

## Curriculum Vitae: Kenneth I. Vaden Jr., Ph.D.

### Assistant Professor

Hearing Research Program  
Department of Otolaryngology - Head and Neck Surgery  
Medical University of South Carolina  
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### EDUCATION

**Ph.D. Psychology.** June 5, 2009. Department of Cognitive Sciences at the University of California, Irvine.  
Advisor: Dr. Greg Hickok. Dissertation title: *Phonological processes in speech perception*.

**M.A. Social Sciences.** September 14, 2005. University of California, Irvine.

**B.S. Psychology, Cognitive Science Minor.** December 31, 2001. University of North Carolina at Chapel Hill.  
Advisors: Dr. Peter C. Gordon (Psychology) and Dr. Jon W. Tolle (Statistics & Operations Research).

### RESEARCH INTEREST

I study how speech recognition in noise and hearing acuity change across the lifespan. My primary research focus is age-related speech recognition difficulties, especially how brain activity relates to the cognitive demands of acoustic noise. My other research interests include auditory perception, reading disability, development of statistical techniques and computational models, and characterizing age-related hearing loss.

### AWARDS AND HONORS

July 2014-2016 Age related changes in the central auditory system and speech recognition.  
NIH Extramural Clinical Loan Repayment Program. [NIDCD L30 DC012682]  
June 2014 Trainee Stipend: Intl Society for Magnetic Resonance in Medicine. Charleston, SC.  
October 2013 Student Scholarship: Aging and Speech Conference. Bloomington, IN.  
July 2012-2014 Age related changes in the central auditory system and speech recognition.  
NIH Extramural Clinical Loan Repayment Program. [NIDCD L30 DC012682]  
October 2012 Travel Award: Society for the Neurobiology of Language. San Sebastian, Spain.  
October 2011 Student Scholarship: Aging and Speech Conference. Bloomington, IN.  
Fall 2005 Regents' Pre-Dissertation Research Fellowship. School of Social Sciences, UCI.  
Summer 2005 Summer Research Fellowship. Department of Cognitive Sciences, UCI.  
Spring 2004 Jack I. Yellott Scholar Award. Department of Cognitive Sciences, UCI.  
Fall 2003 School of Social Sciences Graduate Fellowship. Dept. of Cognitive Sciences, UCI.  
Spring 2000 Undergraduate Cognitive Science Research Grant. Psychology Dept., UNC.  
Summer 2000 Undergraduate Cognitive Science Research Grant. Psychology Dept., UNC.  
Summer 2000 Cognitive Science Summer Research Workshop. Indiana University, Bloomington.  
UNC Dean's List: Fall 1998, Fall 1999, Spring 2000, Spring 2001.

### PUBLICATIONS

Mayo PG, Vaden KI, Matthews LJ, Dubno JR (2025). Feature-based audiogram value estimator (FAVE): Estimating numerical thresholds from scanned images of handwritten audiograms. *Journal of Medical Systems*, 49(1):32.

Guo F, Zucker D, Vaden KI, Curhan S, Dubno JR, Molin W (2024). New quadratic discriminant analysis algorithms for correlated audiometric data. *Statistics in Medicine*, 43(29), 5473-5483.

Eckert MA, Matthews LJ, Vaden KI, Dubno JR (2024). Executive function associations with audibility-adjusted speech perception in noise. *Journal of Speech, Language, and Hearing Research*, 67(12), 4811-4828.

Yang C, Langworthy B, Curhan S, Vaden KI, Curhan G, Dubno JR, Wang M (2024). Soft classification and regression analysis of audiometric phenotypes of age-related hearing loss. *Biometrics*, 80(1): ujae013.

Eckert MA, Vaden KI, Paracchini S (2024). Auditory cortex asymmetry associations with individual differences in language and cognition. *Brain Sciences*, 14(1).

Vaden KI, Neely S, Harris S, Dubno JR (2023). Metabolic and sensory components of age-related hearing loss: Associations with distortion- and reflection-based otoacoustic emissions. *Trends in Hearing*, 27.

Lewis MA, Schulte J, Matthews LM, Vaden KI, Steves CJ, Williams FMK, Schulte BA, Dubno JR, Steel KP (2023). Accurate phenotypic classification and exome sequencing allow identification of novel genes and variants associated with adult-onset hearing loss. *PLOS Genetics*, 19(11): e1011058.

Teubner-Rhodes S, Luu A, Dunterman R, Vaden K (2023). Evidence for conflict monitoring during speech recognition in noise. *Psychonomic Bulletin & Review*.

Joshi F, Wang JZ, Vaden KI, Eckert MA (2023). Deep learning classification of reading disability with regional brain volume features. *NeuroImage*, 273.

Eberhard JE, Matthews LJ, Vaden KI, Dubno JR, Eckert MA (2023). Probability distributions for associations between cognitive screening and pure-tone thresholds in older adults. *Ear and Hearing*, 44(3), 641-654.

Vaden KI, Teubner-Rhodes S, Ahlstrom JB, Dubno JR, Eckert MA (2022). Evidence for cortical adjustments to perceptual decision criteria during word recognition in noise. *NeuroImage*. 253:119042.

Vaden KI, Eckert MA, Matthews LJ, Schmiedt RA, Dubno JR (2022). Metabolic and sensory components of age-related hearing loss. *Journal of the Association for Research in Otolaryngology*, 23, 253-272.

Eckert MA, Vaden KI, Iuricich F, Dyslexia Data Consortium (2022). Cortical asymmetries at different spatial hierarchies relate to phonological processing ability. *PLOS Biology*, 20(4): e3001591.

Eckert MA, Teubner-Rhodes S, Vaden KI, Ahlstrom JB, McClaskey CM, Dubno JR (2022). Unique patterns of hearing loss and cognition in older adults' neural responses to listening difficulty cues during speech recognition. *Brain Structure and Function*, 227(1): 203-218.

Eckert MA, Harris K, Lang H, Lewis M, Schmiedt RA, Schulte BA, Steel K, Vaden KI, Dubno JR (2021). Translational and interdisciplinary insights into presbycusis: a multidimensional disease. *Hearing Research*, 402: 108109.

Vaden KI, Gebregziabher M, Eckert MA (2020). Fully synthetic neuroimaging data for replication and exploration. *NeuroImage*, 223: 117284.

Eckert MA, Iuricich R, Vaden KI, Glaze B (2020). The topology of pediatric structural asymmetries in language-related cortex. *Symmetry*, 12(11):1809.

Vaden KI, Eckert MA, Dubno JR, Harris KC (2020). Cingulo-opercular adaptive control for younger and older adults during a challenging gap detection task. *Journal of Neuroscience Research*, 98(4), 680-691.

Fultz S, Vaden KI, Rasetshwane DM, Kopun JG, Neely ST, Dubno JR. (2020). Age effects on cochlear reflectance in adults. *Ear and Hearing*, 41(2), 451-460.

Wilmskoetter J, Fridriksson J, Gleichgerricht E, Stark BC, Delgaizo J, Hickok G, Vaden KI, Hillis AE, Rorden C, Bonilha L (2019). Neuroanatomical structures supporting lexical diversity, sophistication, and phonological word features during discourse. *NeuroImage: Clinical*, 24, 101961.

Eckert MA, Vaden KI, Dubno JR. (2019). Age-related hearing loss associations with changes in brain morphology. *Trends in Hearing*, 23:2331216519857267, 1-14.

Eckert MA, Vaden KI, Dyslexia Data Consortium. (2019). A deformation-based approach for characterizing brain asymmetries at different spatial scales of resolution. *Journal of Neuroscience Methods*, 322(1), 1-9.

Eckert MA, Vaden KI, Roberts DR, Castles A. (2019). A pericallosal lipoma case with evidence of surface dyslexia. *Cortex*, 117, 414-416.

- Bologna WJ, Vaden KI, Ahlstrom JA, Dubno JR. (2019). Age effects on the contributions of envelope and periodicity cues to recognition of interrupted speech in quiet and with a competing talker. *Journal of the Acoustical Society of America Express Letters*, 145(3), EL173.
- Vaden KI, Matthews LJ, Dubno JR. (2018). Transient-evoked otoacoustic emissions reflect audiometric patterns of age-related hearing loss. *Trends in Hearing*, 22, 1-13.
- Bologna WJ, Vaden KI, Ahlstrom JA, Dubno JR. (2018). Age effects on perceptual organization of speech: contributions of glimpsing, phonemic restoration, and speech segregation. *Journal of the Acoustical Society of America*, 144(1), 267-281.
- Eckert MA, Vaden KI, Gebregziabher M, Dyslexia Data Consortium. (2018). Reading profiles in multi-site data with missingness. *Frontiers in Psychology*, 9, 644.
- Chiarello C, Vaden KI, Eckert MA. (2018). Orthographic influence on spoken word identification: Behavioral and fMRI evidence. *Neuropsychologia*, 111, 103-111.
- Harris KC, Vaden KI, McClaskey C, Dias J, Dubno JR. (2018). Complementary metrics of human auditory nerve function derived from compound action potentials. *Journal of Neurophysiology*, 119(3), 1019-1028.
- Vaden KI, Teubner-Rhodes S, Ahlstrom JB, Dubno JR, Eckert MA. (2017). Cingulo-opercular activity affects incidental memory encoding for speech in noise. *NeuroImage*, 157, 381-387.
- Vaden KI, Matthews LJ, Eckert MA, Dubno JR (2017). Longitudinal changes in audiometric phenotypes of age-related hearing loss. *Journal of the Association for Research in Otolaryngology*, 18(2), 371-385.
- Eckert MA, Vaden KI, Teubner-Rhodes S, Bentzley BS. (2017). A novel communication value task demonstrates evidence of response bias in cases with presbycusis. *Scientific Reports*, 16512.
- Eckert MA, Vaden KI, Maxwell A, Cute SL, Gebregziabher M, Berninger V, Dyslexia Data Consortium. (2017). Common brain structure findings across children with varied reading disability profiles. *Scientific Reports*, 6009.
- Teubner-Rhodes S, Vaden KI, Dubno JR, Eckert MA. (2017). Cognitive persistence: Development and validation of a novel measure from the Wisconsin Card Sorting Test. *Neuropsychologia*, 102, 95-108.
- Gebregziabher M, Eckert MA, Vaden KI, Johnson TD, Lawson AB (2017) Methods for the analysis of missing data in fMRI studies. *Journal of Biometrics and Biostatistics*, 8, 335.
- Venezia JH, Vaden KI, Rong F, Maddox D, Saberi K, Hickok G. (2017). Auditory, visual and audiovisual speech processing streams in superior temporal sulcus. *Frontiers in Human Neuroscience*, 11, 174.
- Vaden KI, Kuchinsky SE, Ahlstrom JB, Teubner-Rhodes SE, Dubno JR, Eckert MA. (2016). Cingulo-opercular function during word recognition in noise for older adults with hearing loss. *Experimental Aging Research*, 42(1), 67-82.
- Eckert MA, Teubner-Rhodes S, Vaden KI. (2016). Is listening in noise worth it? The Neurobiology of Speech Recognition in Challenging Listening Conditions. *Ear and Hearing*, 37: 101S-110S.\*
- Teubner-Rhodes S, Vaden KI, Cute SL, Yeatman JD, Dougherty RF, Eckert MA (2016). Aging-resilient associations between the arcuate fasciculus and vocabulary knowledge: microstructure or morphology? *Journal of Neuroscience*, 36(27), 7210-7222.
- Eckert MA, Berninger VW, Vaden KI, Gebregziabher M, Tsu L. (2016). Gray matter features of reading disability: a combined meta-analytic and direct analysis approach. *eNeuro*, 3(1).
- Eckert MA, Berninger VW, Hoeft F, Vaden KI, Dyslexia Data Consortium. (2016). A case of bilateral perisylvian syndrome with reading disability. *Cortex*, 76, 121-124.
- Kuchinsky SE, Vaden KI, Ahlstrom JB, Cute SL, Humes LE, Dubno JR, Eckert MA. (2016). Task-related vigilance during word recognition in noise for older adults with hearing loss. *Experimental Aging Research*, 42,

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- Vaden KI, Kuchinsky SE, Ahlstrom JB, Dubno JR, Eckert MA. (2015). Cortical activity predicts which older adults recognize speech in noise and when. *Journal of Neuroscience*, 35(9), 3929-3937.
- Harris KC, Vaden KI, Dubno JR. (2014). Auditory-evoked cortical activity: contribution of brain noise, phase locking, and spectral power. *Journal of Basic and Clinical Physiology and Pharmacology*, 25(3), 277-284.
- Vaden KI, Kuchinsky SE, Cute SL, Ahlstrom JB, Dubno JR, Eckert MA. (2013). The cingulo-opercular network provides word recognition benefit. *Journal of Neuroscience*, 33(48), 18979-18986.
- Eckert MA, Kuchinsky SE, Vaden KI, Cute SL, Spampinato MV, Dubno JR. (2013). White matter hyperintensities predict low frequency hearing in older adults. *Journal of the Association for Research in Otolaryngology*, 14(3), 425-433.
- Kuchinsky SE, Ahlstrom JB, Vaden KI, Cute SL, Humes LE, Dubno JR, Eckert MA. (2013). Pupil size varies with word listening and response selection difficulty in older adults with hearing loss. *Psychophysiology*, 50(1), 23-34.
- Vaden KI, Gebregziabher M, Kuchinsky SE, Eckert MA. (2012). Multiple imputation of missing fMRI data in whole brain analysis. *NeuroImage*, 60(3), 1843-1855.
- Eckert MA, Cute SL, Vaden KI, Kuchinsky SE, Dubno JR. (2012). Auditory cortex signs of age-related hearing loss. *Journal of the Association for Research in Otolaryngology*, 13(5), 703-713.
- Kuchinsky SE, Vaden KI, Keren NI, Harris KC, Ahlstrom JB, Dubno JR, Eckert MA. (2012). Word intelligibility and age predict visual cortex activity during word listening. *Cerebral Cortex*, 22(6), 1360-1371.
- Isenberg A, Vaden KI, Saberi K, Muftuler LT, Hickok GS. (2012). Functionally distinct regions for spatial processing and sensory motor integration in the planum temporale. *Human Brain Mapping*, 33(10), 2453-2463.
- Vaden KI, Kuchinsky SE, Keren NI, Harris KC, Ahlstrom JB, Dubno JR, Eckert MA. (2011). Inferior frontal sensitivity to common speech sounds is amplified by increasing word intelligibility. *Neuropsychologia*, 49(13), 3563-3572.
- Vaden KI, Piquado T, Hickok G. (2011). Sublexical properties of spoken words modulate activity in Broca's area but not superior temporal cortex: implications for models of speech recognition. *Journal of Cognitive Neuroscience*, 23(10), 2665-2674.
- Vaden KI, Muftuler LT, Hickok G. (2010). Phonological repetition-suppression in bilateral superior temporal sulci. *NeuroImage*, 49(1), 1018-1023.
- NIH My Bibliography: <https://www.ncbi.nlm.nih.gov/sites/myncbi/kenneth.vaden.1/bibliography/47273242/public>

## **CONFERENCE ABSTRACTS AND PAPERS**

- Vaden, KI, McClaskey, CM, Dubno, JR, Eckert, MA (2025). Memory encoding for middle-age and older adults during word identification in noise. Association for Research in Otolaryngology Midwinter Meeting. Orlando, FL.
- Luo L, Phatangare R, Wang J, Vaden K, Eckert M (2024). Deep learning methods to evaluate privacy and quality of skull-stripped brain images. International Conference on Brain Informatics. Bangkok, Thailand.
- Vaden KI, Neely ST, Harris SE, Dubno JR (2024). Associations of distortion- and reflection-based otoacoustic emissions with metabolic and sensory components of age-related hearing loss. Association for Research in Otolaryngology Midwinter Meeting. Anaheim, CA.
- McClaskey CM, Kuchinsky SE, Vaden KI, Cute SL, Ahlstrom JB, Humes LE, Dubno JR, Eckert MA (2024). Speech-perception training for older adults with hearing loss increases the consistency of cortical activity during a speech-in-noise task. Association for Research in Otolaryngology Midwinter Meeting. Anaheim, CA.
- Ahmed S, Vaden KI, Dubno JR, Drögemöller B (2024). Incorporating novel audiogram classification strategies to identify genes and pathways involved in subtype components of age-related hearing loss. Association for Research in Otolaryngology Midwinter Meeting. Anaheim, CA.
- Bhandari R, Phatangare RV, Eckert MA, Vaden KI, Wang JZ (2023). Dyslexia Data Consortium repository: A

data sharing and delivery platform for research. International Conference on Brain Informatics. Hoboken, NJ.

Ahmed S, Vaden KI, Dubno JR, Drögemöller B. (2023). The incorporation of novel audiogram classification strategies to identify genes and pathways involved in age-related hearing loss. International Congress of Human Genetics. Cape Town, South Africa.

McClaskey C, Vaden KI, Dubno JR, Harris K, Eckert MA (2023). Auditory nerve function predicts voicing errors in noise by older adults. Association for Research in Otolaryngology Midwinter Meeting. Orlando, FL.

Eckert MA, McClaskey C, Vaden KI, Dias J, Dubno J, Harris K (2023). Differential presbycusis phenotype associations with cortical gray matter volume. Association for Research in Otolaryngology Midwinter Meeting. Orlando, FL.

Luu A, Dunterman R, Teubner-Rhodes S, Vaden KI (2022). Conflict triggers improvements in understanding speech in noise. The annual conference on Architectures and Mechanisms for Language Processing, York, England.

Ahmed S, Vaden KI, Dubno JR, Drögemöller B (2022). The incorporation of novel audiogram classification strategies to identify genes and pathways involved in age-related hearing loss. Bellucci Symposium on Hearing Research. Omaha, NE. *Virtual Format*.

Teubner-Rhodes S, Luu A, Vaden KI (2021). Evidence for conflict monitoring during speech recognition in noise. Psychonomic Society. *Virtual Format*.

Vaden KI (2021). Age-related auditory declines and perceptual decision-making for speech recognition in noise. Symposium: *Age-related plasticity changes in the central auditory system*. Association for Research in Otolaryngology Mid-Winter Meeting. Orlando, FL. *Virtual format*.

Teubner-Rhodes S, Vaden KI (2020). Audiovisual conflict triggers an inhibitory control system to facilitate speech recognition in noise. Society for the Neurobiology of Language, Philadelphia, PA. *Virtual format*.

Vaden KI, Gebregziabher M, Eckert MA (2020). Fully synthetic neuroimaging data for replication and exploration. Organization for Human Brain Mapping, Montreal, Quebec, Canada. *Virtual format*.

Vaden KI, Teubner-Rhodes S, Ahlstrom JB, Dubno JR, Eckert MA (2019). Perceptual decision-making during speech recognition in noise by middle-aged and older adults. Aging and Speech Communication Conference, Sand Key Beach, FL.

Vaden KI, Teubner-Rhodes S, Ahlstrom JB, Dubno JR, Eckert MA (2018). Cortical activity and incidental memory for speech in noise. Association for Research in Otolaryngology Mid-Winter Meeting. San Diego, CA.

Vaden KI, Eckert MA, Dubno JR, Harris KC (2017). Adaptive control for gap detection across the lifespan. Aging and Speech Communication Conference, Tampa, FL.

Teubner-Rhodes S, Vaden KI, Matthews L., Dubno JR, Eckert MA (2017). Persisting through the cocktail party: speech recognition in healthy aging. Association for Psychological Science, Boston, MA.

Bologna WJ, Vaden KI, Ahlstrom JB, Dubno JR (2017). Recognition of Interrupted Speech with Competing Talkers: Effects of Age, Envelope Cues, and Cognitive Abilities.

Chiarello CC, Vaden KI, Eckert MA (2016). Orthographic influence on spoken word identification: Behavioral and fMRI evidence. Neurobiology of Language Conference, London, UK.

Vaden KI, Eckert MA, Matthews LJ, Dubno JR. (2016) Metabolic Presbycusis: Longitudinal Changes in Hearing for Middle-Aged and Older Adults. Association for Research in Otolaryngology Mid-Winter Meeting. San Diego, CA.

Vaden KI, Teubner-Rhodes SE, Ahlstrom JB, Dubno JR, Eckert MA (2015). Cingulo-opercular interactions with auditory cortex activity during speech recognition in noise. Neurobiology of Language Conference, Chicago, IL.

Harris KC, Vaden KI, Dubno JR (2015). Contributions of Brain Noise, Phase Locking, and Spectral Power to Auditory-Evoked Cortical Activity. Association for Research in Otolaryngology. Mid-Winter Meeting. Baltimore, MD.

Teubner-Rhodes S, Vaden KI, Ahlstrom JB, Dubno JR, Eckert MA (2015). The role of cognitive abilities in

understanding speech in noise by older adults. Association for Research in Otolaryngology Mid-Winter Meeting. Baltimore, MD.

Vaden KI, Kuchinsky SE, Cute SL, Ahlstrom JB, Dubno JR, Eckert MA (2014). The cingulo-opercular network supports word recognition in noise for older adults. *Nanosymposium: Attentional Networks in Humans*. Society for Neuroscience, Washington, DC.

Vaden KI, Kuchinsky SE, Ahlstrom JB, Dubno JR, Eckert MA (2014). Cingulo-opercular network support for word recognition by older adults. International Society for Magnetic Resonance in Medicine. Charleston, SC.

Vaden KI, Kuchinsky SE, Cute SL, Ahlstrom JB, Dubno JR, Eckert MA (2013). Engagement of the cingulo-opercular system enhances future word recognition. Neurobiology of Language Conference, San Diego, CA.

Vaden KI, Kuchinsky SE, Cute SL, Ahlstrom JB, Dubno JR, Eckert MA (2013). Cingulo-opercular activity predicts subsequent word recognition. Aging and Speech Communication Conference, Bloomington, IN.

Kuchinsky SE, Vaden KI, Cute SL, Ahlstrom JB, Dubno JR, Eckert MA (2013). Word recognition benefit from attention systems in older adults with hearing loss. Aging Research Day, Charleston, SC; Association for Research in Otolaryngology Mid-Winter Meeting, Baltimore, MD.

Vaden KI, Kuchinsky SE, Cute SL, Ahlstrom JB, Dubno JR, Eckert MA (2012). Anterior insula and frontal operculum support word recognition in younger and older adults. Society for Neuroscience, New Orleans, LA.

Vaden KI, Gebregziabher M, Kuchinsky SE, Eckert MA (2012). Multiple imputation toolkit for group level fMRI statistics. 13th Annual Frontiers in Neuroscience Research Day: Neurodegenerative Disorders, Seabrook, SC.

Vaden KI, Kuchinsky SE, Cute SL, Ahlstrom JB, Dubno JR, Eckert MA (2011). An fMRI study of age-related changes in sustained attention and word recognition. Aging and Speech Communication Conference, Bloomington, IN.

Keren NI, Gregory NC, Vaden KI, Vazey EM, Morgan PS, Hinson VA, Taheri S, Granholm AC, Aston-Jones G, Eckert MA (2011). The human locus coeruleus in healthy individuals and neurodegenerative disease: Post-mortem magnetic resonance imaging and histology. Society for Neuroscience, Washington, DC.

Vaden KI, Keren NI, Harris KC, Ahlstrom JB, Dubno JR, Eckert MA (2010). Sublexical processing in left inferior frontal gyrus depends on word intelligibility. Society for Neuroscience, San Diego, CA; Neurobiology of Language Conference, San Diego, CA.

Kuchinsky SE, Vaden KI, Keren NI, Harris KC, Ahlstrom JB, Dubno JR, Eckert MA (2010). Word intelligibility and age predict visual cortex activity during word listening. Society for Neuroscience, San Diego, CA.

Eckert M, Kuchinsky S, Keren N, Conner C, Vaden KI, Ahlstrom JB, Dubno JR (2010). Sustained inferior frontal activation predicts age-related changes in word recognition. Human Brain Mapping, Barcelona, Spain.

Vaden KI, Hickok G (2009). Sublexical and lexical processing in temporal and frontal lobes during word recognition. Society for Neuroscience, Chicago, IL.

Isenberg A, Vaden KI, Saberi K, Hickok G. (2009). Functional organization of the planum temporale for spatial versus sensory-motor processes. Society for Neuroscience, Chicago, IL.

Vaden KI, Hickok G (2009). Adaptation to phonologically similar words in bilateral Superior Temporal Sulci. Auditory Cognitive Neuroscience Society, Tucson, AZ; Cognitive Neuroscience Society, San Francisco, CA.

Fillmore P, Vaden KI, Isenberg A, Gage N, Hickok G (2007). Hemispheric asymmetries in speech perception: stimulus-driven versus task-specific effects. Cognitive Neuroscience Society, New York, NY.

## **COLLOQUIA AND TALKS**

Vaden KI (2024, Oct 7). Brain activity for listening. Quarterly Research Webinar: Hearing Health Foundation.

Vaden KI (2024, Oct 2). Studies on frontal cortex function during speech recognition in noise. Presentation: Hearing Science Interest Group, MUSC, Charleston, SC.

Vaden KI (2022, Sep 9). Age-related differences in the most interesting part of the brain. Virtual presentation: Symposium for Cognitive Auditory Neuroscience 2022: Aging from the lens of auditory cognitive neuroscience.

Carnegie Mellon University, Pittsburgh, PA.

Vaden KI (2021, Mar 1). Fully synthetic brain image datasets: a new tool for open science. Presentation: Department of Public Health Sciences, MUSC, Charleston, SC.

Vaden KI (2016, Apr 8). Age-related differences in adaptive control for speech recognition in noise. Presentation: Hearing Research Center, Boston University, Boston, MA.

Vaden KI (2016, Jan 1). Group fMRI parametric statistics: observed elevated type I error rates. Presentation: Nuts & Bolts, Center for Biomedical Imaging, MUSC, Charleston, SC.

Vaden KI (2015, Mar 24). Example representational similarity analysis. Presentation: Nuts & Bolts, Center for Biomedical Imaging, MUSC, Charleston, SC.

Harris KC, Vaden KI, Teubner-Rhodes S (2015, Jan 27). Automated fiber quantification analysis. Presentation: Nuts & Bolts, Center for Biomedical Imaging, MUSC, Charleston, SC.

Vaden KI (2014, Feb 6). Frontal control and compensation during speech recognition. Presentation: Hearing Science Interest Group, MUSC, Charleston, SC.

Vaden KI. (2014, Jan 31). The frontal adaptive control network benefits word recognition. Presentation: Department of Neurosciences Postdoctoral Seminar Series, MUSC, Charleston, SC.

Vaden KI (2014, Jan 17). Connectivity at the trial level: extent of network engagement. Presentation: Brain Connectivity Study Group, MUSC, Charleston, SC.

Vaden KI (2012, Oct 3). Speech recognition in challenging conditions: adaptive neural systems and aging. Presentation: Hearing Science Interest Group, MUSC, Charleston, SC.

Vaden KI (2010, Nov 5). Inferior frontal activity during speech recognition is modulated by intelligibility. Presentation: Perry V. Halushka MUSC 2010 Student Research Day, MUSC, Charleston, SC.

Vaden KI (2010, Nov 3). Speech recognition in older and younger adults: proposed studies and preliminary data. Presentation: Hearing Science Interest Group, MUSC, Charleston, SC.

Vaden KI (2010, Mar 11). Sublexical phonological processing in word recognition. Presentation: Center for Cognitive Neuroscience, MUSC, Charleston, SC.

Vaden KI (2009, May 13). Phonological speech activity in cortex: similarity, density, and phonotactic frequency. Presentation: Seventh Annual Graduate Student Conference: Social Choice and Behavioral Sciences. Institute for Mathematical Behavioral Sciences, UCI, Irvine, CA.

Vaden KI (2009, Feb 11). Phonological processing in bilateral superior temporal lobes. Presentation: Psychobabble Psycholinguistics Seminar. Department of Linguistics, UCLA, Los Angeles, CA.

Vaden KI (2008, Dec 5). Adaptation to phonologically similar words in bilateral superior temporal sulci. Presentation: Brain Research Imaging Center, Univ. of Chicago, Chicago, IL.

Vaden KI (2008, May 21). A computational approach to cognitive neuroscience of speech. Presentation: Sixth Annual Graduate Student Conference: Social Choice and Behavioral Sciences. Institute for Mathematical Behavioral Sciences, UCI, Irvine, CA.

Vaden KI (2005, May 26). Density and phonotactic effects in the serial recall of pseudowords. Second year talk. Department of Cognitive Sciences, UCI, Irvine, CA.

Vaden KI (2005, May 23). Density and phonotactic effects in the serial recall of pseudowords. Presentation: Third Annual Graduate Student Conference: Social Choice and Behavioral Sciences. Institute for Mathematical Behavioral Sciences, UCI, Irvine, CA.

Bensmaïa SJ, Vaden KI, Halpin HR (2002, Feb). How and what does SINBAD learn: improving on an unsupervised error backpropagating network. Poster: 2002 NC Cognition Conference, Chapel Hill, NC.

Halpin HR, Vaden KI (2000, April). Topic segmentation: computational algorithms and psycholinguistic theory. Presentation: Celebration of Undergraduate Research at UNC, Chapel Hill, NC.

Halpin HR, Vaden KI (2000, May). Topic segmentation research summary. Presentation: Smallwood Foundation, Office Undergraduate Research at UNC, Chapel Hill, NC.

## **BOOK CHAPTERS**

Kuchinsky SE, Vaden KI (2020). Aging, hearing loss, and listening effort: imaging studies of the aging listener. Chapter 10. Book: *The Aging Auditory System*. Eds. Helfer, KS, Bartlett, EL, Popper, AN, Fay, RR. Springer. Series: Springer Handbook of Auditory Research. <https://doi.org/10.1007/978-3-030-49367-7>

## **NON-PEER REVIEWED ARTICLES**

Vaden KI, Dubno JR (2011). Easy listening: Longer words can optimize speech recognition. *Audiology Today*, 5, 82-83.

## **RESEARCH EXPERIENCE AND ACADEMIC APPOINTMENTS**

10/2023 – present	Assistant Professor Department of Otolaryngology, MUSC, Charleston, SC.
01/2015 – 10/2023	Research Assistant Professor Department of Otolaryngology, MUSC, Charleston, SC.
01/2010 – 12/2015	Postdoctoral Scholar, supervised by Dr. Mark A. Eckert. Department of Otolaryngology, MUSC, Charleston, SC.
06/2009 – 12/2009	Assistant Specialist, Lab for Cognitive Brain Research, Dr. Greg S. Hickok. Department of Cognitive Sciences, UC Irvine
06/2003 – 06/2009	Graduate student researcher, advised by Dr. Greg S. Hickok. Department of Cognitive Sciences, UC Irvine
01/2002 – 03/2002	Programmed experiment for Dr. Jack R. Aiello, Dr. Brent J. Burke. Psychology Department, Rutgers University
05/2001 – 07/2002	Independent Research with Dr. Sliman J. Bensmaïa. Psychology Department, UNC Chapel Hill
05/2001 – 06/2001	Research assistant for Dr. Josephine M. Johns. Psychiatry Department, UNC Chapel Hill
01/2001 – 05/2001	Independent Research with Dr. Jon W. Tolle. Operations Research Department, UNC Chapel Hill
06/2000 – 05/2001	Independent Research with Dr. Peter C. Gordon. Psychology Department, UNC Chapel Hill

## **GRANTS**

9/2024 – 7/2029	Role: PI. NIH/NIDCD R01-DC021423: <i>Aging neural systems and communication difficulties</i> .
7/2017 - 6/2021	Role: Subaward PI. [PI: Teubner-Rhodes, Auburn University]. NIH/NIDCD R21-DC016375: <i>Cognitive and neurobiological factors of age-related speech recognition declines</i> .
7/2015 - 12/2017	Role: PI. Hearing Health Foundation, Emerging Research Grant: <i>Adaptive control of auditory representations in listeners with central auditory processing disorder</i> .

## **PROFESSIONAL AFFILIATIONS**

Association for Research in Otolaryngology: 2015 - 2025  
Society for Neuroscience Member: 2009 - 2025  
Society for the Neurobiology of Language Member: 2009 - 2025  
Cognitive Neuroscience Society Member: 2003, 2009  
International Society for Magnetic Resonance in Medicine Member: 2014



## **PROFESSIONAL SERVICE**

Jan 2025    Reviews: Organization for Human Brain Mapping, Brisbane, Australia  
Nov 2024    Judge: MUSC Perry V Halushka Research Day. Charleston, SC  
June 2024    Reviews: Society for the Neurobiology of Language, Brisbane, Australia  
May 2024    Grant reviews: Hearing Health Foundation  
June 2023    Reviews: Society for the Neurobiology of Language, Marseille, France  
May 2023    Grant reviews: Hearing Health Foundation  
Nov 2022    Judge: MUSC Perry V Halushka Research Day. Charleston, SC  
July 2022    Reviews: Society for the Neurobiology of Language, Philadelphia, PA  
May 2022 – *Present*: Review Editor at Frontiers in Neuroscience  
May 2022    Grant reviews: Hearing Health Foundation  
Nov 2021    Judge: MUSC Perry V Halushka Research Day. Charleston, SC (Virtual Edition)  
June 2021    Reviews: Society for the Neurobiology of Language. (Virtual Edition)  
May 2021    Grant reviews: Hearing Health Foundation  
July 2020    Reviews: Society for the Neurobiology of Language, Philadelphia, PA. (Virtual Edition)  
May 2020    Grant reviews: Hearing Health Foundation  
Nov 2019    Judge: MUSC Perry V Halushka Research Day. Charleston, SC  
May 2019    Reviews: Society for the Neurobiology of Language, Helsinki, FI  
Nov 2018    Judge: MUSC Perry V Halushka Research Day. Charleston, SC  
Jul 2018    Invited peer review: Biotechnology and Biological Sciences Research Council (UK).  
May 2018    Reviews: Society for the Neurobiology of Language, Québec City, CA  
Mar 2018    Invited peer review: Medical Research Council (UK)  
Mar 2018    Grant reviews: Hearing Health Foundation  
Nov 2017    Judge: MUSC Perry V Halushka Research Day. Charleston, SC  
Jun 2017    Reviews: Society for the Neurobiology of Language, Baltimore, MD  
Mar 2017    Grant reviews: Hearing Health Foundation  
2016 –17    Center for Biomedical Imaging Lecture Series Planning Committee, MUSC  
Sep 2016    Reviews: Architectures and Mechanisms for Language Processing 2016, Bilbao, ES  
Aug 2016    Reviews: Society for the Neurobiology of Language, London, UK  
Mar 2016    Grant reviews: Hearing Health Foundation  
Oct 2015    Judge: MUSC Perry V Halushka Research Day. Charleston, SC  
Oct 2015    Reviews: Society for the Neurobiology of Language, Chicago, IL  
Aug 2014    Reviews: Society for the Neurobiology of Language, Amsterdam, NL  
Nov 2013    Reviews: Society for the Neurobiology of Language, San Diego, CA  
Apr 2013    Invited session chair: Frontiers in Neuroscience Meeting, Charleston, SC  
Aug 2012    Invited session chair: Joint Statistical Meetings, San Diego, CA

## **AD HOC REVIEWER**

Aperture Neuro (2021-22), Auditory Perception & Cognition (2020), Brain & Language (2011-12, 2023-24), Brain Research (2012), Cerebral Cortex (2012, 2014, 2020-21), Cortex (2021); Ear & Hearing (2018, 2020-22, 2024-25), ENeuro (2017-18), Frontiers in Systems Neuroscience (2013), Frontiers in Psychology (2022-24), Hearing Research (2018, 2020-21), Human Brain Mapping (2011-12), Imaging Neuroscience (2023), International Journal of Audiology (2020-21), Journal of the Acoustical Society of America (2019), JASA-Express Letters (2015), Journal of Cognitive Neuroscience (2009, 2013-17), Journal of Speech, Language, and Hearing Research (2024), Journal of Neurolinguistics (2023), Journal of Neuroscience (2015, 2017), Journal of Psychophysiology (2014), Language and Cognitive Processes (2010), Language, Cognition and Neuroscience (2019, 2024), Memory & Cognition (2014-15), Neurobiology of Aging (2017-18, 2025),

Neurobiology of Language (2020, 2022), NeuroImage (2013-20, 2023), Neuroscience Letters (2012, 2018), Neuropsychologia (2013, 2016-17), Otology & Neurotology (2014), Psychonomic Bulletin & Review (2010, 2015-16, 2024), Trends in Hearing (2024-25).

Web of Science / Publons reviewer profile: <https://www.webofscience.com/wos/author/rid/AAB-8387-2019>

## **TEACHING EXPERIENCE**

**Neuroscience guest lectures:** NSCS 735 Module: Neural Plasticity in Sensory Systems. Department of Neuroscience, MUSC. 11/2015, 10/2017, 10/2018.

**Biostatistics guest lectures:** *BMTRY 702: Advanced ANOVA & Regression. Module: fMRI data, analysis, and multiple imputation.* Div. Biostatistics and Epidemiology, MUSC. 12/2011, 12/2012, 6/2014, 12/2015, 12/2018 12/2020, 12/2022, 7/2024.

### **Teaching Associate from 2008 Spring - 2009 Spring (4 quarters) at UC Irvine**

Social Science 3A: Computer-Based Research in Social Sciences. Presented the weekly lectures and administered course (120-300 students, 4 teaching assistants).

### **Teaching Assistantships at UC Irvine**

2008 Winter	Linguistics 10: Introduction to Phonology	Dr. Griffith
2007 Fall	Psychology 120P: Personality Theory	Dr. Byde
2007 Spring	Psychology 9B: Introduction to Psychology	Dr. Kean
2007 Winter	Linguistics 10: Introduction to Phonology	Dr. Tranel
2006 Fall	Psychology 9A: Psychology Fundamentals	Dr. Hoffman
2006 Spring	Linguistics 10: Introduction to Phonology	Dr. Kim
2005 Fall	Psychology 9A: Psychology Fundamentals	Dr. Hoffman
2005 Winter	Psychology 9B: Psychology Fundamentals	Dr. D'zMura
2004 Fall	Psychology 9A: Psychology Fundamentals	Dr. Hoffman
2004 Winter	Social Science 10B: Intro. Statistics	Dr. Noviello
2003 Fall	Psychology 160: Cognitive Neuroscience	Dr. Hickok

### **Student Mentorship and Research Supervision**

2023–present	Pranav Patel, MUSC Medical Student; neuroimaging study on age and hearing loss.
2019–2023	Sneha Thota, College of Charleston; senior thesis on aging and speech perception.
2019–2022	Jacqueline Eberhard, College of Charleston; publication on cognition and presbycusis.
2013-2014	Storm Harvey, SC Governor's School; first place thesis project at SCJAS.
2003–2009	Co-supervised 7 undergraduate RAs with Dr. Hickok: Ernesto García Orduña, Corica Rodgers, Victoria Smith, Sherri Abassi, Yasmine Omidvar, Camille Basilio, Colleen Cochran.

## **CODE-BASED GENERATIVE ART**

In addition to my scientific work, I am an internationally exhibited artist and create artwork with code. Each unique algorithm generates iterative artwork that is designed for prints or web-based platforms (e.g., Art Blocks, fx Hash). I often compose art systems with the R Statistics language, one of my primary research tools.

## **ART EXHIBITIONS**

*Opposite Equal Reaction* (R code). April 2025. Humanitas 2025 Annual Juried Art & Literary Publication. Medical University of South Carolina, Charleston, SC.

*Rift* (*p5.js*). Feb 13-14, 2025. NFT Paris 2025. Paris, France. <https://nftparis.xyz>

*Harvest Moon* (R code). May 24 to June 9, 2024. Piccolo Spoleto Juried Art Exhibition. City Gallery, Charleston, SC. <http://www.piccolospoleto.com>

*Rift (p5.js)*. May 24, 2024. Berlin Blockchain Week 2024. w3.hub, Berlin, Germany. <https://lu.ma/onchainartday>

*Harvest Moon* (R code). April 2024. Humanitas 2024 Annual Juried Art Exhibit and Literary Publication. Medical University of South Carolina, Charleston, SC. [www.musc.edu/humanitas](http://www.musc.edu/humanitas)

*Black Path* (R code). April 2023. Humanitas 2023 Annual Juried Art Exhibit and Literary Publication. Medical University of South Carolina, Charleston, SC. [www.musc.edu/humanitas](http://www.musc.edu/humanitas)

*Time Reversal Paradox* (R code). March – May 2023. Piccolo Spoleto Juried Art Exhibition. City Gallery, Charleston, SC. <http://www.piccolospoleto.com>

*Inksapes: Algorithmic Dreams*. March 18, 2023. Generative + Video Art collaboration with Swickie Fang. OtherBlock: Supercharged LA. Los Angeles, CA. <https://www.otherblock.io>

*Twelve Works*. Dec 1, 2022 – June 15, 2023. Artist Residency. Serendipity Labs, Mount Pleasant, SC

*Places of Conflict, Iteration* (R code). May 27 – June 12, 2022. Piccolo Spoleto Juried Art Exhibition. City Gallery, Charleston, SC. <http://www.piccolospoleto.com>

*Magnetic Field Reconnection Event* (R code). March 2022. Humanitas 2022 Annual Juried Art Exhibit and Literary Publication. Medical University of South Carolina, Charleston, SC. [www.musc.edu/humanitas](http://www.musc.edu/humanitas)

*Momentary* (R code). April 2021. Humanitas 2021 Annual Juried Art Exhibit and Literary Publication. Medical University of South Carolina, Charleston, SC. [www.musc.edu/humanitas](http://www.musc.edu/humanitas)

*Moth*. Common buckeye (*Junonia Coenia*). April 2020. Humanitas 2020 Annual Juried Art Exhibit and Literary Publication. Medical University of South Carolina, Charleston, SC. [www.musc.edu/humanitas](http://www.musc.edu/humanitas)

*Sleepy Snake*. April 20, 2016. A coiled snake laying on fallen tree branches in the Walterboro Wildlife Sanctuary. Humanitas 2016 Annual Juried Art Exhibit and Literary Publication. MUSC, Charleston, SC. [www.musc.edu/humanitas](http://www.musc.edu/humanitas)

*Untitled*. April 23, 2015. Dark fishing spider (*Dolomedes Tenebrosus*) hunting tadpoles at the Caw Caw Interpretive Center, Ravenel, SC. Humanitas 2015 Annual Juried Art Exhibit and Literary Publication. Medical University of South Carolina, Charleston, SC. [www.musc.edu/humanitas](http://www.musc.edu/humanitas)

*Peaceful*. May 27 to June 10, 2011. Piccolo Spoleto 27th Annual Juried Art Exhibition. Calm water in the Charleston harbor. Visitor Center, Charleston, SC. [www.piccolospoleto.com](http://www.piccolospoleto.com)



*Opposite Equal Reaction*

## **ART ON THE BLOCKCHAIN**

7/4/2024	<i>Rift</i> . KodaDot
12/6/2023	<i>Escapism</i> . FxHash
7/18/2023	<i>Headwinds</i> . FxHash
11/14/2022	<i>Snake Alley</i> . FxHash
9/30/2022	<i>Thalassophobia</i> . FxHash
5/4/2022	<i>Super User</i> . Quantum.art curated art collection
4/20/2022	<i>A360 Mindsets</i> . Commissioned work for the A360 Summit in Los Angeles.
12/15/2021	<i>Worlds</i> . Flamingo DAO Flutter curated collection <a href="https://flutter.flamingodao.xyz/project/0">https://flutter.flamingodao.xyz/project/0</a>
8/20/2021	<i>A Human in Times of Chaos</i> . OpenSea collection
7/2021	<i>Views from the Apocalypse</i> . OpenSea collection

## **ART GALLERY REPRESENTATION**

February 2021 – present      Anew Gallery. Tiomkin 16, Tel Aviv

<https://anew.gallery>

## **ART PUBLICATIONS**

*Places of Conflict, Iteration*. Art featured in: Anarchist Review of Books, Issue #4 Summer/Fall 2022.

*Whisper and Roar* (R code). Art featured in fundraiser for Drawdown DAO. November 2022.

## **ART COLLECTIONS**

*CRUNCH* (R code). Charleston, SC. February 2024. Juried Art Selection by *Arts in Healing* for the MUSC Foundation collection, Medical University of South Carolina.

*Pathos* (R code). Charleston, SC. November 2021. Juried Selection by *Arts in Healing* for the Medical University of South Carolina Community Gallery.

*Gorgeous Gorges (Photograph)*. Waterfalls and fall colors at the Gorges State Park, NC. April 20, 2016. Selected by the Humanitas 2016 Jury for exhibit and inclusion in the permanent MUSC Art Collection. [www.musc.edu/humanitas](http://www.musc.edu/humanitas)