

William Matchin, Ph.D

Curriculum Vitae

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Current appointment

Assistant Professor	Department of Communication Sciences & Disorders Arnold School of Public Health University of South Carolina
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Education

Ph.D Cognitive Neuroscience	Dept. of Cognitive Sciences University of California, Irvine	2009-2014
B.A. Psychology Minor in Linguistics	University of California, Irvine <i>Magna Cum Laude</i> <i>Phi Beta Kappa</i>	2005-2009

Dissertation

Title:	<i>Investigations of the syntax-brain relationship</i>
Supervisors:	Prof. Gregory Hickok (Chair) Prof. Jon Sprouse (Co-Chair)

Past Appointments

Postdoctoral Associate	Linguistics Department University of California, San Diego Prof. Rachel Mayberry Prof. Eric Halgren	2016-2018
Postdoctoral Fellow	Dept. of Linguistics University of Maryland, College Park Prof. Ellen Lau	2014-2016
Graduate Student Researcher	Dept. of Cognitive Sciences University of California, Irvine Prof. Gregory Hickok	2009-2014
Research Assistant	Dept. of Cognitive Sciences University of California, Irvine Prof. Gregory Hickok	2007-2014

Research Interests

Syntax, sentence processing, psycholinguistics, neurolinguistics, fMRI, MEG, EEG, aphasia, sign language, critical period

I work to bridge the gaps between linguistics, psycholinguistics and cognitive neuroscience, particularly with respect to syntax & the brain.

Technical skills

Programming	Matlab/PsychToolBox UNIX/LINUX Python
Languages	English (native) American Sign Language (moderate) French (beginner) Persian (beginner)

Honors/Awards

Associate Dean's Fellowship	School of Social sciences University of California, Irvine	2013
Graduate Student Merit Fellowship	Dept. of Cognitive Sciences University of California, Irvine	2010
Graduate Dean's Award	Dept. of Cognitive Sciences University of California, Irvine	2009
Social Sciences Award	Dept. of Cognitive Sciences University of California, Irvine	2009

Journal Articles

19. **Matchin, W.** & Hickok, G. (in review). The cortical organization of syntax.
18. **Matchin, W.**, Villwock, A., Roth, A., Ilkbasaran, D., Hatrak, M., Halgren, E., & Mayberry, M. (in preparation). The spatio-temporal dynamics of combinatorial processing in American Sign Language.
17. **Matchin, W.**, Villwock, A., Roth, A., Ilkbasaran, D., Hatrak, M., Halgren, E., & Mayberry, M. (in preparation). The cortical organization of syntactic processing in American Sign Language.
16. **Matchin, W.**, Almeida, D., Sprouse, J., & Hickok, G. (in preparation) Semantic processing triggered by subject island violations (but not phrase structure violations): evidence from fMRI.
15. **Matchin, W.**, Liao, C., Gaston, P., & Lau, E.F. (in review). An fMRI investigation of

argument structure and syntactic selection.

14. **Matchin, W.**, Brodbeck, C., Hammerly, C., & Lau, E.F. (in press). The temporal dynamics of structure and content in the language network. *Human Brain Mapping*.
13. Hickok, G., Rogalsky, R., **Matchin, W.**, Basilakos, A., Cai, J., Pillay, S., Ferrill, M., Love, T., Binder, J., Fridriksson, J. (2018). Neural Networks Supporting Audiovisual Integration for Speech: A Large-Scale Lesion Study. *Cortex*.
12. Okada, K.*, **Matchin, W.***, & Hickok, G. (2018). Phonological repetition-suppression in the left inferior frontal gyrus. *Journal of Cognitive Neuroscience*. *This is a joint first-author publication.
11. **Matchin, W.** (2017). A neuronal retuning hypothesis of sentence-specificity in Broca's area. *Psychonomic Bulletin & Review*, 1-13.
10. **Matchin, W.**, Hammerly, C., & Lau, E.F. (2017). The role of the IFG and pSTS in syntactic prediction: Evidence from a parametric study of hierarchical structure in fMRI. *Cortex*, 88, 106-123.
9. Okada, K., **Matchin, W.**, & Hickok, G. (2017). Neural evidence for predictive coding in auditory cortex during speech production. *Psychonomic Bulletin & Review*, 1-8.
8. **Matchin, W.** & Hickok, G. (2016). 'Syntactic perturbation' during production activates the right IFG, but not Broca's area or the ATL. *Frontiers in Psychology*. 7:241.
7. Venezia, J. H., Fillmore, P., **Matchin, W.**, Isenberg, A. L., Hickok, G., & Fridriksson, J. (2016). Perception drives production across sensory modalities: A network for sensorimotor integration of visual speech. *NeuroImage*, 126, 196-207.
6. Venezia, J., Thurman, S., **Matchin, W.**, George, S., Hickok, G. (2015). Timing in audiovisual speech perception: A mini review and new psychophysical data. *Attention, Perception, & Psychophysics*, 77(8).
5. **Matchin, W.**, Sprouse, J., & Hickok, G. (2014). A structural distance effect for backward anaphora in Broca's area: an fMRI study. *Brain and Language*, 138, 1-11.
4. **Matchin, W.**, Groulx, K., & Hickok, G. (2014). Audiovisual speech integration does not rely on the motor system: evidence from articulatory suppression, the McGurk effect and fMRI. *Journal of Cognitive Neuroscience*, 26(3), 606-620.
3. Okada, K., Venezia, J. H., **Matchin, W.**, Saberi, K., & Hickok, G. (2013). An fMRI study of audiovisual speech perception reveals multisensory interactions in auditory cortex. *PLOS ONE*, 8(6), e68959.
2. Okada, K., Rong, F., Venezia, J., **Matchin, W.**, Hsieh, I.H., Saberi, K., et al. (2010). Hierarchical organization of human auditory cortex: evidence from acoustic invariance in the response to intelligible speech. *Cerebral Cortex*, 20(10), 2486-2495.
1. Rogalsky, C., **Matchin, W.**, & Hickok, G. (2008). Broca's area, sentence comprehension, and working memory: an fMRI study. *Frontiers in Human Neuroscience*, 2.

Book Chapters

3. **Matchin, W.** (in review). Neuroimaging. In: *The Cambridge Handbook of Experimental Syntax*. Goodall, G. (editor). Cambridge University Press.
2. **Matchin, W.** & Rogalsky, C. (in review). Aphasia and syntax. In: *The Oxford Handbook of Experimental Syntax*. Sprouse, J. (editor). Oxford University Press.
1. Venezia, J., **Matchin, W.**, & Hickok, G. (2015). Audiovisual integration. In: *Brain*

Mapping: An Encyclopedic Reference. Toga AW, Poldrack RA (Eds.) Amsterdam: Elsevier.

Presentations

33. Matchin, W. The temporal dynamics of structure and content: evidence from fMRI-constrained MEG. Colloquium at the Institute for Mind and Brain, the University of South Carolina, to be presented October 10, 2018.
32. **Matchin, W.** (2018). The cortical organization of syntax. August 30 lecture at the Center for the Study of Aphasia Recovery (C-STAR) at the University of South Carolina.
31. **Matchin, W.**, Brodbeck, C., Hammerly, C., & Lau, E. (2018). The temporal dynamics of structure and content in the language network. Talk presented at the 31st CUNY sentence processing conference.
30. **Matchin, W.**, Almeida, D., Sprouse, J., & Hickok, G. (2018). Semantic processing triggered by subject island violations (but not phrase structure violations): evidence from fMRI. Poster presented at the 31st CUNY sentence processing conference.
29. **Matchin, W. (2018)**. The neurobiology of language: insights both from and for linguistic theory. Talk presented at the UCLA Linguistics dept. psycholinguistics seminar.
28. **Matchin, W.**, Almeida, D., Sprouse, J., & Hickok, G. (2018). Semantic processing triggered by subject island violations (but not phrase structure violations): evidence from fMRI. Poster presented at the 92nd Annual Meeting of the Linguistic Society of America.
27. **Matchin, W.**, Almeida, D., Sprouse, J., & Hickok, G. (2017). Semantic processing triggered by subject island violations (but not phrase structure violations): evidence from fMRI. Poster to be presented at the first California Meeting on Psycholinguistics (CAMP) 2017.
26. **Matchin, W.**, Villwock, A., Roth, A., Ilkbasaran, D., Hatrak, M., Davenport, T., Halgren, E. & Mayberry, M. (2017). The cortical organization of syntactic processing in American Sign Language: Evidence from a parametric manipulation of constituent structure in fMRI and MEG. Poster presented at the 9th annual meeting of the Society for the Neurobiology of Language.
25. **Matchin, W.**, & Hickok, G. (2017). A syntax area in the posterior superior temporal sulcus. Poster presented at the 9th annual meeting of the Society for the Neurobiology of Language.
24. Okada, K., **Matchin, W.**, & Hickok, G. (2017). Phonological Feature Repetition Suppression in the Left Inferior Frontal Gyrus. Poster presented at the 9th annual meeting of the Society for the Neurobiology of Language.
23. Villwock, A., **Matchin, W.**, Roth, A., Ilkbasaran, D., Hatrak, M., Davenport, T., Halgren, E. & Mayberry, M. (2017). The cortical organization of syntactic processing in American Sign Language: Evidence from a parametric manipulation of constituent structure in fMRI and MEG. Poster presented at the 47th annual meeting of the Society for Neuroscience.
22. **Matchin, W.** (2017). The cortical organization of syntactic processing in American Sign Language. Talk presented at the Center for Research on Language, UCSD.
21. **Matchin, W.**, Liao, C., Gaston, P., & Lau, E.F. (2017). An fMRI investigation of argument structure and syntactic selection. Poster presented at the 24th annual meeting of the Cognitive Neuroscience Society.
20. **Matchin, W.** (January 2017). Structure and Content in Real-time: an integrated theory of

- syntax. Linguistics Dept. Colloquium, UC Irvine.
19. **Matchin, W.** (November 2016). On the relation between syntactic theory and sentence processing, and a theory of island phenomena. Linguistics Dept. Colloquium, UCSD.
 18. **Matchin, W.** (2016). On the relation between syntactic theory and sentence processing, and a theory of island phenomena. Talk presented at the Center for Research on Language, UCSD.
 17. **Matchin, W.**, Hammerly, C., Lau, E. (2015). A parametric study of hierarchical structure-building in fMRI and MEG. Poster presented at the 7th annual meeting of the Society for the Neurobiology of Language.
 16. **Matchin, W.**, Hickok, G. (2014). A novel approach to investigating the neural correlates of syntax: a 'syntactic perturbation' paradigm during sentence production. Poster presented at the 6th annual meeting of the Society for the Neurobiology of Language.
 15. Venezia, J., Fillmore, P., **Matchin, W.**, Isenberg, A.L., Hickok, G., Fridriksson, J. (2014). Cortical network for sensorimotor integration of audio-visual speech. Poster presented at the 6th annual meeting of the Society for the Neurobiology of Language.
 14. **Matchin, W.** & Hickok, G. (2014). A 'syntactic perturbation' paradigm during sentence production reveals sentence processing networks in the brain. Poster presented at the 21st annual meeting of the Cognitive Neuroscience Society.
 13. **Matchin, W.**, Sprouse, J., Hickok, G. (2013). A syntactic distance effect for backwards anaphora in Broca's area: an fMRI study. Poster presented at the 5th annual meeting of the Society for the Neurobiology of Language.
 12. Venezia, J., Thurman, S., **Matchin, W.**, George, S., Hickok, G. (2013). Mapping the timecourse of visual interference on auditory speech perception: A novel application of the McGurk effect. Poster presented at the 5th annual meeting of the Society for the Neurobiology of Language.
 11. **Matchin, W.** & Hickok, G. (2013). Audiovisual speech integration does not rely on the motor system: evidence from articulatory suppression, the McGurk effect and fMRI. Poster presented at the 20th annual meeting of the Cognitive Neuroscience Society.
 10. **Matchin, W.**, Ferrill, M., Rogalsky, C., Love, T., Hickok, G. (2012). Audiovisual speech integration does not rely on the motor system: evidence from intact McGurk fusion in Broca's aphasia. Poster presented at the 4th annual Neurobiology of Language Conference.
 9. **Matchin, W.**, Ferrill, M., Rogalsky, C., Love, T., Hickok, G. (2012). Audiovisual speech integration does not rely on the motor system. Talk presented at the 42nd annual meeting of the Society for Neuroscience.
 8. **Matchin, W.**, Sprouse, J., & Hickok, G. (2012). Broca's area shows a distance effect for both syntactic movement and backwards anaphora in fMRI. Poster presented at the 25th CUNY Sentence Processing Conference.
 7. **Matchin, W.**, Sprouse, J., & Hickok, G. (2012). Broca's area shows a distance effect for both syntactic movement and backwards anaphora in fMRI. Poster presented at the 19th annual meeting of the Cognitive Neuroscience Society.
 6. **Matchin, W.** & Hickok, G. (2011). Visual speech and speech production rely on separate cognitive networks: evidence from articulatory suppression, the McGurk effect and

- fMRI. Talk presented at the 2nd annual Southern California Cognitive Neuroscience Meeting.
5. Okada, K., **Matchin, W.**, Alshara, S., & Hickok, G. (2012). A hierarchy of internal forward models in speech production. Poster presented at the 19th annual meeting of the Cognitive Neuroscience Society.
 4. **Matchin, W.** & Hickok, G. (2011). Visual speech and speech production rely on separate cognitive networks: evidence from articulatory suppression, the McGurk effect and fMRI. Poster presented at the 3rd annual Neurobiology of Language Conference.
 3. **Matchin, W.**, Ferril, M., Rogalsky, C., Love, T., & Hickok, G. (2011). Role of the motor system in audio-visual speech integration: evidence from the McGurk effect in Broca's aphasia. Poster presented at the 18th annual meeting of the Cognitive Neuroscience Society.
 2. Okada, K., Venezia, J., **Matchin, W.**, Saberi, K., & Hickok, G. (2010). Activity in primary auditory cortex is enhanced by visual speech. Poster presented at the 2nd annual Neurobiology of Language Conference.
 1. Okada, K., Venezia, J., **Matchin, W.**, Saberi, K., Serences, J., & Hickok, G. (2009). Early auditory cortical regions discriminate intelligible from unintelligible speech. Poster presented at the 1st Neurobiology of Language Conference.

Reviewer activity

<i>Brain and Language</i>	<i>Human Brain Mapping</i>
<i>Cognitive Psychology</i>	<i>Frontiers in Psychology</i>
<i>Language, Cognition and Neuroscience</i>	<i>Scientific Reports</i>
<i>Journal of Neurolinguistics</i>	<i>Ear and Hearing</i>
<i>Journal of Cognitive Neuroscience</i>	<i>Psychonomic Bulletin & Review</i>
<i>Austrian Academy of Sciences Doctoral Fellowship Program</i>	<i>Brain Structure & Function</i>
<i>Brain Research</i>	<i>Neuropsychologia</i>
<i>Psychological Science</i>	<i>Society for the Neurobiology of Language</i>
<i>Chicago Linguistics Society</i>	

Editing activity

PNAS: guest editor

Professional memberships

Cognitive Neuroscience Society	2010-present
Society for the Neurobiology of Language	2011-present
Society for Neuroscience	2012-present
Linguistics Society of America	2017-present

Teaching

LIGN101: Intro. to the Study of Language	Lecturer	Spring 2018
ESL 4C (intermediate)	Volunteer Instructor	Summer 2015
ESL Basic B (beginner)	Volunteer Instructor	Spring 2015

Linguistics 3: Introduction to Linguistics	Teaching Assistant	Summer 2014
Linguistics 3: Introduction to Linguistics	Teaching Assistant	Spring 2014
Psychology 56L: Acquisition of Language	Teaching Assistant	Winter 2014
Psychology 9A: Psychology Fundamentals	Teaching Assistant	Fall 2013
Linguistics 10: Introduction to Phonology	Lecturer	Summer 2013
Linguistics 3: Introduction to Linguistics	Teaching Assistant	Winter 2013
Linguistics 3: Introduction to Linguistics	Teaching Assistant	Fall 2012
Linguistics 20: Introduction to Syntax	Lecturer	Summer 2012
Linguistics 10: Introduction to Phonology	Lecturer	Summer 2012
Linguistics 3: Introduction to Linguistics	Teaching Assistant	Spring 2012
Linguistics 3: Introduction to Linguistics	Teaching Assistant	Winter 2012
Linguistics 3: Introduction to Linguistics	Teaching Assistant	Fall 2011
Psychology 161: Language and the Brain	Teaching Assistant	Spring 2011
Psychology 9A: Psychology Fundamentals	Teaching Assistant	Winter 2011
Psychology 155: Psychology of Language	Teaching Assistant	Fall 2010
Linguistics 10: Introduction to Phonology	Teaching Assistant	Spring 2010
Psychology 159: Creating Languages	Teaching Assistant	Fall 2009

In addition, I have given several guest lectures in Psychology, Linguistics and Neuroscience at Whittier College, University of Maryland, and UC San Diego.

Scientific blog posts

Review of W. T. Fitch's *Evolution of Language* Talking Brains
<http://www.talkingbrains.org/2014/01/tecumseh-fitchs-evolution-of-language.html>

Broca's area doesn't care what you do syntactically Talking Brains
<http://www.talkingbrains.org/2014/10/brocas-area-doesnt-care-what-you-do.html>

What's the right hemisphere doing? Talking Brains
<http://www.talkingbrains.org/2016/02/whats-right-hemisphere-doing-guest-post.html>

Abstractness, innateness, and modality-independence of language Talking Brains
<http://www.talkingbrains.org/2017/11/abstractness-innateness-and-modality.html>

Reply to Jarvis Talking Brains

Brains and syntax: part 1 Faculty of Language
<http://facultyoflanguage.blogspot.com/2016/09/brains-and-syntax.html>

Brains and syntax: part 2 Faculty of Language
<http://facultyoflanguage.blogspot.com/2016/09/brains-and-syntax-part-2.html>

Service/volunteer activities

Local school visits to UMD Language Science Center Presenter	2015-2016
Washington English Center Volunteer ESL Instructor	Winter-Summer 2015
UMD Language Science Center “Winter Storm” Special interest group discussion leader: “Technology and language”	Winter 2015
Climatepedia: climate change advocacy & education Member/Volunteer	Spring 2014
UCI Cognitive Sciences Department Graduate Liaison	2013-2014
Irvine Unified School District Annual Science Fair Volunteer Judge	2013-2014
Irvine Unified School District “Ask-A-Scientist Night” Volunteer Panel Member	2012