Annika Heuser

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Department of Linguistics, 3401 Walnut Street, Philadelphia, PA, 19104

Education

University of Pennsylvania *Expected: May 2027*
PhD Candidate in Linguistics
Advisor: Charles Yang
GPA: 3.97/4.0

Massachusetts Institute of Technology *2022*
MEng in Computation & Cognition (Computer Science & Brain and Cognitive Sciences; 6-9)
Thesis: Transformer-Maze
GPA: 5.0/5.0

BS in in Computation & Cognition (Computer Science & Brain and Cognitive Sciences; 6-9)
MIT EECS | CS+HASS Undergraduate Research and Innovation Scholar
GPA: 4.7/5.0

Research and Teaching Interests

Child Language Acquisition, Computational Linguistics, Phonetics, Experimental and Corpus
Linguistics, Phonology, Psycholinguistics, Natural Language Processing

Publications

Le Xuan Chan & **Annika Heuser** (2025). Relative cue weighting in multilingual stop voicing
production. *Proceedings of Interspeech 2025*. [Link] ***Nominated for Best Student Paper.**

Annika Heuser (2025). Discovering Phonological Representations: The Case of French Liaison.
In *Proceedings of the 49th annual Boston University Conference on Language Development (BUCLD 49)*. Somerville, MA: Cascadilla Press.

Héctor Javier Vázquez Martínez, **Annika Heuser**, Charles Yang, Jordan Kodner (Under review).
Evaluating the existence proof. LLMs as cognitive models. In Jose-Luis Mendivil (Ed.), *Artificial Knowledge of Language: A Linguists' Perspective on its Nature, Origins and Use* (Chapter 7, pp. 110-135). Vernon Press.

Annika Heuser & Jianjing Kuang (2024). Information-theoretic hypothesis generation of relative cue weighting for the voicing contrast. *Proceedings of Interspeech 2024*. [Link]

Annika Heuser, Tyler Kendall, Migual Del Rio, Quinten McNamara, Nischal Bhandari, Corey Miller, & Migüel Jetté (2024). Quantification of stylistic differences in human- and ASR-produced transcripts of African American English. *Proceedings of Interspeech 2024*. [Link]

Héctor Javier Vázquez Martínez, **Annika Heuser**, Charles Yang, Jordan Kodner (2023). Evaluating Neural Language Models as Cognitive Models of Language Acquisition. In *Proceedings of the 1st GenBench Workshop on (Benchmarking) Generalisation in NLP.* [Link]

Annika Heuser & Edward Gibson (2023). Transformer-Maze: An Accessible Incremental Processing Measurement Tool. In *Proceedings of the Annual Meeting of the Cognitive Science Society* (Vol. 45, No. 45). [Link]

Annika Heuser (2022). Transformer-Maze. *Master's of Engineering Thesis, Massachusetts Institute of Technology*. [Link]

Annika Heuser & Polina Tsvilodub (2021). Modeling German Word Order Acquisition via Bayesian Inference. In *Proceedings of the Society for Computation in Linguistics 2021.* [Link]

Annika Heuser & Polina Tsvilodub (2021). Comparing Symbolic Models of Language via Bayesian Inference (Student Abstract). In *Proceedings of the AAAI Conference on Artificial Intelligence.* [Link]

Presentations

2025   **Annika Heuser**. Emergence of phonemic categories through the acquisition of a lexicon. Poster to be presented at the 50th Annual Boston University Conference on Language Development (BUCLD), 6-9 November, 2025, Boston, MA, USA.

2025   Le Xuan Chan and **Annika Heuser**. Relative cue weighting in multilingual stop voicing production. Poster presented at Interspeech 2025, 17-21 August, 2025, Rotterdam, the Netherlands.

2025   **Annika Heuser**. Discovering Phonological Representations: The Case of French Liaison. Paper presented at the 2025 Annual Meeting of the Linguistic Society of America (LSA 2025), 9-12 January, 2025, Philadelphia, PA, USA.

2024   **Annika Heuser** and Charles Yang. Discovering Phonological Representations: The Case of French Liaison. Poster presented at the 49th Annual Boston University Conference on Language Development (BUCLD), 7-10 November, 2024, Boston, MA, USA.

2024   **Annika Heuser** and Jianjing Kuang. Information-theoretic hypothesis generation of relative cue weighting for the voicing contrast. Poster presented at Interspeech 2024, 1-5 September, 2024. Kos Island, Greece.

2024 **Annika Heuser**, Tyler Kendall, Migual Del Rio, Quinten McNamara, Nischal Bhandari, Corey Miller, & Migüel Jetté. Quantification of stylistic differences in human- and ASR-produced transcripts of African American English. Poster presented at Interspeech 2024, 1-5 September, 2024. Kos Island, Greece.

2024 **Annika Heuser**, Héctor Javier Vázquez Martínez, and Charles Yang. The Learnability of Syntactic Islands. Co-presented at the 54th Annual Meeting of the North East Linguistics Society (NELS), 26-27 January, 2024, Cambridge, MA, USA.

2023 Héctor Javier Vázquez Martínez, **Annika Heuser**, Charles Yang, and Jordan Kodner. Evaluating Neural Language Models as Cognitive Models of Language Acquisition. Paper co-presented at the 1st GenBench Workshop on (Benchmarking) Generalisation in NLP at the 2023 Conference on Empirical Methods in Natural Language Processing (EMNLP). 6-10 December 2023, Singapore.

2023 **Annika Heuser** and Edward Gibson. Transformer-Maze: An Accessible Incremental Processing Measurement Tool. Poster presented at the 44th Annual Meeting of the Cognitive Science Society, 26-29 July, 2023, Sydney, Australia. (Virtual)

2023 **Annika Heuser** and Edward Gibson. Transformer-Maze: An Accessible Incremental Processing Measurement Tool. Poster presented at 36th Annual Conference on Human Sentence Processing, 9-11 March, 2023, Pittsburgh, PA, USA.

2021 **Annika Heuser** and Polina Tsvilodub. Modeling German Word Order Acquisition via Bayesian Inference. Paper presented at Society for Computation in Linguistics conference, 15 February 2021. (Virtual)

2021 **Annika Heuser** and Polina Tsvilodub. Comparing Symbolic Models of Language via Bayesian Inference. Poster presented at Association for the Advancement of Artificial Intelligence (AAAI) Conference Student Abstract and Poster Program, 4-7 February 2021. (Virtual)

Industry Experience

Speech Science Intern   June, 2023 - March, 2024
Rev.com, *Research & Development Team, remote*
- Investigated sources of bias in ASR development
- Published and presented findings at Interspeech 2024

Natural Language Processing Intern   June, 2021 - August, 2021
Virtualitics, *Research & Development Team, remote*
- Improved natural language querying system of data analytics and 3D visualization platform
- Customer-facing product updated with these changes in the next release cycle

Bioinformatics Intern   June, 2019 - August, 2019
***Hummingbird Diagnostics**, Heidelberg, Germany*
- Built pipeline with cox survival regression, leave one-out cross validation, and parallel processing to determine whether patients' miRNA expression levels can predict medication efficacy

Siri Team Intern   June, 2018 - August, 2018
***Apple, Inc**., Cupertino, CA, USA*
- Wrote engineering documentation for the Siri team
- Finalist in Apple's annual intern innovation contest, iContest

Awards, Scholarships, and Funding

2024	**Interspeech 2024 ISCA Student Travel Grant**
2024	**President Gutmann Leadership Award,** University of Pennsylvania
2023-2024	**Language and Communication Sciences (LCS) Program**, University of Pennsylvania
2023-2024	**SAS Dean's Travel Subvention**, University of Pennsylvania
2023	**GAPSA Research Student Individual Grant for Fall 2022**, University of Pennsylvania
2022-2027	**Benjamin Franklin Fellowship**, University of Pennsylvania
2020	**Walle Nauta Award for Excellence in Undergraduate Teaching**, Massachusetts Institute of Technology
2017-2021	**CRCA Scholar Athlete & Patriot League Academic Honor Roll**, Massachusetts Institute of Technology

Teaching Experience

Formal Linguistics (LING 0500)   Spring 2025
Teaching Assistant for Professor Florian Schwarz
Department of Linguistics, University of Pennsylvania

Language Acquisition (LING 2700)   Fall 2024
Teaching Assistant for Dr. Aletheia Cui
Department of Linguistics, University of Pennsylvania

Introduction to Linguistics (LING 0001)   Spring 2024
Teaching Assistant for Dr. Aletheia Cui
Department of Linguistics, University of Pennsylvania

Tutorial in Linguistics (LING 4000)   Fall 2023
Teaching Assistant for Dr. Aletheia Cui
Department of Linguistics, University of Pennsylvania

Mentor and Curriculum Team Executive Board Member   June, 2022 - August, 2023
Momentum
- Taught underserved high school students about AI and the college application process during summer capstone program
- Revised next summer's curriculum based on teaching experience

Introduction to EECS via Interconnected Embedded Systems (6.08)   Spring 2021, 2022
Teaching Assistant for Dr. Joe Steinmeyer
Department of Electrical Engineering and Computer Science, MIT

Artificial Intelligence (6.034/6.844)   Fall, 2021
Teaching Assistant for Dr. Kimberle Koile
Department of Electrical Engineering and Computer Science, MIT

Computational Psycholinguistics (9.19/9.190)   Fall, 2020
Teaching Assistant for Professor Roger Levy
Department of Brain and Cognitive Sciences, MIT

Other Research Experience

Undergraduate Research Opportunity Program   Summer, 2020
Massachusetts Institute of Technology, Computational Linguistics Lab
Department of Electrical Engineering and Computer Science
PI: Professor Robert Berwick

SuperUROP (Advanced Undergraduate Research Opportunities Program)   Fall, 2019 - Spring, 2020
Title: Modeling German Language Acquisition
Department of Electrical Engineering and Computer Science
Advisors: Professor Robert Berwick and Professor Suzanne Flynn

Service and Leadership Experience

University of Pennsylvania
2024 - Present	Penn Graduate Student Committee (GradLings) President
2024	Penn Linguistics Conference 48 – Invited Speakers Chair
2023 - 2025	Integrated Language Science and Technology (ILST) Seminar Organizer
2023 - 2025	Linguistics Department Representative to SASGov
2023 - Present	Penn Working Papers in Linguistics Copy Editor
2023	Penn Linguistics Conference 47 – Co-Chair & Content Committee Chair
2022 - 2024	GradLings Prospective Student Liaison
2022 - 2023	GradLings Social Chair

Massachusetts Institute of Technology
2020 - 2022   MIT Casino Rueda (Cuban-style salsa) Club President
2019 - 2020   Captain of NCAA Division 1 Varsity Rowing Team

Other Organizations
2022   [Momentum](#) Ukraine Executive Board Member

Peer-Reviewer
2023 - Present   Annual Meeting of the Cognitive Science Society (CogSci)
2023 - Present   Penn Linguistics Conference

Skills

Languages: English (Native), German (Fluent/C1), Spanish (Fluent/C1), Japanese (Beginner/A1)

Programming Languages: Python, C#, C++, R