\* , **Leonard, M.K.\*** , & Chang, E.F. (2019). The encoding of speech sounds in the superior temporal gyrus. *Neuron*, 102(6):1096-1110. doi:10.1016/j.neuron.2019.04.023.
- Sellers, K.K.\* , Schuerman, W.L.\* , Dawes, H.E., Chang, E.F., & **Leonard, M.K.** (2019). Comparison of common artifact rejection methods applied to direct cortical and peripheral stimulation in human ECoG. In *2019 9th International IEEE/EMBS Conference on Neural Engineering (NER)* (pp. 77-80). IEEE.
- Khatami, F., **Leonard, M.K.**, & Chang, E.F. (2019). Spectral entropy describes human superior temporal gyrus responses to natural speech. In *2019 9th International IEEE/EMBS Conference on Neural Engineering (NER)*.
- Dichter, B., Breshears, J.D., **Leonard, M.K.**, & Chang, E.F. (2018). The control of vocal pitch in the human laryngeal motor cortex. *Cell*, 174(1):21-31.e9. doi:10.1016/j.cell.2018.05.016.
- Leonard, M.K.**, Desai, M., Hungate, D., Cai, R., Singhal, N.S., Knowlton, R.C., & Chang, E.F. (2018). Direct cortical stimulation of inferior frontal cortex disrupts both speech and music production in highly trained musicians. *Cognitive Neuropsychology*, doi:10.1080/02643294.2018.1472559.
- Conant, D.F., Bouchard, K.E., **Leonard, M.K.**, & Chang, E.F. (2018). Human sensorimotor cortex control of directly-measured vocal tract movements during vowel production. *Journal of Neuroscience*, 2382-17, doi:10.1523/JNEUROSCI.2382-17.2018.
- Moses, D.A., **Leonard, M.K.**, & Chang, E.F. (2018). Real-time classification of spoken sentences using human auditory evoked cortical activity. *Journal of Neural Engineering*, 15(3): 036005.
- Khoshkhoo, S.\* , **Leonard, M.K.\*** , Mesgarani, N., & Chang, E.F. (2018). Neural correlates of sine wave speech intelligibility in human frontal and temporal cortex. *Brain and Language*. doi:10.1016/j.bandl.2018.01.007.
- Martin, S., Mikutta, C., **Leonard, M.K.**, Hungate, D., Koelsch, S., Shamma, S., Chang, E.F., Millán, J.delR., Knight, R.T., & Pasley, B.N. (2017). Neural Encoding of Auditory Features during Music Perception and Imagery. *Cerebral Cortex*, <https://doi.org/10.1093/cercor/bhx277>.
- Chiong, W., **Leonard, M.K.**, & Chang, E.F. (2017). Neurosurgical Patients as Human Research Subjects: Ethical Considerations in Intracranial Electrophysiology Research. *Neurosurgery*, doi:10.1093/neuros/nyx361.
- Rao, V.R.\* , **Leonard, M.K.\*** , Kleen, J.K., Lucas, B.A., Mirro, E.A., & Chang, E.F. (2017). Chronic ambulatory electrocorticography from human speech cortex. *Neuroimage*, doi:10.1016/j.neuroimage.2017.04.008.
- Leonard, M.K.**, Baud, M.O.\* , Sjerps, M.J.\* , & Chang, E.F. (2016). Perceptual restoration of masked speech in human cortex. *Nature Communications*, 7:13619. doi:10.1038/ncomms13619.

- Leonard, M.K.\***, Cai, R.\*, Babiak, M.C.\*, Ren, A.\*, & Chang, E.F\*. (2016). The peri-Sylvian cortical networks underlying single word repetition revealed by electrocortical stimulation and direct neural recordings. *Brain and Language*. doi:10.1016/j.bandl.2016.06.001.
- Moses, D.A., Mesgarani, N., **Leonard, M.K.**, & Chang, E.F. (2016). Neural speech recognition: Continuous phoneme decoding using spatiotemporal representations of human cortical activity. *Journal of Neural Engineering*, 13(5), 056004.
- Leonard, M.K.** & Chang, E.F. (2016). Neural organization of speech perception: Intracranial Recording. In G. Hickok & S.L. Small (Eds.), *Neurobiology of Language*. Elsevier.
- Leonard, M.K.**, Bouchard, K.E., Tang, C., & Chang, E.F. (2015). Dynamic encoding of speech sequence probability in human temporal cortex. *The Journal of Neuroscience*, 35(18): 7203-7214.
- Cibelli, E., **Leonard, M.K.**, Johnson, K., & Chang, E.F. (2015). The influence of lexical statistics on temporal lobe cortical dynamics during spoken word listening. *Brain and Language*, 147, 66-75.
- Ferjan Ramirez, N., **Leonard, M.K.**, Torres, C., Halgren, E., & Mayberry, R.I. (2014). Neural language processing in adolescent first-language learners: Longitudinal case studies in American Sign Language. *Cerebral Cortex*, doi: 10.1093/cercor/bhu273.
- Bridgman, M.W., Brown, W.S., Spezio, M.L., **Leonard, M.K.**, Adolphs, R., & Paul, L.K. (2014). Facial emotion recognition in primary agenesis of the corpus callosum. *Journal of Neurodevelopmental Disorders*, 6(1), 32: 1-14.
- Leonard, M.K.** & Chang, E.F. (2014). Dynamic speech representations in the human temporal lobe. *Trends in Cognitive Sciences*, 18(9): 472-479.
- Leonard, M.K.\***, Ferjan Ramirez, N.\*, Torres, C., Hatrak, M., Mayberry, R.I., & Halgren, E. (2013). Neural stages of spoken, written, and signed word processing in second language learners. *Frontiers in Human Neuroscience*, 7:322. doi: 10.3389/fnhum.2013.00322.
- Chan, A.M., Dykstra, A.R., Jayaram, V., **Leonard, M.K.**, Travis, K.E., Gygi, G., Baker, J.M., Eskandar, E., Hochberg, L.R., Halgren, E., & Cash, S.S. (2013). Speech-specific tuning of neurons in human superior temporal gyrus. *Cerebral Cortex*, 24(10): 2679-2693.
- Ferjan Ramirez, N.\*, **Leonard, M.K.\***, Torres, C., Hatrak, M., Halgren, E., & Mayberry, R.I. (2013). Neural language processing in adolescent first-language learners. *Cerebral Cortex*, 24(10): 2772-2783.
- Travis, K.E., Curran, M., Torres, C., **Leonard, M.K.**, Brown, T.T., Dale, A.M., Elman, J.L., & Halgren, E. (2013). Age-related changes in tissue signal properties within cortical areas important for word understanding in 12-19 month old infants. *Cerebral Cortex*, 24(7): 1948-1955.
- Ferjan Ramirez, N.\*, **Leonard, M.K.\***, Halgren, E., & Mayberry, R.I. (2013) The neural correlates of childhood linguistic isolation. *Proceedings of the 37<sup>th</sup> Boston University Conference on Language Development*, 110-121.
- Travis, K.E.\* , **Leonard, M.K.\***, Chan, A.M.\* , Torres, C., Sizemore, M., Qu, Z., Eskandar, E., Dale, A.M., Elman, J.L., Cash, S.S., & Halgren, E. (2012). Independence of early speech processing from word meaning. *Cerebral Cortex*, 23(10): 2370-2379.

- Leonard, M.K.\***, Ferjan Ramirez, N.\*, Torres, C., Travis, K.E., Hatrak, M., Mayberry, R.I., & Halgren, E. (2012). Signed words in the congenitally deaf evoke typical late lexicosemantic responses with no early visual responses in left superior temporal cortex. *Journal of Neuroscience*, 32(28), 9700-9705.
- Leonard, M.K.**, Torres, C., Travis, K.E., Brown, T.T., Hagler, D.J., Dale, A.M., Elman, J.L., & Halgren, E. (2011). Language proficiency modulates the recruitment of non-classical language areas in bilinguals. *PLoS ONE*, 6(3): e18240. doi:10.1371/journal.pone.0018240.
- Travis, K.E., **Leonard, M.K.**, Brown, T.T., Hagler, D.J., Curran, M., Dale, A.M., Elman, J.L., & Halgren, E. (2011). Spatiotemporal neural dynamics of word understanding in 12- to 18-month-old infants. *Cerebral Cortex*, 21(8): 1832-1839.
- McDonald, C.R., Thesen, T., Carlson, C., Blumberg, M., Girard, H.M., Trongnetrpunya, A., Sherfey, J., Devinsky, J., Kuzniecky, R., Cash, S., **Leonard, M.K.**, Hagler, D.J., Dale, A.M., & Halgren, E. (2010). Multimodal imaging of repetition priming: Using fMRI, MEG, and intracranial EEG to reveal spatiotemporal profiles of word processing. *NeuroImage*, 53(2):707-717.
- Leonard, M.K.**, Brown, T.T., Travis, K.E., Gharapetian, L., Hagler, D.J., Dale, A.M., Elman, J.L., & Halgren, E. (2010). Spatiotemporal dynamics of bilingual word processing. *NeuroImage*, 49(4): 3286-3294.

## FUNDING

- 2017-2020 DARPA Targeted Neuroplasticity Training (TNT)  
(Role: Co-PI, human studies team leader; Lead PI: Xiaoqin Wang, Johns Hopkins)
- 2017-2022 NIH R01: Neural Systems in Auditory and Speech Categorization  
(Role: Co-I; PI: Bharath Chandrasekaran, UT Austin)
- 2013-2016 NIH Postdoctoral Fellowship (F32 NRSA)  
(Grant Number 1F32DC013486; “The Neurophysiological Dynamics of Lexical and Sub-Lexical Representations)
- 2012-2013 Kavli Institute for Brain and Mind Innovative Research Award  
(PI: R. Mayberry; “The development of neural language processing after childhood”)
- 2009-2012 National Science Foundation Research Grant (Award # 0924539)  
(PI: E. Halgren; “Spatiotemporal Dynamics of Word Processing in Bilinguals”)
- 2009-2010 Center for Research in Language Pre-doctoral Fellowship  
(NIH Training Grant: T-32 DC00041)
- 2008-2010 UCSD Chancellor’s Collaboratories Grant  
(Funding for four graduate students and one undergraduate research assistant)
- 2008-2009 Institute for Neural Computation Pre-doctoral Fellowship  
(NIH Training Grant: T-32 MH20002)
- 2008-2009 Kavli Institute for Brain and Mind Innovative Research Award  
(**PI: M.K. Leonard**; “The spatiotemporal dynamics of bilingual lexical representation”)
- 2007-2009 Kavli Institute for Brain and Mind Innovative Research Award  
(PI: K. Travis; “Joint attention and the neural correlates of word learning in human infants”)

## HONORS, AWARDS, FELLOWSHIPS

2013-2016	UCSF, NIH Postdoctoral Fellowship (NRSA F32)
2009-2010	UCSD, Center for Research in Language Pre-doctoral Fellowship
2008-2009	UCSD, Institute for Neural Computation Pre-doctoral Fellowship
2006-2008	UCSD, Glushko Fellowship
2006	Occidental College, Phi Beta Kappa
2006	Occidental College, College Honors, Honors in Cognitive Science
2004	Occidental College, Cox Award (given to two distinguished sophomores)

## TEACHING

2020	PSY 351	Neuropsychology, USF ( <i>Guest Lecture</i> )
2017	PSY 351	Neuropsychology, USF ( <i>Guest Lecture</i> )
2016	PSY 351	Neuropsychology, USF ( <i>Guest Lecture</i> )
2015	PSY 351	Neuropsychology, USF ( <i>Guest Lecture</i> )
2013	PSY 230	Developmental Psychology, UCSD ( <i>Guest Lecture</i> )
2012	HDP 120	Language Development, UCSD ( <i>Guest Lecture</i> )
2011	HDP 120	Language Development, UCSD ( <i>Guest Lecture</i> )
2008	CogSci 1	Introduction to Cognitive Science, UCSD ( <i>TA</i> )
2008	CogSci 107B	Systems Neuroscience, UCSD ( <i>TA</i> )
2007	CogSci 17	Neurobiology of Cognition, UCSD ( <i>TA</i> )
2007	CogSci 107C	Cognitive Neuroscience, UCSD ( <i>TA</i> )
2007	CogSci 107B	Systems Neuroscience, UCSD ( <i>TA</i> )

## TALKS

**Leonard, M.K.** (2020). Dynamic brain networks for the perception and organization of speech. *Invited talk at the UC Berkeley Linguistics Department Phorum, Berkeley.*

**Leonard, M.K.** (2020). Dynamic brain networks for the perception and organization of speech. *Invited talk at the European Workshop on Cognitive Neuropsychology, Bressanone, Italy.*

**Leonard, M.K.** (2020). Opportunities for human neurophysiological investigations of sleep. *Invited talk at the Chan Zuckerberg Biohub Sleep Symposium, San Francisco.*

**Leonard, M.K.** (2019). Dynamic brain networks for the perception and organization of speech. *Invited talk at Baylor College of Medicine CAMRI, Houston.*

Townsend, J.D., Yi, H.G., Beckett, A., **Leonard, M.K.**, Vu, A.T., Chang, E.F., & Feinberg, D.A. (2019). Non-invasive mapping of acoustic-phonetic speech features in human superior temporal gyrus using ultra-high field 7T fMRI. *Society for Neuroscience, Chicago.*

**Leonard, M.K.** (2019). Dynamic brain networks for speech comprehension. *Invited seminar at the Boston University Hearing Research Center.*

**Leonard, M.K.**, Chandrasekaran, B., Crone, N.E., & Howard, M.A. (2019). Vagus nerve stimulation to enhance foreign language learning. *DARPA Targeted Neuroplasticity Training (TNT) Annual Meeting, Boulder.*

- Leonard, M.K.** (2018). Dynamic brain networks for speech comprehension. *Invited colloquium speaker at the University of San Francisco Neuroscience program.*
- Yi, H.G., **Leonard, M.K.**, Chandrasekaran, B., Nourski, K.V., Howard III, M.A., & Chang, E.F. (2018). Learning novel speech sounds reorganizes acoustic representations in the human superior temporal gyrus. *Neurobiology of Language*, Quebec City.
- Leonard, M.K.**, Chandrasekaran, B., Crone, N.E., & Howard, M.A. (2018). Vagus nerve stimulation to enhance foreign language learning. *DARPA Targeted Neuroplasticity Training (TNT) Annual Meeting*, Denver.
- Leonard, M.K.** (2018). Neurotechnology for sleep and cooperative teaming enhancement. *Invited talk at the DARPA Biological Technologies Office*, Arlington.
- Leonard, M.K.** (2017). Dynamic brain networks supporting speech comprehension. *UCSF Neurosurgery Grand Rounds*, San Francisco.
- Fox, N.P., Sjerps, M.J., **Leonard, M.K.**, & Chang, E.F. (2017). Transforming continuous temporal cues to a categorical spatial code in human speech cortex, *Neurobiology of Language*, Baltimore.
- Leonard, M.K.**, Cai, R., Babiak, M.C., Ren, A., & Chang, E.F. (2016). The peri-Sylvian cortical networks underlying single word repetition revealed by electrocortical stimulation and direct neural recordings. *Sensorimotor Speech Processing Symposium*, University of Oxford, London.
- Dichter, B.K., **Leonard, M.K.**, & Chang, E.F. (2016). Cortical representation of vocal pitch production. *Sensorimotor Speech Processing Symposium*. University of Oxford, London.
- Sjerps, M.J., **Leonard, M.K.**, Hamilton, L.S., Johnson, K., & Chang, E.F. (2016). Hierarchical, acoustically-grounded, distinctive features are the dominant representations of perceived speech. *Neurobiology of Language*, London.
- Leonard, M.K.**, Baud, M.O., Sjerps, M.J., & Chang, E.F. (2016) Perceptual restoration of masked speech in human cortex. *11<sup>th</sup> Annual Hearing Symposium*, Center for Hearing Research, UC Irvine.
- Leonard, M.K.**, Baud, M.O., Sjerps, M.J., & Chang, E.F. (2016) Perceptual restoration of masked speech in human cortex. *Invited talk at the VA (Host: Marc Ettlinger)*, Department of Veterans Affairs, Martinez, CA.
- Davenport, T.S., Ferjan Ramirez, N., **Leonard, M.K.**, Mayberry, R.I., & Halgren, E. (2015). Neural effects of childhood language deprivation on picture processing: Insights from adolescent first-language learners. *Cognitive Science 2015*, Pasadena.
- Mayberry, R.I., Davenport, T.S., Ferjan Ramirez, N., **Leonard, M.K.**, & Halgren, E. (2014). Neural language processing in adolescent first-language learners: Case studies in American Sign Language. *39<sup>th</sup> Boston University Conference on Language Development*, Boston.
- Davenport, T.S., Ferjan Ramirez, N., **Leonard, M.K.**, Mayberry, R.I., & Halgren, E. (2014). Effects of childhood language deprivation on picture processing: Insights from adolescent first-language learners. *Neurobiology of Language*, Amsterdam.

Mayberry, R.I., Ferjan Ramirez, N., **Leonard, M.K.**, Davenport, T., & Halgren, E. (2014). Neural language processing in adolescent first-language learners: Case studies in American Sign Language. *38<sup>th</sup> Boston University Conference on Language Development*, Boston.

**Leonard, M.K.**, Bouchard, K.E., & Chang, E.F. (2013). Human superior temporal gyrus encoding of speech sequence probabilities. *The Journal of the Acoustical Society of America* 134.5 (2013): 4234-4234.

Cibelli, E., **Leonard, M.K.**, & Chang, E.F. (2013). Neural evidence for shared phonetic, phonological, and lexical processing of words and pseudowords. *The Journal of the Acoustical Society of America* 134.5 (2013): 4233-4233.

**Leonard, M.K.** & Travis K.E. (2011). Early and late stages of word processing across development, languages, and modalities. *Invited talk at The Neurosciences Institute (Host: Ani Patel)*, La Jolla, USA.

**Leonard, M.K.**, Brown, T.T., Travis, K.E., Gharapetian, L., Erhart, M., Halgren, E., & Elman, J. (2009). The spatiotemporal dynamics of bilingual lexico-semantic representations. *International Conference on Neurobilingualism*, Bangor, Wales.

**Leonard, M.K.** (2009). Neural substrates of bilingual lexico-semantic knowledge. *Cognitive Neuroscience Annual Spring Retreat*, La Jolla, USA.

**Leonard, M.K.**, Elman, J., Halgren, E., Brown, T.T., Travis, K.E., Mayberry, R. (2009). Neural substrates of bilingual lexico-semantic knowledge. *Kavli Institute for Brain and Mind Symposium*, La Jolla, USA.

## POSTERS (\*Equally contributing authors)

Desbordes, T., Lakretz, Y., Oquab, M., Chang, E.F., Dehaene, S., **Leonard, M.K.**, & King, J-R. (2020). Characterizing the spatiotemporal signatures of syntactic processing in ECoG. *Cognitive Science Society*, Toronto.

Moses, D.A., **Leonard, M.K.**, & Chang, E.F. (2018). Real-time decoding of question-and-answer speech dialogue using human cortical activity. *Society for Neuroscience*, San Diego.

Khatami, F., **Leonard, M.K.**, & Chang, E.F. (2018). Human superior temporal gyrus tracks spectral entropy during speech perception. *Society for Neuroscience*, San Diego.

Yi, H.G., **Leonard, M.K.**, Chandrasekaran, B., Nourski, K.V., Howard III, M.A., & Chang, E.F. (2018). Learning novel speech sounds reorganizes acoustic representations in the human superior temporal gyrus. *Society for Neuroscience*, San Diego.

Llanos, F., McHanney, J.R., **Leonard, M.K.**, Schuerman, W.L., Yi, H.G., & Chandrasekaran, B. (2018). Transcutaneous vagus nerve stimulation enhances non-native speech categorization. *Neurobiology of Language*, Quebec City.

Kleen, J., **Leonard, M.K.**, & Chang, E.F. (2017). Regional semantic encoding during auditory naming. *American Epilepsy Society*, Washington, DC.

- Khoshkhoo, S.\*, **Leonard, M.K.\***, Mesgarani, N., & Chang, E.F. (2017). Neural correlates of sine wave speech intelligibility in human frontal and temporal cortex. *Neurobiology of Language*, Baltimore.
- Khoshkhoo, S.\*, **Leonard, M.K.\***, Mesgarani, N., & Chang, E.F. (2017). Neural correlates of sine wave speech intelligibility in human frontal and temporal cortex. *Society for Neuroscience*, Washington, DC.
- Fox, N.P., Sjerps, M.J., **Leonard, M.K.**, & Chang, E.F. (2017) Transforming continuous temporal cues to a categorical spatial code in human speech cortex. *Advances and Perspectives in Auditory Neuroscience*, Washington, DC.
- Fox, N.P., Sjerps, M.J., **Leonard, M.K.**, & Chang, E.F. (2017) Transforming continuous temporal cues to a categorical spatial code in human speech cortex. *Society for Neuroscience*, Washington, DC.
- Fox, N.P., Sjerps, M.J., **Leonard, M.K.**, & Chang, E.F. (2017) Transforming continuous temporal cues to a categorical spatial code in human speech cortex. International Conference on Auditory Cortex, Banff, Canada.
- Leonard, M.K.**, Lucas, B., Blau, S., Corina, D.P., & Chang, E.F. (2016). Cortical encoding of sensorimotor and linguistic features in sign language. *Poster at Society for the Neurobiology of Language*, London.
- Leonard, M.K.**, Lucas, B., Blau, S., Corina, D.P., & Chang, E.F. (2016). Cortical encoding of sensorimotor and linguistic features in sign language. *Poster at Society for Neuroscience*, San Diego.
- Dichter, B., **Leonard, M.K.**, & Chang, E.F. (2016). Cortical representation of vocal pitch production. *Poster at Society for the Neurobiology of Language*, London.
- Moses, D.A., Mesgarani, N., **Leonard, M.K.**, & Chang, E.F. (2016). Neural speech recognition: Continuous phoneme decoding using spatiotemporal representations of human cortical activity. *Poster at Society for Neuroscience*, San Diego.
- Sjerps, M.J., **Leonard, M.K.**, Hamilton, L.S., & Chang, E.F. (2016). Hierarchically organized distinctive features are the dominant representations of perceived speech. *Poster at Society for the Neurobiology of Language*, London.
- Leonard, M.K.**, Sjerps, M., Baud, M., & Chang, E.F. (2015). Perceptual restoration of missing speech sounds in human auditory cortex. *Poster at Society for Neuroscience*, Chicago.
- Leonard, M.K.**, Sjerps, M., Baud, M., & Chang, E.F. (2015). Perceptual restoration of missing speech sounds in human auditory cortex. *Poster at Society for the Neurobiology of Language*, Chicago.
- Leonard, M.K.**, Baud, M., Sjerps, M., & Chang, E.F. (2015). Perceptual restoration of missing speech sounds in human auditory cortex. *The Assembly and Function of Neuronal Circuits*, Ascona.
- Leonard, M.K.**, Morrill, R., & Chang, E.F. (2014). Phoneme sequence probability encoding during speech production. *Poster at Neurobiology of Language*, Amsterdam.
- Davenport, T., Ferjan Ramirez, N., **Leonard, M.K.**, Halgren, E., & Mayberry, R.I. (2014). Effects of childhood language deprivation on picture processing: Insights from adolescent first-language learners. *Poster at Neurobiology of Language*, Amsterdam.



- Leonard, M.K.**, Bouchard, K., & Chang, E.F. (2013). Human superior temporal gyrus encoding of speech sequence probabilities. *Poster at the American Acoustical Society*, San Francisco.
- Cibelli, E., **Leonard, M.K.**, & Chang, E.F. (2013). Neural evidence for shared phonetic, phonological, and lexical processing of words and pseudowords. *Poster at the American Acoustical Society*, San Francisco.
- Leonard, M.K.**, Bouchard, K., & Chang, E.F. (2013). Speech statistics mediate the transformation from acoustic to word-level neural representations. *Poster at Society for Neuroscience*, San Diego.
- Cibelli, E., **Leonard, M.K.**, Johnson, K., & Chang, E.F. (2013). Word and pseudoword processing in the left ventral stream. *Poster at Neurobiology of Language*, San Diego.
- Ferjan Ramirez, N., **Leonard, M.K.**, Torres, C., Halgren, E., & Mayberry, R.I. (2013). Neural language processing in adolescent first-language learners: Longitudinal case studies in American Sign Language. *Poster at Neurobiology of Language*, San Diego.
- Corina, D., Blau, S., Lamarr, T., **Leonard, M.K.**, & Chang, E.F. (2013). Shared cortical representation of the hands and face in a Deaf Signer: Evidence from cortical stimulation mapping. *Poster at Neurobiology of Language*, San Diego.
- Leonard, M.K.**, Bouchard, K., & Chang, E.F. (2013). Human superior temporal gyrus encoding of speech sequence probabilities. *Poster at Neurobiology of Language*, San Diego.
- Corina, D., Blau, S., Lamarr, T., **Leonard, M.K.**, & Chang, E.F. (2013). Cortical stimulation mapping in a Deaf signer. *Poster at TISLR 11*, London.
- Leonard, M.K.\***, Travis, K.E.\* , Torres, C., Qu, Z., Sizemore, M., Dale, A.M., Elman, J.L., & Halgren, E. (2011). Neural Separation of Acousto-phonemic from Lexico-semantic Word Encoding. *Poster at Neurobiology of Language*, Annapolis.
- Travis, K.E.\* , **Leonard, M.K.\***, Torres, C., Qu, Z., Sizemore, M., Dale, A.M., Elman, J.L., & Halgren, E. (2011). Neural Separation of Acousto-phonemic from Lexico-semantic Word Encoding. *Poster at Society for Neuroscience*, Washington, D.C.
- Leonard, M.K.\***, Ferjan Ramirez, N.\* , Torres, C., Mayberry, R.I., & Halgren, E. (2011). Spatiotemporal neural dynamics of sign and speech processing. *Poster at Neurobiology of Language Conference 2011*, Annapolis.
- Leonard, M.K.\***, Ferjan Ramirez, N.\* , Torres, C., Mayberry, R.I., & Halgren, E. (2011). Spatiotemporal neural dynamics of sign and speech processing. *Poster at European Society for Cognitive Psychology 2011*, San Sebastian.
- Travis, K.E., **Leonard, M.K.**, Brown, T.T., Hagler, D.J., Dale, A.M., Elman, J.L., & Halgren, E. (2011). Investigating the spatiotemporal neural dynamics of lexico-semantic activity in 12-18 month old infants by combining magnetoencephalography and magnetic resonance imaging. *Poster at Annual Meeting of The Acoustical Society of America*, Seattle.

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