

# Dr. Will Styler

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Department of Linguistics

University of Michigan

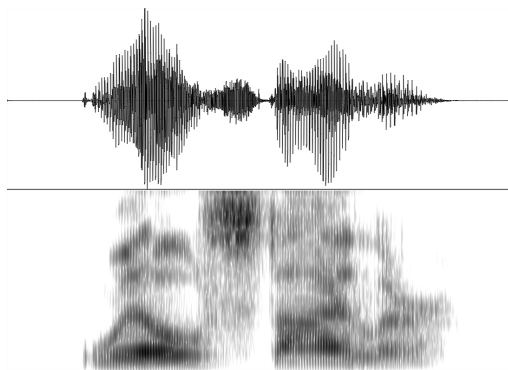
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## Current Position

Post-Doctoral Research Fellow at the University of Michigan, Department of Linguistics

## Education

Ph.D., Linguistics, University of Colorado at Boulder, 2008-2015.

*Thesis Title: On the Acoustical and Perceptual Features of Vowel Nasality* (Defended March 2015) - [Get PDF](#)

B.A, M.A. in Linguistics, University of Colorado at Boulder, Winter 2008.

*M.A. Thesis Title: Establishing the nature of context in speaker vowel space normalization* - [Get PDF](#)

## Research Interests

*In Acoustic and Articulatory Phonetics:* Speech perception, with an emphasis on variability, normalization, and its role in our perception; The use of machine learning and computational modeling to simulate, predict and explore the human process of speech perception and categorization; perceptual cues and features for vowel perception and vowel nasality; Modeling articulation using Electromagnetic Articulography; experimental technology in phonetics; quantitative and statistical analysis in phonetics.

*In Natural Language Processing:* Processing language and idioms in medicine and medical records; event extraction and temporal reasoning; annotation and representation of temporal semantics; speaker adaptation in automatic speech recognition; the role of inference and domain knowledge in natural language processing.

## Publications

PDFs of publications, where possible, are available on the [Publications page on my website](#).

### In Submission

P.S. Beddor, A. Coetzee, **W. Styler**, K. McGowan, J. Boland. *The time course of individuals' perception of coarticulatory information is linked to their production: implications for sound change*. *Language*. In Submission

### Peer-Reviewed

A. Coetzee, P.S. Beddor, K. Shedden, **W. Styler**, Daan Wissing. *Plosive voicing in Afrikaans: Differential cue weighting and tonogenesis*. *Journal of Phonetics*, 66:185 - 216. 2018.

**W. Styler**. *On the Acoustical Features of Vowel Nasality in English and French*. *Journal of the Acoustical Society of America*. 142(4):2469-2482. Oct. 2017. <http://asa.scitation.org/doi/10.1121/1.5008854>

G. Savova, S. Pradhan, M. Palmer, **W. Styler**, W. Chapman, and N. Elhadad. *Annotating the Clinical Text MiPACQ SHARe SHARpN and THYME Corpora*. In *Handbook of Linguistic Annotations*. Ed. James Pustejovsky and Nancy Ide. Springer. 2017.

R. Scarborough, **W. Styler**, and L. Marques. *Coarticulation and contrast: Neighborhood density conditioned phonetic variation in French*. In *Proceedings of the 18th International Congress of Phonetic Sciences*, Glasgow, Aug. 2015.

**W. Styler**, S. Bethard, S. Finan, M. Palmer, S. Pradhan, P. C. De Groen, B. Erickson, T. Miller, C. Lin, G. K. Savova, and J. Pustejovsky. *Temporal annotation in the clinical domain*. *Transactions of the Association of Computational Linguistics*, 2, 2014.

R. Ikuta, **W. Styler**, M. Hamang, T. O'Gorman, and M. Palmer. *Challenges of adding causation to Richer Event Descriptions*. In *Proceedings of the 2014 ACL EVENT Workshop*. *Association for Computational Linguistics*, June 2014.

W.-T. Chen and **W. Styler**. *Anafora: A web-based general purpose annotation tool*. In *Proceedings of the 2013 NAACL HLT Demonstration Session*, pages 14-19, Atlanta, Georgia, June 2013. *Association for Computational Linguistics*.

D. Albright, A. Lanfranchi, A. Fredriksen, **W. Styler**, C. Warner, J. D. Hwang, J. D. Choi, D. Dligach, R. D. Nielsen, J. Martin, W. Ward, M. Palmer, and G. K. Savova. *Towards comprehensive syntactic and semantic annotations of the clinical narrative*. *Journal of the American Medical Informatics Association*, December 2012.

R. Scarborough, **W. Styler**, and G. Zellou. *Nasal Coarticulation in Lexical Perception: The Role of Neighborhood-Conditioned Variation*. In *Proceedings of the 17th International Congress of Phonetic Sciences*, pages 1-4, Hong Kong, Aug. 2011.

G. K. Savova, S. Bethard, **W. Styler**, J. Martin, and M. Palmer. *Towards temporal relation discovery from the clinical narrative*. In *AMIA Annual Symposium Proceedings*, page 445. AMIA, 2009.

### Non-Peer-Reviewed

**W. Styler**. *Using Praat for Linguistic Research*. Published in July 2011 for the 2011 LSA Linguistic Institute's Praat Workshop, and continuously maintained at <http://savethevowels.org/praat/>.

**W. Styler**. (2014) *Speech is an Elaborate Cover for Widespread Telepathy*. *Speculative Grammarian (A Satirical Linguistics Journal)*, Vol. CLXX, No. 4, August 2014 (Available at <http://specgram.com/CLXX.4/09.styler.telepathy.html>)

**W. Styler** (2011). *The EnronSent Corpus*. Technical Report 01-2011, University of Colorado at Boulder Institute of Cognitive Science, Boulder, CO, January 2011.

## Conference Presentations

**W. Styler**, J. Krivokapic, B. Parrell, J. Kim (2017). *Using Machine Learning to Identify Articulatory Gestures in Time Course Data*. A poster to be presented at the Meeting of the Acoustical Society of America in New Orleans, Louisiana

(December 4th-8th)

J. Krivokapic, **W. Styler**, B. Parrell, J. Kim (2017). *Pause Postures in American English*. A poster to be presented at the Meeting of the Acoustical Society of America in New Orleans, Louisiana (December 4th-8th)

**W. Styler** (2017). *Modeling human speech perception using machine learning*. A talk presented at the Linguistic Society of America 2017 meeting in Austin, Texas (January 6th)

**W. Styler** (2016). *Normalizing Nasality? Across-Speaker Variation in Acoustical Nasality Measures*. A poster presented at the Meeting of the Acoustical Society of America in Salt Lake City, Utah (May 23rd-27th)

**W. Styler**, R. Scarborough (2014). *Surveying the Nasal Peak: A1 and P0 in nasal and nasalized vowels*. A poster presented at the Meeting of the Acoustical Society of America in Indianapolis, Indiana (October 26th-29th)

**W. Styler**, R. Scarborough, G. Zellou (2011). *Use of stimulus mixing to synthesize a continuum of nasality in natural speech*. A poster presented at the 162nd Meeting of the Acoustical Society of America in San Diego, California (October 31st-November 4th)

## Invited Talks

**W. Styler** (2017). *Ask An Algorithm: Using Machine Learning to study Human Speech*. Invited Colloquium talk at Michigan State University in East Lansing, MI. (September 28th).

**W. Styler** (2017). *A Nose by Any Other Wave: Studying the Perception of Vowel Nasality with Humans and Machines*. Presented as the Paul Efron Distinguished Lecturer at Pomona College (March 24th).

**W. Styler** (2016). *On the Acoustical and Perceptual Features of Vowel Nasality*. Presented at the Northwestern University 'Phonatics' Colloquium (April 27th).

## Honors and Awards

Received the University of Colorado Graduate School's **2012-2013 Graduate Student Teaching Excellence Award**, based on student evaluations, recommendations, and observation in the classroom.

**Graduated with Distinction** for BA degree, maintaining a 3.75 or greater overall GPA, 2008

Named National Residence Hall Honorary **CU Student of the Month** September 2006

## Research Experience

### *University of Michigan, Department of Linguistics*

Post-Doctoral Research Fellow for Jelena Krivokapic, Fall 2016-Present.

A Post-Doctoral Fellowship, working with Jelena Krivokapic to bootstrap and manage the University of Michigan's EMA (Electromagnetic Articulography) lab, using two Carstens AG501 EMA units to conduct research on articulation, prosody, and gesture. Major responsibilities included operation and maintenance of EMA systems, writing software and scripts for data capture and processing, statistical analysis using R and MATLAB, machine learning for data prediction, as well as the day-to-day management and equipment maintenance for the department's Sound Lab.

Post-Doctoral Research Fellow for Patrice Speeter Beddor and Andries Coetzee, Spring 2015-Present.

A Post-Doctoral Fellowship, working with Patrice Speeter Beddor and Andries Coetzee on data collection, analysis, and modeling for a grant from the National Science Foundation, titled *The time course of speech perception and production in individual language users*. This involved the implementation of several major experiments utilizing an SR Research Eyelink 1000+ Eye-Tracking System, a Zonare Z.One Ultrasound Machine, optical position tracking, and acoustic recording, as well as the purchase, testing, and deployment of a new nasal airflow capture system. Major responsibilities included data collection, data processing script creation, statistical analysis using R and machine

learning methods, as well as the day-to-day management and equipment maintenance for the department's Sound Lab.

### *University of Colorado at Boulder, Department of Linguistics*

Research Assistant to Dr. Rebecca Scarborough, Spring 2008-Spring 2015.

Assisting Dr. Scarborough with phonetic data collection and analysis, along with the design of new computational methods of data analysis and measurement. Particular emphasis on the development of new tools for accurately and quickly analyzing formant and spectral measures in large corpora of data, as well as the computational manipulation of nasality. Working primarily with Praat, Python, SPSS, PsyScope X, PsychoPy and R.

### *University of Colorado at Boulder, Department of Cognitive Science*

Research Assistant and Annotation Supervisor for Dr. Martha Palmer, Spring 2008-Fall 2014.

Assisting and directing various computer language processing and corpus annotation projects. Main projects include the development of a schema for the coding and annotation of temporal relations within medical records (the THYME project) and in the general domain (RED for the DEFT project) and the implementation of the Unified Medical Language System (UMLS) to mark the information desired in clinical questions (MiPACQ).

This position involved training and supervising a team of 10+ annotators as they progressed through a series of annotation tasks using Protege, Knowtator, Jubilee, and other tools, and also led to a role in the development of Anafora, a lightweight annotation tool to replace Protege/Knowtator. This annotation and schema development work has since given rise to two published papers and several awarded grants. This involved collaboration with the Mayo Clinic and Harvard Children's Medical Clinic.

## Teaching Experience

### *Mini-Course Instructor, 2017 Linguistic Society of America Annual Meeting*

Instructor, "Praat Beyond the Basics: Measurement, Manipulation, Automation, and More"

Designed and taught a four-hour mini-course covering the use of the Praat Phonetics Software Package for more complex tasks like measuring difficult data, sound manipulation, and automated/script-based analysis.

### *Lead Graduate Teacher for the University of Colorado Department of Linguistics*

Departmental Lead for the development of Graduate Teaching, Academic year 2012-2014

Coordinating departmental graduate teaching, consulting for graduate teachers, and conducting video consultations for new and returning graduate teachers. Also organized and lead the Linguistics Department Teaching intensives for Fall and Spring 2012-2014. Originally hired for 2012-2013, but asked to reprise in 2013-2014. Through the University of Colorado Graduate Teacher Program (<http://gtp.colorado.edu/>).

### *Workshop Instructor, LSA Linguistic Institute 2011*

Workshop Instructor - Using Praat for Linguistic Research, July 10th and 16th, 2011

Teaching a 4 hour intensive seminar about using the Praat Phonetics Software package for linguistic measurement, sound modification, and Praat scripting. The workshop was repeated twice during the institute (due to high demand), and once again in the Fall of 2011.

*Graduate Instructor-of-Record, University of Colorado at Boulder*

*LING 5030 - Graduate Linguistic Phonetics, Fall 2011*

Planned and taught a graduate-level course focused on a variety of topics in articulatory, acoustic and laboratory phonetics, for a class of 26 incoming graduate students. Tasked with the preparation of two weekly 1.5 hour lectures and a weekly lab session, and all of the homeworks, labs, tests and other materials necessary for the class to function.

*LING 3100 - Language Sound Systems, Spring 2011, Spring 2012, Fall 2012*

Planned and taught a survey of acoustic and articulatory phonetics and phonology to a class of undergraduates. Tasked with preparing and presenting two weekly lectures as well as creating materials for 1 weekly lab, and all of the homework, tests, and other materials necessary for the class to function.

*LING 1020 - Languages of the World, Fall 2014*

Planned and taught an introductory course in linguistics, focused on examining many of the languages and language families in the world with an eye towards typology, patterns, and understanding the link between how languages accomplish communication and how Language in general works.

*Graduate Teaching Assistant, University of Colorado at Boulder*

*LING 3100 - Language Sound Systems, Spring 2013*

Presented an overview of acoustic and articulatory phonetics and phonology to a class of undergraduates. Tasked with running two weekly lab sessions, teaching undergraduates to use Praat and other phonetic software, as well as all non-exam course grading.

*Chair and Coordinator, 2007 CU Stampede First Year Leadership Camp*

*2007 CU Stampede First Year Leadership Camp, August 19th-20th 2007*

Coordinating, planning, teaching and advising at an intensive orientation/conference for a group of 50 incoming Freshmen.

*Workshop Instructor, University of Colorado Graduate Teacher Program*

*Expect the Unexpected!, March 11th, August 22nd, and October 7th 2013*

An interactive workshop for the general campus audience focused on preparing college-level teachers for a variety of unexpected, uncomfortable, and unpleasant situations that can arise in the course of conducting a class, with the goal of helping teachers manage chaos with confidence. Repeated three times to meet demand.

*Writing Readably and Reading Writably, January 9th, 2014*

A one-hour course for graduate students about writing in an academic setting, as well as purposeful research, all with a focus on writing papers that somebody might, someday, actually want to read.

*LaTeX for Linguists, November 17th 2012, October 22nd 2013*

A 2.5 hour intensive course on the use of the LaTeX typesetting engine for linguistics-related writing and teaching material generation, with special emphasis on bibliography, exam creation, and the proper use of International Phonetic Alphabet (IPA) characters. Repeated by popular demand.

*Putting the LOL in Classroom Learning, January 21st 2014, September 22nd 2014*

A one hour workshop focused on the skillful application of humor in lectures, exams, and assignments, with emphasis on where to draw the line between “funny” and “offensive”.

*Active Harmer Response, September 16th 2013*

A one hour workshop, coordinated with the University of Colorado Police discussing how student instructors should handle active harm situations (such as bomb threats or active shooters) with an emphasis on both ensuring one's personal safety and on the teacher's role in promoting student safety.

### *Invited Guest Lectures*

University of Michigan - LING 512 - Phonetics (Fall 2015, Fall 2016, Fall 2017)

University of Michigan - LING 612 - Advanced Phonetics (Spring 2017)

University of Michigan - LING 209 - Language and Mind (Spring 2015)

University of Colorado - LING 7030 - Phonetic Theory (Fall 2014)

University of Colorado - LING 7800/3800 - Computational Lexical Semantics (Spring 2013, Fall 2013)

University of Colorado - LING 3100 - Language Sound Systems (Spring 2009, Fall 2010, Fall 2011, Spring 2013)

University of Colorado - LING 2000 - Introduction to Linguistics (Fall 2010, Spring 2011, Fall 2011, Spring 2012, Fall 2012, Spring 2013, Fall 2013)

University of Colorado - LING 4220 - Language and Mind (April 2008)

University of Colorado - LING 1000 - Language and US Society (Summer 2011)

### *Student Leadership Mentor, CU Stampede First Year Leadership Camp*

CU Stampede First Year Leadership Camp, 2008-2012

Training a group of 5-10 first year students to get involved on campus and make an effective transition into the new environment at CU during a small training camp at the start of Fall Semester.

### *Invited Program Presenter, CU Stampede First Year Leadership Camp*

CU Stampede First Year Leadership Camp, 2007-2014

*Program:* "Language is magic", a presentation on the beauty, magic, and joy to be found in languages of the world, with emphasis on the improbable nature of human communication. (2013-2014)

*Program:* "Your Writing System is lying to you", an accessible introduction to articulatory phonetics and phonology using examples from English speech, framed as an exploration of the role of passion in leadership. (2007-2012)

*Program:* "The View from the other side of the Desk", a seminar on the lessons for students in a University setting which come from thinking like the instructor. (2011-2014)

## Academic Service

### *Reviewer for Journals*

*Journal of the Acoustical Society of America*

*Journal of the International Phonetic Association*

*Phonology*

*Clinical Linguistics & Phonetics*

*Journal of West African Languages*

### *Corpus Maintainer*

Creator and maintainer of the EnronSent email corpus, 2006-Present

More information available at <http://verbs.colorado.edu/enronsent>

## Technological Competencies

Programming and Scripting in R, Python, Praat, Bash/ZSH Shell, LaTeX, HTML/CSS, and MATLAB  
Electromagnetic Articulography using Dual Carstens AG501 EMA systems  
Eye Tracking (using SRResearch EyeLink 1000+)  
Statistical Modeling using Linear Mixed Effects Models, GAM, and Bayesian LMER  
Machine Learning (using SVMs, RandomForest, PCA, Naive Bayes, Perceptrons, Neural Networks)  
Digital Audio Recording/Playback/Signal Processing  
Experimental Programming (MATLAB, PsychoPy, ExperimentBuilder, PsyScope X)  
Using MATLAB for Data processing, capture, and analysis  
Ultrasound for Articulation (Zonare Z.One 3.5, Articulate Assistant Advanced)  
Oral/Nasal Airflow Measurement (Glottal Enterprises 'Dualview' System, SQLabs EVA2)  
Basic audiological tools (audiometers, calibrated headphones and microphones)  
Advanced working proficiency in both macOS and Linux-based Operating Systems

## Human languages

English, Native Speaker  
Spanish, Fluent  
Russian, Intermediate  
French, Beginning, Intermediate fluency in reading

Last updated: November 18, 2017