

Alex Warstadt

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Google scholar profile
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Employment

Nov. 2024 – **Assistant Professor, University of California San Diego**
present Joint appointments in the Department of Linguistics and Halıcıoğlu Data Science Institute

Education

Oct. 2022 – **Postdoctoral Researcher, ETH Zürich**
present Department of Computer Science
Supervisor: Ryan Cotterell

Sep. 2017 – **PhD Linguistics, New York University**
Sep. 2022 Thesis title: Artificial Neural Networks as Models of Human Language Acquisition
Advisor: Samuel R. Bowman
Committee members: Tal Linzen, Michael C. Frank, Brenden Lake, Ellie Pavlick

Sep. 2011 – **A.B. Linguistics, Brown University**
May 2015 magna cum laude, with honors, GPA 3.97
Thesis title: Right-node Wrapping [pdf], Advisor: Pauline Jacobson

A.B. Music, Brown University
magna cum laude, GPA 3.97

Peer Reviewed Papers

- In press **Investigating Critical Period Effects in Language Acquisition through Neural Language Models.** Ionut Constantinescu, Tiago Pimentel, Ryan Cotterell, and Alex Warstadt. *Transactions of the Association for Computational Linguistics*. [preprint]
- In press **Surprise! Uniform Information Density Isn't the Whole Story: Predicting Surprisal Contours in Long-form Discourse.** Eleftheria Tsipidi, Franz Nowak, Ryan Cotterell, and Ethan Wilcox, Mario Giulianelli, Alex Warstadt. *Journal of Memory and Language*. [preprint]
- Accepted **Bigger is not always better: The importance of human-scale language modeling for psycholinguistics.** Ethan Gotlieb Wilcox, Michael Hu, Aaron Mueller, and Tal Linzen, Alex Warstadt, Leshem Choshen, Chengxu Zhuang, Ryan Cotterell, Adina Williams. *Journal of Memory and Language*. [preprint]
- 2024 **Automatic annotation of grammaticality in child-caregiver conversations.** Mitja Nikolaus, Abhishek Agrawal, Petros Kaklamanis, and Alex Warstadt, Abdellah Fourtassi. *In Proceedings of the 2024 joint international conference on computational linguistics, language resources and evaluation (LREC-COLING 2024)*. [link]
- 2023 **Quantifying the redundancy between prosody and text.** Lukas Wolf, Tiago Pimentel, Evelina Fedorenko, and Ryan Cotterell, Alex Warstadt, Ethan Wilcox, Tamar Regev. *In Proceedings of the 2023 conference on empirical methods in natural language processing*. [link]
- 2023 **Findings of the BabyLM Challenge: Sample-Efficient Pretraining on Developmentally Plausible Corpora.** Alex Warstadt, Aaron Mueller, Leshem Choshen, Ethan Wilcox, Chengxu Zhuang, Juan Ciro, Rafael Mosquera, Bhargavi Paranjabe, Adina Williams, Tal Linzen, Ryan Cotterell. *Proceedings of the BabyLM Challenge at CoNLL (2023)*. [link]

- 2023 **Acquiring Linguistic Knowledge from Multimodal Input.** Theodor Amariuca, Alex Warstadt. *Proceedings of the BabyLM Challenge at CoNLL (2023)*. [link]
- 2023 **WhisBERT: Multimodal Text-Audio Language Modeling on 100M Words.** Lukas Wolf, Klemen Kotar, Greta Tuckute, Eghbal Hosseini, Tamar I. Regev, Ethan Gotlieb Wilcox, Alex Warstadt. *Proceedings of the BabyLM Challenge at CoNLL (2023)*. [link]
- 2023 **Beyond the Imitation Game: Quantifying and extrapolating the capabilities of language models.** ..., Alex Warstadt, ..., [400+ authors not shown]. *Transactions of Machine Learning (TML)*. [link]
- 2023 **Quantifying the redundancy between prosody and text.** Lukas Wolf, Tiago Pimentel, Evelina Fedorenko, Ryan Cotterell, Alex Warstadt, Ethan Wilcox, Tamar Regev. *Proceedings of EMNLP (2023)*. [link]
- 2023 **Generalizing Backpropagation for Gradient-Based Interpretability.** Kevin Du, Lucas Torroba Hennigen, Niklas Stoeck, Alex Warstadt, Ryan Cotterell. *Proceedings of ACL (2023)*. [link]
- 2023 **Reconstruction Probing.** Najoung Kim, Jatin Khilnani, Alex Warstadt, Abed Qaddoumi. *Findings of ACL (2023)*. [link]
- 2022 **Entailment Semantics Can Be Extracted from an Ideal Language Model.** William Merrill, Alex Warstadt, Tal Linzen. *Proceedings of CoNLL (2022)*. [link]
- 2022 **What Makes Reading Comprehension Questions Difficult?** Saku Sugawara, Nikita Nangia, Alex Warstadt, Samuel Bowman. *Proceedings of ACL*. [link]
- 2021 **NOPE: A Corpus of Naturally-Occurring Presuppositions in English.** {Alicia Parrish, Sebastian Schuster, Alex Warstadt}, Omar Agha, Soo-Hwan Lee, Zhuoye Zhao, Samuel R. Bowman, Tal Linzen. *Proceedings of CoNLL*. [link]
- 2021 **What Ingredients Make for an Effective Crowdsourcing Protocol for Difficult NLU Data Collection Tasks?** Nikita Nangia, Saku Sugawara, Harsh Trivedi, Alex Warstadt, Clara Vania, Samuel R. Bowman. *Proceedings of ACL*. [link]
- 2021 **Does Putting a Linguist in the Loop Improve NLU Data Collection?** Alicia Parrish, William Huang, Omar Agha, Soo-Hwan Lee, Nikita Nangia, Alex Warstadt, Karmanya Aggarwal, Emily Allaway, Tal Linzen, Samuel R. Bowman. *Findings of EMNLP*. [link]
- 2021 **CLiMP: A Benchmark for Chinese Language Model Evaluation.** Beilei Xiang, Changbing Yang, Yu Li, Alex Warstadt, Katharina Kann. *Proceedings of EACL*. [link]
- 2020 **When Do You Need Billions of Words of Pretraining Data?** {Yian Zhang, Alex Warstadt}, Xiaocheng Li, Samuel R. Bowman. *Proceedings of ACL*. [link]
- 2020 **Learning which features matter: RoBERTa acquires a preference for linguistic generalizations (eventually).** Alex Warstadt, Yian Zhang, Xiaocheng Li, Haokun Liu, Samuel R. Bowman. *Proceedings of EMNLP*. [link]
- 2020 **Can neural networks acquire a structural bias from raw linguistic data?** Alex Warstadt, Samuel R. Bowman. *Proceedings of the Annual Meeting of the Cognitive Science Society*. [link]
- 2020 **Are natural language inference models IMPPRESsive? Learning IMPLIcature and PRESupposition.** {Paloma Jeretić, Alex Warstadt}, Suvrat Bhooshan, Adina Williams. *Proceedings of ACL*. [link]
- 2020 **BLiMP: The Benchmark of Minimal Pairs for English.** Alex Warstadt, Alicia Parrish, Haokun Liu, Anhad Mohananey, Wei Peng, Sheng-Fu Wang, Samuel R. Bowman. *Transactions of the Association for Computational Linguistics (TACL)*. [link]

- 2019 **Investigating BERT’s Knowledge of Language: Five Analysis Methods with NPIs.** {[Alex Warstadt](#), Yu Cao, Ioana Grosu, Wei Peng, Hagen Blix, Yining Nie, Anna Alsop, Shikha Bordia, Haokun Liu, Alicia Parrish, Sheng-Fu Wang, Jason Phang, Anhad Mohananey, Phu Mon Htut, Paloma Jeretič}, and Samuel R. Bowman. *Proceedings of EMNLP*. [link]
- 2019 **Neural Network Acceptability Judgments.** [Alex Warstadt](#), Amanpreet Singh and Samuel R. Bowman. *Transactions of the Association for Computational Linguistics (TACL)*. [link]

Book Chapters

- 2022 **What Artificial Neural Networks Can Tell Us About Human Language Acquisition** [Alex Warstadt](#) and Samuel Bowman. *Algebraic Structures in Natural Language*. Eds., Shalom Lappin, Philippe Bernardy [preprint]

Editor

- 2023 **Proceedings of the BabyLM Challenge at the 27th Conference on Computational Natural Language Learning.** Eds., [Alex Warstadt](#), Aaron Mueller, Leshem Choshen, Ethan Wilcox, Chengxu Zhuang, Juan Ciro, Rafael Mosquera, Bhargavi Paranjabe, Adina Williams, Tal Linzen, Ryan Cotterell. [link]

Papers Refereed (or Reviewed) as Abstracts

- 2022 **Presupposition Triggering Reflects Pragmatic Reasoning About Utterance Utility** [Alex Warstadt](#). *Proceedings of the 23rd Amsterdam Colloquium (2022)*. [link]
- 2022 **Testing Bayesian measures of relevance in discourse.** {[Alex Warstadt](#), Omar Agha}. *Proceedings of Sinn und Bedeutung 26 (to appear)*. [preprint]
- 2020 **“Just” don’t ask: Exclusives and potential questions.** [Alex Warstadt](#). *Proceedings of Sinn und Bedeutung 24*. [link]
- 2020 **Non-resolving responses to polar questions: A revision to the QUD theory of relevance.** {Omar Agha, [Alex Warstadt](#)}. *Proceedings of Sinn und Bedeutung 24*. [link]
- 2019 **Verb Argument Structure Alternations in Word and Sentence Embeddings.** {Katharina Kann, [Alex Warstadt](#), Adina Williams}, Samuel R. Bowman. *Proceedings of SCiL 2*. [link]
- 2015 **Right-node wrapping: A combinatory account.** [Alex Warstadt](#). *Proceedings for ESSLLI 2015 Workshop ‘Empirical Advances in Categorical Grammar’*. [link]

Manuscripts

- 2019 **Linguistic Analysis of Pretrained Sentence Encoders with Acceptability Judgments.** [Alex Warstadt](#), Samuel R. Bowman *ArXiv preprint* [link]
- 2015 **The Syntax of Coordination and Discontinuity in Categorical Grammar.** [Alex Warstadt](#) *Unpublished manuscript, presented at Tri-College Undergraduate Linguistics Conference* [link]

Refereed Presentations without Proceedings Papers

- 2021 **The Dynamics of Refusal: A revision to the QUD theory of discourse structure.** *Talk given at Semantics and Linguistic Theory (SALT) 31 (Brown University/Online)*.
- 2020 **BLiMP: The Benchmark of Minimal Pairs for English.** Co-presented with Alicia Parrish Work also with Haokun Liu, Anhad Mohananey, Wei Peng, Sheng-Fu Wang, Samuel R. Bowman. *Talk given at SCiL 3 (New Orleans)*.

- 2019 **Non-Resolving Responses to Polar Questions.** Co-presented with Omar Agha. *Talk given at SYNC (SUNY Stony Brook).*
- 2018 **Acceptability Judgments from a Neural Network.** Work with Samuel R. Bowman. *Talk given at Annual Meeting of the LSA (Salt Lake City).*
- 2015 **The Syntax of Coordination and Discontinuity in a Combinatory Categorical Grammar.** *Talk given at Tri-College Undergraduate Linguistics Conference (Haverford).*

Invited Talks

- 2024 **“What’s the point?” How relevance shapes language learning and inference in humans and machines.** Keynote address at *UnImplicit Workshop (EACL).*
- 2024 **Language Models and Human Language Acquisition.** *Department of Linguistics, IIT Delhi.*
- 2023 **Language Models and Human Language Acquisition.** *ILFC Lecture Series.*
[video]
- 2023 **Neural networks as models of human language acquisition.** *CLASP, University of Gothenburg*
- 2022 **Presupposition triggering reflects utterance utility.** *Department of Linguistics, University of Tübingen*
- 2022 **Neural networks as models of human language acquisition.** *ILLC, University of Amsterdam*
- 2022 **Neural networks as models of human language acquisition.** *TALEP, Aix-Marseille University*
- 2022 **The effects of pretraining on generalization and inductive bias in language models** *Instituto Superior Técnico and Unbabel, Lisbon*
- 2022 **Neural networks as models of human language acquisition.** *Ev Fedorenko’s Language Lab, MIT*
- 2022 **What artificial neural networks can teach us about human language acquisition.** *Computation and Language Lab, University of California Berkeley*
- 2022 **What artificial neural networks can teach us about human language acquisition.** *Cognitive Machine Learning lab, Ecole Normal Supérieure*
- 2022 **What artificial neural networks can teach us about human language acquisition.** *Rycolab meeting, ETH Zürich*
- 2022 **What artificial neural networks can teach us about human language acquisition.** *Computational Linguistics Seminar, University of Texas at Austin*
- 2022 **What artificial neural networks can teach us about human language acquisition.** *The Stanford Language and Cognition Lab*
- 2021 **Testing the learnability of grammar for humans and machines: Investigations with artificial neural networks.** *New York University NLP and Text-as-Data Speaker Series.*
- 2020 **Learning Which Features Matter: RoBERTa Acquires a Preference for Linguistic Generalizations (Eventually).** *Bar-Ilan University NLP group seminar.*
- 2020 **Learning grammar from raw data: Case studies with acceptability judgments and neural networks.** *Indiana University ClingDing discussion group.*
- 2020 **Learning Acceptability Judgments from Text Alone.** *Max Planck–NYU Center for Language, Music, and Emotion (CLaME) workshop on Language.*
(Stand-in for Samuel R. Bowman, who was the invited speaker and wrote the talk)

- 2019 **Discovering Structure: Can neural networks acquire a bias for structural generalization?** *New York University Syntax Brown Bag.*
- 2018 **Just Refuses to Answer the QUD.** *New York University Semantics Group.*

Awards and Grants

- 2023 **Nominated for Outstanding Paper Award, EMNLP.** For “Quantifying the redundancy between prosody and text”.
- 2023 **Outstanding Paper Award, ACL.** For “Generalizing Backpropagation for Gradient-Based Interpretability”.
- 2022 **ETH Zürich Postdoctoral Fellowship.** CHF 24,000 for research expenses. 24 months. Host: Ryan Cotterell.
- 2021 **Outstanding reviewer for ACL.**
- 2019 **NSF Computer and Information Science and Engineering Research Initiation Initiative.** \$175,000, 24 months Can Low-Bias Machine Learners Acquire English Grammar? Deep Learning and Linguistic Acceptability. Samuel R. Bowman (PI)
Note: A. Warstadt was an equal co-author on the proposal.
- 2017-2022 **McCracken Fellowship.** 5 years, NYU internal
- 2015 **Outstanding work in the linguistics concentration.** Brown University
- 2014 **Phi Beta Kappa**
- 2014 **Undergraduate Teaching and Research Award.** \$3570, 3 months Brown University internal
- 2011 **Valedictorian** Sharon High School

Teaching

- 2024 **Guest Lecturer** Computational Linguistics and Cognitive Science. New York University. Professor Tal Linzen.
- 2023 **Guest Lecturer** Natural Language Processing. Wellesley College. Professor Carolyn Anderson.
- 2021 **Guest Lecturer** Natural Language Understanding and Computational Semantics. New York University. Professor Samuel R. Bowman.
- 2021 **Guest Lecturer** Machine Learning and Language Understanding. New York University. Professor Samuel R. Bowman.
- 2021 **Teaching Assistant** Patterns in Language. New York University. Professor Lucas Champollion.
- 2020 **Guest Lecturer** Machine Learning and Language Understanding. New York University. Professor Samuel R. Bowman.
- 2020 **Primary Instructor** Language. New York University. Co-taught with Paloma Jeretič.
- 2021 **Teaching Assistant, Guest Lecturer** Language. New York University. Professor Gary Thoms.

Reviewing

- 2023 *Language Development Research*
- 2023 *Cognitive Science*
- 2023 *Journal of Semantics*
- 2023 *Transactions of the Association for Computational Linguistics (TACL)*
- 2022 *Nature Machine Intelligence*

2022 *BlackBox NLP*

2022 *Frontiers in Psychology*

2021 *Association for Computational Linguistics Rolling Review (ARR)*. October, November, December cycles.

2021 *International Conference on Learning Representations (ICLR)*.

2021 *The Joint Conference of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing (ACL-IJCNLP)*.

2021 *Frontiers in Psychology, section Language Sciences*.

2021 *Society for Computation in Linguistics (SCiL)*.

2021 *The SIGNLL Conference on Computational Natural Language Learning (CoNLL)*.

2020 *Conference of the North American Chapter of the Association for Computational Linguistics - Human Language Technologies (NAACL-HLT)*.

2020 *Language and Cognition*.

2020 *The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP)*.

2020 *Society for Computation in Linguistics (SCiL)*.

2020 *The 24th Conference on Computational Natural Language Learning (CoNLL)*.

2020 *The 58th Annual Meeting of the Association for Computational Linguistics (ACL)*.

2019 *Stony Brook/Yale/NYU/Columbia Linguistics Conference (SYNC)*

Other Service

- 2022- **Lead Organizer** BabyLM shared task. Sponsored by the Conference on Natural Language Learning (CoNLL) and Workshop on Cognitive Modeling for Computational Linguistics (CMCL).
- 2022- **Founder & Organizer** Zürich NLP Lab Meeting. ETH Zürich.
- 2018-2021 **Colloquium Committee** Department of linguistics. New York University.
- 2019 **Meal coordinator** ML² Lab Meeting. New York University.

Research-Related Work

- 2018 **Java Developer** Lambda Calculator. Under Professor Lucas Champollion. New York University.
- 2014 **Research Assistant** Sentence and Discourse Processing Lab. Under Professor Laura Kertz. Brown University.

Industry Work

- May 2016 – **Research and Development Engineer** IPsoft, Inc. New York, NY.
Apr. 2017
- Nov. 2015 – **Java Developer** IBM Watson Health. Yorktown Heights, NY.
May 2016

Technologies

- Expert Python, Pandas, Matplotlib, LaTeX, Regex
- Proficient Java, NLTK, Pytorch, SpaCy, Git, R, slurm
- Novice Scala, WebPPL, HTML

Natural Languages

- Native English
- Proficient Spanish
- Beginner German, Hebrew
- Fieldwork Q'anjob'al (Mayan)