

# Kyle Mahowald: CV

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*Assistant professor of linguistics at UCSB, computational psycholinguist, Marshall Scholar, crossword puzzle maker with interests in computation, cognition, quantitative methods, and NLP.*

CONTACT INFORMATION      mobile: (954) 401-1400  
e-mail: [kmahowald@gmail.com](mailto:kmahowald@gmail.com)  
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RESEARCH INTERESTS      Computational psycholinguistics, cognitive science, NLP, statistical methods in the sciences, language and communication, language neuro-imaging, historical English, literature, meta-analysis

ACADEMIC WORK      **University of California, Santa Barbara**, Goleta, CA USA      2020-  
Assistant Professor, Linguistics

**Stanford University**, Palo Alto, CA USA      2019-2020  
Postdoctoral Researcher, Computer Science  
• Advisors: [Dan Jurafsky](#), [Dan McFarland](#)

EDUCATION      **Massachusetts Institute of Technology**, Cambridge, MA USA      2011-16  
Ph.D., [Brain and Cognitive Sciences](#)

- Advisor: [Edward Gibson](#)
- Committee: [Edward Gibson](#), [Nancy Kanwisher](#), [Joshua Tenenbaum](#)
- GPA: 5.0/5.0
- Thesis: *Cognitive and Communicative Pressures in Natural Language*

**University of Oxford**, Oxford, England UK      2009-11  
M.Phil with Distinction, [General Linguistics and Comparative Philology](#)  
Marshall Scholar

- Advisors: [Mary Dalrymple](#), [Aditi Lahiri](#)
- Areas of Study (all with Distinction): history and structure of English, morpho-phonology, computational linguistics, general linguistics
- Thesis: *An LFG Approach to Old English Constituent Order* (with Distinction)

**Harvard University**, Cambridge, MA USA      2005-09  
A.B. Summa Cum Laude, English

- Advisors: [Daniel Donoghue](#), [Marjorie Garber](#)
- GPA: 3.96/4.00
- Thesis: *A Fairy's Tale: Queen Mab's Journey from Shakespeare to Modernity*

INDUSTRY EXPERIENCE      **Algorithm Developer, Hudson River Trading**, New York, NY USA      2016-2019

- Performed research in natural language processing and quantitative finance, wrote production code for low latency trading algorithms in C++ and Python

FELLOWSHIPS AND GRANTS      • NSF Doctoral Dissertation Improvement Grant (\$12,000)      2015-16  
• National Defense Science and Engineering Graduate Fellowship      2012-15  
• Henry E. Singleton Fund Fellowship      2011-12  
• Marshall Scholarship (1 of 40 selected nationally)      2009  
• Harvard College Research Fellowship      2008  
• National Merit Scholarship      2005-09  
• Robert Byrd Scholarship      2005-09

## AWARDS

- Graduate Student Council Travel Grant 2014
- Angus MacDonald Award for Excellence in Undergraduate Teaching 2014
- AAAS/Science Program for Excellence in Science 2014
- CUNY 2013 Travel Award 2013
- Sigma Xi Scientific Research Society 2012
- Harvard Bowdoin Prize (Undergraduate Essay), \$10,000 2009
- Harvard Phi Beta Kappa Junior Electee, 1 of 24 elected as junior 2008
- John Harvard Scholar, top 5% in class 2006-09
- United States Presidential Scholar, 1 of 2 selected from each state 2005
- Youngest Sunday New York Times crossword constructor 2004

## PUBLISHED JOURNAL ARTICLES

- K. Mahowald, G. Kachergis, M.C. Frank. 2020. What counts as an exemplar model, anyway? A commentary on Ambridge (2020). *First Language*.
- E. Gibson, R. Futrell, S.T. Piantadosi, I. Dautriche, K. Mahowald, L. Bergen, R. Levy. 2019. How efficiency shapes human language. *Trends in Cognitive Science*.
- K. Mahowald, I. Dautriche, E. Gibson, S.T. Piantadosi. 2018 . Word forms are structured for efficient use. *Cognitive Science*. doi: 10.1111/cogs.12689.
- Z. Mineroff, I.A. Blank, K. Mahowald, E. Fedorenko. 2018. A robust dissociation among the language, multiple demand, and default mode networks: evidence from inter-region correlations in effect size. *Neuropsychologia*. doi: 10.1016/j.neuropsychologia.2018.09.011
- I. Dautriche\*, K. Mahowald\*, E. Gibson, S.T. Piantadosi. 2017. Words cluster phonetically beyond phonotactic regularities. *Cognition* 163: 128-145. doi: 10.1016/j.cognition.2017.02.001. \*co-first authors
- E. Gibson, C. Tan, R. Futrell, K. Mahowald, L. Konieczny, B. Hemfroth, E. Fedorenko. 2017. Dont underestimate the benefits of being misunderstood. *Psychological Science*: 1-10. doi: 10.1177/0956797617690277.
- E. Gibson, R. Futrell, J. Jara-Ettinger, K. Mahowald, L. Bergen, S. Ratnasingam, M. Gibson, S.T. Piantadosi, B.R. Conway. 2017. Color naming across languages reflects color use. *Proceedings of the National Academy of Sciences*. 114(40): 10785-10790.
- K. Mahowald, A. James, R. Futrell, E. Gibson. 2016. Structural priming is most useful when the conclusions are statistically robust. *Behavioral and Brain Sciences*, E302.
- I. Dautriche, K. Mahowald, E. Gibson, S.T. Piantadosi. 2016. Wordform similarity increases with semantic similarity: an analysis of 100 languages. *Cognitive Science*. doi: 10.1111/cogs.12453
- K. Mahowald, A. James, R. Futrell, E. Gibson. 2016. A meta-analysis of syntactic priming. *Journal of Memory and Language*, 91, 5-27.
- K. Mahowald, E. Fedorenko. 2016. Reliable individual-level neural markers of highlevel language processing: A necessary precursor for relating neural variability to behavioral and genetic variability. *Neuroimage*, 139, 74-93. doi: 10.1016/j.neuroimage.2016.05.073.
- I. Blank, E. Fedorenko, Z. Balewski, and K. Mahowald. 2016. Syntactic processing is distributed across the language network. *Neuroimage*, 127, 307-323.
- K. Mahowald, P. Graff, J. Hartman, and E. Gibson. 2016. SNAP Judgments: A Small N Acceptability Paradigm (SNAP) for Linguistic Acceptability Judgments. *Language*, 92 (3), 619-635.
- R. Futrell, K. Mahowald, E. Gibson. 2015. Large-Scale Evidence of Dependency Length Minimization in 37 Languages. *Proceedings of the National Academy of Sciences*. 112 (33), 10336-10341. doi: 10.1073/pnas.1502134112

- R. Singh, E. Fedorenko, K. Mahowald, E. Gibson. 2015. Presupposition accommodation is costly only in implausible contexts. *Cognitive Science*. Published online before print July, 2015. doi: 10.1111/cogs.12260
- E. Gibson, P. Jacobson, P. Graff, E. Fedorenko, K. Mahowald, S.T. Piantadosi. 2014. A pragmatic account of complexity in definite Antecedent-Contained-Deletion relative clauses. *Journal of Semantics*. 32 (4): 579-618.
- K. Mahowald and E. Gibson. 2013. Short, frequent words are more likely to appear genetically related by chance. Letter to *Proceedings of the National Academy of Sciences*.
- K. Mahowald, E. Fedorenko, S.T. Piantadosi, and E. Gibson. 2013. Info/information theory: speakers choose shorter words in predictive contexts. *Cognition*, 126, 313-318.
- K. Mahowald. 2012. A Naive Bayes Classifier for Shakespeare's second person pronoun. *Literary and Linguistic Computing*. 27 (1): 17-23. doi:10.1093/lc/fqr045
- K. Mahowald. 2010. It may nat be: Chaucer, Derrida, and the Impossibility of the Gift. *Studies in the Age of Chaucer*. 32:129-150.

JOURNAL  
ARTICLES  
IN PROGRESS

- Mahowald, K., Isola, P., Fedorenko, E., Gibson, E., and Oliva, A. 2018. Memorable words are monogamous: The role of synonymy and homonymy in word recognition memory. PsyArXiv. 10.31234/osf.io/p6kv9.

CONFERENCE  
PROCEEDINGS

- R. Futrell, K. Mahowald, E. Gibson. 2015. Quantifying Word Order Freedom in Dependency Corpora. Proceedings of *Depling 2015*.
- K. Mahowald. 2011. An LFG Account of Word Order Freezing. In M. Butt and T. H. King, eds., Proceedings of the LFG11 Conference. Hong Kong: CSLI Publications: <http://www-csli.stanford.edu/publications>.

THESES

- K. Mahowald. 2011. An LFG Approach to Old English. Master's thesis. Oxford University.
- K. Mahowald. 2009. A Fairy's Tale: Queen Mab's Journey from Shakespeare to Modernity. Harvard College.

REFEREED  
PRESENTATIONS

- K. Mahowald, A. James, R. Futrell, E. Gibson. 2016. A meta-analysis of syntactic priming in language production. Annual CUNY Conference on Human Sentence Processing, CUNY 2016. Gainesville, FL. March 3-5, 2016.
- K. Mahowald, I. Dautriche, E. Gibson, A. Christophe, E. Gibson. 2014. Efficient phonological clustering in the mental lexicon. Ninth International Conference on the Mental Lexicon. Niagara-on-the-Lake, Ontario, Canada. September 30-October 2, 2014.
- I. Dautriche, K. Mahowald, E. Gibson, A. Christophe, E. Gibson. 2014. Lexical clustering in efficient language design. AMLaP 2014 (Architectures and Mechanisms for Language Processing). Edinburgh, UK. September 3-6, 2014.
- K. Mahowald, P. Graff, J. Hartman, E. Gibson. 2014. SNAP Judgments: Small N Acceptability Paradigm (SNAP) for linguistic judgments. AMLaP 2014 (Architectures and Mechanisms for Language Processing). Edinburgh, UK. September 3-6, 2014.
- K. Mahowald, A. Jacobs, A. Fahimipour, M. Kleiman-Weiner. 2013. Measure for Measure: Quantifying Shakespearean Drama. Links 2013. MIT Media Lab. July 22-23, 2013.
- K. Mahowald. 2011. An LFG Account of Word Order Freezing. Sixteenth International LFG Conference. Hong Kong. July 16-19, 2011.

REFEREED  
POSTERS

- S. Ratnasingam, E. Gibson, R. Futrell, J. Jara-Ettinger, K. Mahowald, L. Bergen, S.T. Piantadosi, B. Conway. 2017. Statistical variations in the power spectrum of daylight over a day predict communicative efficiency of color-language. VSS.
- K. Mahowald, M. Kline, E. Fedorenko, E. Gibson. 2015. Informativity and efficient compression of sentences. Annual CUNY Conference on Human Sentence Processing, CUNY 2015. Los Angeles, CA. March 19-21, 2014.
- K. Mahowald, S.T. Piantadosi, M. Alper, E. Gibson. 2015. Lexical items are privileged slots for meaning. Annual CUNY Conference on Human Sentence Processing, CUNY 2015. Los Angeles, CA. March 19-21, 2014.
- R. Futrell, K. Mahowald, E. Gibson. 2014. CLIQS: Cross-Linguistic Investigations in Quantitative Syntax. AMLaP 2014 (Architectures and Mechanisms for Language Processing). Edinburgh, UK. September 3-6, 2014.
- K. Mahowald, P. Isola, E. Fedorenko, A. Oliva, E. Gibson. 2014. An information-theoretic account of word memorability. AMLaP 2014 (Architectures and Mechanisms for Language Processing). Edinburgh, UK. September 3-6, 2014.
- K. Mahowald, E. Fedorenko. Reliable individual-level neural markers of language activity. Neurobiology of Language 2014. Amsterdam. August 27-29, 2014.
- E. Gibson, P. Jacobson, P. Graff, K. Mahowald, E. Fedorenko, S.T. Piantadosi. Pragmatic influences on the processing of ACD relative clauses. 27th Annual CUNY Conference on Human Sentence Processing, CUNY 2014. Columbus, OH. March 13-15, 2014.
- R. Futrell, K. Mahowald, S.T. Piantadosi, E. Gibson. Efficient Communication Forwards and Backwards. 27th Annual CUNY Conference on Human Sentence Processing, CUNY 2014. Columbus, OH. March 13-15, 2014.
- K. Mahowald, S.T. Piantadosi, E. Gibson. 2013. Lexical clustering in efficient language design. 26th Annual CUNY Conference on Human Sentence Processing, CUNY 2013. Columbia, SC. March 22, 2013.
- K. Mahowald, T.J. O'Donnell, and J.B. Tenenbaum. 2013. Filling in the blanks in morphological productivity: a word completion task. 26th Annual CUNY Conference on Human Sentence Processing, CUNY 2013. Columbia, SC. March 23, 2013.
- K. Mahowald, E. Fedorenko, S.T. Piantadosi, E. Gibson. 2012. Info/information theory: speakers actively choose shorter word in predictive contexts. 25th Annual CUNY Conference on Human Sentence Processing, CUNY 2012. New York. March 16, 2012.

INVITED  
PRESENTATIONS

- K. Mahowald. 2020. Understanding linguistic structure through computational models of language. Linguistics Department. University of California, Santa Cruz. June 18, 2020.
- K. Mahowald. 2020. Computational and communicative pressures in language. Linguistics Department. Boston University. February 20, 2020.
- K. Mahowald. 2020. Cognitive pressures in language. Linguistics. University of Texas Austin. February 17, 2020.
- K. Mahowald. 2020. Cognitive and communicative pressures in language. Department of Psychology, Department of Language Sciences. University of Wisconsin Madison. February 3, 2020.
- K. Mahowald. 2020. Human language as a window into cognition. Department of Psychology. University of California Berkeley. January 29, 2020.

- K. Mahowald. 2020. Communicative pressures in language. Linguistics Department. University of California Santa Barbara. January 23, 2020.
- K. Mahowald. 2020. Cognitive and communicative pressures in language. Language and Cognition Talk Series. Stanford University. January 16, 2020.
- K. Mahowald. 2019. Cognitive and communicative pressures in natural language. Department of Linguistics and Department of Computer Science. McGill University. March 14, 2019.
- K. Mahowald. 2019. Cognitive and communicative pressures in language. School of Philosophy, Psychology, and Language Sciences. Edinburgh University. February 28, 2019.
- K. Mahowald. 2019. Cognitive and communicative pressures in language. Department of Linguistics. University of Florida. February 5, 2019.
- K. Mahowald. 2019. Cognitive and communicative pressures in language. Department of Linguistics. Northwestern University. January 31, 2019.
- K. Mahowald. 2015. Four mini-talks in psycholinguistics. CogLunch. Department of Brain and Cognitive Sciences. MIT. May 12, 2015.
- K. Mahowald. 2014. Efficient structure in the lexicon. Mini-Symposium on the Neural and Cognitive Mechanisms of Language. Department of Psychology. Harvard University. December 4, 2014.
- K. Mahowald. 2014. Efficient lexical structure. Department of Brain and Cognitive Sciences. Invited Talk. University of Rochester. October 3, 2014.
- K. Mahowald. 2014. Learning and organizational structure of the lexicon. Stanford Language and Cognition Lab Meeting. Stanford University. May 13, 2014.
- K. Mahowald, A. Jacobs, A. Fahimipour, E. Pechenick, M. Kleiman-Weiner. 2013. Measure for Measure: Quantifying Shakespeare. Santa Fe Complex Systems Summer School. Santa Fe Institute. June 28, 2013.
- K. Mahowald. 2013. Finding structure in the lexicon. CogLunch. MIT. April 9, 2013.
- K. Mahowald. 2013. Efficient lexical design. Tedlab Lab Meeting. MIT. April 8, 2013.
- M. Frank, K. Mahowald, and E. Gibson. 2012. Syntactic and lexical alternations in noisy environments. MIT Summer Research Program, 2012.
- K. Mahowald. 2011. Computationally classifying the second person pronoun in Early Modern English. Tedlab Lab Meeting. MIT. October 4, 2011.
- K. Mahowald. 2011. Word order freezing in Old English. Oxford Syntax Working Group. Oxford. February 23, 2011.
- K. Mahowald. 2010. Verb clusters in Old English. 3rd South of England LFG Meeting. SOAS, London. October 23, 2010.

## TEACHING

### Massachusetts Institute of Technology

- Teaching assistant, MIT 9.59 Lab in Psycholinguistics 2014
  - Received perfect student evaluations.
  - Refined statistics curriculum developed in 2013.
  - Held regular lectures instructing students in R and statistics.
- Teaching assistant, MIT 9.59j Lab in Psycholinguistics 2013
  - Designed and taught data analysis section of lab course. Held regular lectures instructing students in R and statistics.

	<ul style="list-style-type: none"> <li>• Helped students design, run, and analyze their own psycholinguistics experiments.</li> <li>• Won Angus McDonald Award for Undergraduate Teaching.</li> </ul>	
	<ul style="list-style-type: none"> <li>• Guest lecturer</li> <li>• ‘Language and information’, MIT 9.012, Spring 2015</li> <li>• ‘Sound Structure and Communication’, MIT 9.012 Cognitive Science (graduate class), Spring 2013</li> <li>• ‘Language and Information Theory’, MIT 9.59j Lab in Psycholinguistics, Spring 2013</li> <li>• ‘Introduction to Language’, MIT 9.65 Cognitive Processes, Spring 2013</li> </ul>	2011-16
	<ul style="list-style-type: none"> <li>• Research supervisor</li> <li>• Supervised student for MIT Summer Research Program, 2012</li> <li>• Supervised ~ 5 students for UROP (MIT’s undergraduate research program)</li> <li>• Instructed and advised students in research methods, experimental design, and writing.</li> </ul>	2011-
SERVICES AND ORGANIZATIONS	<p><b>Fellowship services</b></p> <ul style="list-style-type: none"> <li>• Committee member, Committee on Climate, Diversity, and Inclusion, Stanford University NLP Group</li> <li>• Reader, Marshall Scholarship Selection Committee, Boston Region</li> <li>• Member, MIT Distinguished Fellowship Committee</li> <li>• Volunteer fellowships panelist, Harvard Office of Career Services</li> </ul> <p><b>Invited reviewer</b></p> <ul style="list-style-type: none"> <li>• <i>Ad-hoc reviewer, NSF Education</i></li> <li>• <i>Science</i></li> <li>• <i>Entropy</i></li> <li>• <i>Science Advances</i></li> <li>• <i>Cognitive Science</i></li> <li>• <i>Memory &amp; Cognition</i></li> <li>• <i>Journal of Experimental Psychology: Learning, Memory, and Cognition</i></li> <li>• <i>Open Mind</i></li> <li>• <i>Journal of Memory and Language</i></li> <li>• <i>Topics in Cognitive Science</i></li> <li>• <i>Cognition</i></li> <li>• <i>Literary and Linguistic Computing</i></li> <li>• <i>Cogsci</i> conference</li> <li>• <i>CUNY Sentence Processing Conference 2017, 2018</i></li> <li>• <i>Events in Language and Cognition 2016</i></li> </ul> <p><b>Department</b></p> <ul style="list-style-type: none"> <li>• 2012-2013 CogLunch Organizer for MIT Brain and Cognitive Sciences</li> </ul>	
NON-ACADEMIC POSITIONS	<ul style="list-style-type: none"> <li>• Freelance puzzle construction, published in NYT, WSJ, LA Times, GAMES Magazine, Universal Press Syndicate, Chicago Tribune, etc., 2004-</li> <li>• Spirit Airlines in-flight crossword constructor, 2004-2010</li> <li>• Founder and President of Harvard College Crossword Society, 2007-2009</li> <li>• Co-chair of Boston Crossword Tournament, over 200 participants, 2009</li> <li>• Co-chair of Harvard Crossword Tournament, over 100 participants, 2009</li> <li>• Treasurer of Harvard Lifestyle Improvement and Fitness Education, mentored inner-city students in fitness and health, 2007</li> <li>• Peer Advising Fellow, mentored incoming freshmen, 2006-2007</li> <li>• Assistant to New York Times crossword editor Will Shortz, 2006</li> <li>• Research assistant, Advanced Medical Treatment Centers, 2005</li> </ul>	
COMPUTER EXPERTISE	R, Python, Stan, C++, UNIX tools, Amazon Mechanical Turk, L <sup>A</sup> T <sub>E</sub> X, git	

LANGUAGES	English (native), Spanish (good), French (basic), Middle English (reading), Old English (reading)
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## REFERENCES

**Professor Edward Gibson**

Dept. of Brain & Cognitive Sciences  
Massachusetts Institute of Technology  
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Cambridge, MA 02139  
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**Professor Steven T. Piantadosi**

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**Professor Aditi Lahiri**

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**Professor Joshua Tenenbaum**

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