R. Thomas McCoy

Department of Cognitive Science
141 Krieger Hall
Johns Hopkins University
3400 N. Charles Street
Baltimore, MD 21218-2685

Email: tom.mccoy@jhu.edu
Last updated: May 5, 2019

EDUCATION

2017-present	Johns Hopkins University: Ph.D. in Cognitive Science *Advisors:* Tal Linzen, Paul Smolensky
2013-2017	Yale University: B.A. in Linguistics, *summa cum laude*, distinction in the major *Advisor:* Robert Frank
Summer 2016	Institute on Collaborative Language Research (CoLang), University of Alaska Fairbanks
Summer 2015	Linguistic Summer Institute, University of Chicago

EMPLOYMENT

Summer 2018	JSALT sentence representations team Supervisors: Sam Bowman, Ellie Pavlick *Developed techniques for analyzing learned sentence representations.*
Summer 2017	Carnegie Mellon University Low Resource Languages for Emergent Incidents (LORELEI) team Supervisor: Patrick Littell *Programmed a finite-state morphological analyzer for Oromo.*
Summer 2017	Chirila project Supervisor: Claire Bowern *Developed automatic semantic processing techniques for an online database of Australian languages.*
Summer 2016	Grammar Boot Camp Supervisor: Claire Bowern *Wrote a sketch grammar of Kuwarra.*
Summer 2015	Yale Grammatical Diversity Project Supervisors: Laurence Horn, Jim Wood, Raffaella Zanuttini, Jason Zentz *Edited web pages about regional grammatical phenomena.*

Summer 2014   Irish lip rounding research
Supervisor: Ryan Bennett
Collected lip rounding measurements from images of Irish speakers.

Summer 2014   Linguistic Core Multi-University Research Initiative
Supervisors: Chris Dyer, Lori Levin
Developed an English-to-Malagasy tree-to-string transducer.

Summer 2013   Linguistic Core Multi-University Research Initiative
Supervisors: Chris Dyer, Lori Levin
Developed a finite state morphological analyzer for Kinyarwanda.

Teaching

Spring 2019   Johns Hopkins University
Role: Teaching Assistant
Course: Syntax I
Lecture Instructor: Géraldine Legendre
Led review sessions and graded assignments.

Fall 2018   Johns Hopkins University
Role: Teaching Assistant
Course: Introduction to Computational Cognitive Science
Lecture Instructor: Tal Linzen
Created educational simulations, tutorials, and homeworks in Javascript and Jupyter and taught lectures using these resources.

Spring 2018   Johns Hopkins University
Role: Fieldwork Instructor
Course: World of Language
Lecture Instructor: Géraldine Legendre
Led two sections of weekly fieldwork sessions complementing lectures.

Summer 2015   Linguistic Society of America Summer Institute
Role: Workshop Co-Instructor
Course: Linguistic Enigmatography
Co-Instructor: Lori Levin
Developed and co-taught a one-week workshop on creating linguistic puzzles.

Awards

2019   ICLR Travel Grant
Grant to fund travel to present two posters at the 2019 ICLR conference.

2018-2019	Johns Hopkins University Center for Educational Resources Technology Fellowship Grant Co-Grantee: Tal Linzen *Grant to develop interactive visualizations of concepts in computational cognitive science.*
2018-2021	NSF Graduate Research Fellowship *Project title: Assessing the capacity of computational models to make linguistic generalizations*
2017-2020	Owen Scholars Fellowship *Fellowship for outstanding incoming Johns Hopkins PhD students in the natural sciences.*
2017	Alpheus Henry Snow Prize *Award for the graduating Yale senior who is "adjudged by the faculty to have done the most for Yale by inspiring in his or her classmates an admiration and love for the best traditions of high scholarship."*
2017	Finalist, Rhodes Scholarship
2017	Finalist, Marshall Scholarship
2016	Hart Lyman Prize *Award for the Yale junior who "has made through his/her own efforts the best record intellectually and socially."*
2016	Phi Beta Kappa *One of 13 Yale students admitted as juniors.*
2013	International Linguistics Olympiad *First-place team in the world. Individual bronze medal.*
2013	United States Presidential Scholar *One of two for Pennsylvania.*

Peer-reviewed proceedings papers

2019	Najoung Kim, Roma Patel, Adam Poliak, Alex Wang, Patrick Xia, R. Thomas McCoy, Ian Tenney, Alexis Ross, Tal Linzen, Benjamin Van Durme, Samuel R. Bowman, Ellie Pavlick. Probing What Different NLP Tasks Teach Machines about Function Word Comprehension. To appear in *Proceedings of the Eighth Joint Conference on Lexical and Computational Semantics (*SEM 2019).* https://arxiv.org/pdf/1904.11544.pdf.
2019	R. Thomas McCoy, Tal Linzen, Ewan Dunbar, and Paul Smolensky. RNNs implicitly implement tensor-product representations. To appear in *International Conference on Learning Representations 2019.* https://openreview.net/forum?id=BJx0sjC5FX

2019   Ian Tenney, Patrick Xia, Berlin Chen, Alex Wang, Adam Poliak, R. Thomas Mc-Coy, Najoung Kim, Benjamin Van Durme, Samuel R. Bowman, Dipanjan Das, and Ellie Pavlick. What do you learn from context? Probing for sentence structure in contextualized word representations. To appear in *International Conference on Learning Representations 2019.* https://openreview.net/forum?id=SJzSgnRcKX

2018   R. Thomas McCoy, Robert Frank, and Tal Linzen. Revisiting the poverty of the stimulus: hierarchical generalization without a hierarchical bias in recurrent neural networks. In *Proceedings of the 40th Annual Conference of the Cognitive Science Society.* https://arxiv.org/abs/1802.09091

2018   Patrick Littell, R. Thomas McCoy, Na-Rae Han, Shruti Rijhwani, Zaid Sheikh, David Mortensen, Teruko Mitamura, and Lori Levin. Parser combinators for Tigrinya and Oromo morphology. In *Language Resources and Evaluation Conference (LREC) 2018.* https://www.aclweb.org/anthology/L18-1611

2018   R. Thomas McCoy and Robert Frank. Phonologically Informed Edit Distance Algorithms for Word Alignment with Low-Resource Languages. In *Proceedings of the Society for Computation in Linguistics (SCiL) 2018*, pages 102-112. http://www.aclweb.org/anthology/W18-0311

2017   Jungo Kasai, Bob Frank, R. Thomas McCoy, Owen Rambow, and Alexis Nasr. Tag parsing with neural networks and vector representations of supertags. In *Proceedings of the 2017 Conference on Empirical Methods in Natural Language Processing*, pages 1712-1722. https://hal.archives-ouvertes.fr/hal-01771494/document

2017   Dan Friedman*, Jungo Kasai*, R. Thomas McCoy*, Robert Frank, Forrest Davis, and Owen Rambow. Linguistically Rich Vector Representations of Supertags for TAG Parsing. In *Proceedings of the 13th International Workshop on Tree Adjoining Grammars and Related Formalisms*, pages 122-131. http://www.aclweb.org/anthology/W17-6213
*Equal contribution.

Peer-reviewed abstracts

2019   R. Thomas McCoy and Tal Linzen. Non-entailed subsequences as a challenge for natural language inference. *Proceedings of the Society for Computation in Linguistics (SCiL) 2019.* https://arxiv.org/pdf/1811.12112

Papers reviewed by abstract

2017   R. Thomas McCoy. English comparatives as degree-phrase relative clauses. In *Proceedings of the Linguistic Society of America 2*, 26:1-7. https://journals.linguisticsociety.org/proceedings/index.php/PLSA/article/download/4078/3775

Work under review

R. Thomas McCoy, Ellie Pavlick, and Tal Linzen. Right for the Wrong Reasons: Diagnosing Syntactic Heuristics in Natural Language Inference. https://arxiv.org/pdf/1902.01007

Samuel R. Bowman, Ellie Pavlick, Edouard Grave, Benjamin Van Durme, Alex Wang, Jan Hula, Patrick Xia, Raghavendra Pappagari, R. Thomas McCoy, Roma Patel, Najoung Kim, Ian Tenney, Yinghui Huang, Katherin Yu, Shuning Jin, and Berlin Chen. Looking for ELMo's friends: Sentence-Level Pretraining Beyond Language Modeling. https://arxiv.org/pdf/1812.10860

Work in preparation

Susan Hanson, Claire Bowern, and R. Thomas McCoy. A Dictionary and Sketch Grammar of Kuwarra.

Rebecca Everson, R. Thomas McCoy, and Claire Bowern. Creating a semantic database for Pama-Nyungan languages.

Unpublished conference presentations

2018   R. Thomas McCoy, Robert Frank, and Tal Linzen. Investigating hierarchical bias in the acquisition of English question formation with recurrent neural networks. Poster presentation, *2018 Legrain conference: Learning Language in Humans and in Machines*, Paris,France, July 5-6.

2018   Robert Frank, R. Thomas McCoy, and Tal Linzen. Neural network syntax in the age of deep learning: the case of question formation. Oral presentation, *Society for Computation in Linguistics*, Salt Lake City, Utah, January 5.

2017   Patrick Littell, R. Thomas McCoy, and Lori Levin. The North American Computational Linguistics Olympiad. Oral presentation, in Datablitz: Getting High School Students into Linguistics: Current Activities and Future Directions, *Linguistic Society of America Annual Meeting*, Austin, Texas, January 7.

Service

2018	Conference reviewer: CoNLL 2018.
2018	Conference reviewer: ACL 2018. Named as a top reviewer.
2016-2017	Computational Linguistics at Yale (CLAY) reading group: Co-organizer.
2015-2017	Yale Undergraduate Linguistics Society: Co-founder (2015), president (2015-2016), treasurer (2016-2017).

Outreach

2018-present	International Linguistics Olympiad (IOL): Problem writer.

2013-present	North American Computational Linguistics Olympiad (NACLO). National level: Problem writer (12 problems to date) and member of the 7-person NACLO Core governing committee for the national U.S. contest. Local level: Co-founder and co-organizer of the Yale contest site (2013-2017); co-organizer of the Johns Hopkins contest site (2017-present); organizer of pre-contest practice sessions at both sites.
2016	Yale Grammatical Diversity Project: Authored two webpages describing regional grammatical phenomena (*All the further* and *Subject contact relatives*).
2013-2017	Linguistics teaching initiatives: Designed and taught a one-lecture linguistics class to high school students in connection with the separate programs Splash, Sprout, and Math Mornings. Presented 8 times to groups ranging from 25 to 50 students.

PROFESSIONAL MEMBERSHIPS

2015-present	Linguistic Society of America (LSA).
2017-present	Association for Computational Linguistics (ACL).
2018-present	Cognitive Science Society.

SKILLS

Programming languages	Python, PyTorch, JavaScript, Haskell, C, Java, R, Scheme.
Natural languages	English (native), Bahasa Indonesia (conversational), Old English (basic reading ability), Old Norse (basic reading ability), Latin (basic reading ability).

COURSEWORK

Undergraduate GPA: 4.0   *Graduate GPA:* 4.0

Computational Linguistics: Language and Computation I, Language and Computation II, Formal Foundations of Linguistic Theories, Computing Meaning

Natural Language Processing: Natural Language Processing, Machine Learning: Linguistic and Sequence Modeling

Syntax: Syntax I, Syntax II, Grammatical Diversity in US English

Phonetics/Phonology: Phonetics, Phonology I, Phonology II, The Phonetics/Phonology Interface

Semantics: Semantics I, Semantics II

Computer Science: Data Structures and Programming Techniques, Computational Tools for Data Science

Mathematics: Multivariable Calculus, Discrete Mathematics, Probability and Statistics, Advanced Statistical Methods

Other relevant courses: Linguistic Field Methods