

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

Research 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*. [\[Link\]](#)

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 and Dr. Jon W. Tolle.

RESEARCH INTEREST

I study the cognitive neuroscience of speech recognition, including interactions with attention systems and age-related changes in the brain. I am specifically interested in neural systems that support speech recognition in challenging listening conditions and how these systems change with age and hearing loss. This research involves a combination of neuroimaging, behavioral, and computational methods.

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; Renewed]
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

Vaden, KI, Matthews, LJ, Eckert, MA, Dubno, JR (2016). Longitudinal changes in audiometric phenotypes of age-related hearing loss. *Journal of the Association for Research in Otolaryngology*, 18(2), 371-385.

Venezia, JH, Vaden Jr., KI, Rong, F, Maddox, D, Saberi, K, Hickok, G. (In Press). Auditory, Visual and Audiovisual Speech Processing Streams in Superior Temporal Sulcus. *Front Hum Neurosci*, 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. *Exp Aging Res*, 42, 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*.

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. *Exp Aging Res*, 42, 50-66.

Vaden, KI, Kuchinsky, SE, Ahlstrom, JB, Dubno, JR, Eckert, MA. (2015). Cortical activity predicts which older adults recognize speech in noise and when. *J Neurosci*, 35(9), 3929-3937.

Harris, KC, Vaden, KI, Dubno, JR. (2014). Auditory-evoked cortical activity: contribution of brain noise, phase locking, and spectral power. *J Basic Clin Physiol Pharmacol*, 25(3), 267-316.

Vaden, KI, Kuchinsky, SE, Cute, SL, Ahlstrom, JB, Dubno, JR, Eckert, MA. (2013). The cingulo-opercular network provides word recognition benefit. *J Neurosci*, 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. *J Assoc Res Otolaryngol*, 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 Assoc Res Otolaryngol*, 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. *Cereb 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. *Hum Brain Mapp*, 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.

* This supplement issue received the *Editors' Special Recognition Award as an Outstanding Supplement Contribution* from the Editorial Board of *Ear and Hearing* at the American Auditory Society 2017 meeting.

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. *J Cogn Neurosci*, 23(10), 2665-2674.

CONFERENCE ABSTRACTS

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. Fifth Biennial 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. Fourth Biennial 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, J, Dubno, J. (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.

Okada, K, Vaden, KI, Hickok, G. (2006). fMRI studies of lexical phonological processing in word recognition. Cognitive Neuroscience Society, San Francisco, CA.

COLLOQUIA AND TALKS

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, Susan. (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.

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

01/2015 – present	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.

05/2001 – 07/2002 Psychology Department, Rutgers University
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

7/2015 - 12/2017 Role: PI. Hearing Health Foundation, Emerging Research Grant: *Adaptive control of auditory representations in listeners with central auditory processing disorder.*

PROFESSIONAL AFFILIATIONS

Association for Research in Otolaryngology: 2015-2016.
Society for Neuroscience Member: 2009 - 2017.
Society for the Neurobiology of Language Member: 2009 - 2017.
Cognitive Neuroscience Society Member: 2003, 2009.
International Society for Magnetic Resonance in Medicine Member: 2014.

PROFESSIONAL SERVICE

Mar 2017. Grant reviewer: Hearing Health Foundation.
Sep 2016. Reviewer: Architectures and Mechanisms for Language Processing 2016, Bilbao, ES.
Aug 2016. Reviewer: Society for the Neurobiology of Language, London, UK.
Mar 2016. Grant reviewer: Hearing Health Foundation.
Oct 2015. Judge: 50th Annual MUSC Perry V Halushka Research Day. Charleston, SC.
Oct 2015. Reviewer: Society for the Neurobiology of Language, Chicago, IL.
Aug 2014. Reviewer: Society for the Neurobiology of Language, Amsterdam, NL.
Nov 2013. Reviewer: 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

Brain & Language (2011-2012), Brain Research (2012), Cerebral Cortex (2012, 2014), Frontiers in Systems Neuroscience (2013), Human Brain Mapping (2011-2012), JASA-Express Letters (2015), Journal of Cognitive Neuroscience (2009, 2013-2016), Journal of Neuroscience (2015), Journal of Psychophysiology (2014), Language and Cognitive Processes (2010), Memory & Cognition (2014-2015), NeuroImage (2013-2017), Neuroscience Letters (2012), Neuropsychologia (2013, 2016, 2017), Otology & Neurotology (2014), Psychonomic Bulletin & Review (2010, 2015-2016).

TEACHING EXPERIENCE

Guest lecture: 11/2015. Department of Neuroscience, MUSC.

NSCS 735 Module: Neural Plasticity in Sensory Systems.

Guest lecture: 12/2011, 12/2012, 6/2014, 12/2015. Div. Biostatistics and Epidemiology, MUSC.

BMTRY 702: Advanced ANOVA & Regression. Module: fMRI data, analysis, and multiple imputation.

Teaching Associate from 2008 Spring - 2009 Spring (4 quarters). UC Irvine.

Social Science 3A: Computer-Based Research in Social Sciences

Instructed weekly lecture and administered course (120-300 students, 4 teaching assistants).

Teaching Assistantships. 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

PHOTOGRAPHY



Peaceful. Calm water in the Charleston harbor. May 27 to June 10, 2011. Piccolo Spoleto 27th Annual Juried Art Exhibition. Visitor Center, Charleston, SC.

www.piccolospoleto.com



Untitled. Dark fishing spider (*dolomedes tenebrosus*) hunting tadpoles at the Caw Caw Interpretive Center, Ravenel, SC. April 23, 2015. Humanitas 2015 Annual Juried Art Exhibit and Literary Publication. www.musc.edu/humanitas



Gorgeous Gorges. 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.



Sleepy Snake. A coiled snake laying on fallen tree branches in the Walterboro Wildlife Sanctuary. April 20, 2016. Humanitas 2016 Annual Juried Art Exhibit and Literary Publication. www.musc.edu/humanitas