

EDUCATION

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| New York University Ph.D. in Psychology (Cognition and Perception) | New York, NY 2024–now |
| University of California, Irvine Ph.D. Program in Language Science Ph.D. Program in Logic and Philosophy of Science | Irvine, CA 2023–2024 2022–2023 |
| University of Washington M.S. in Computational Linguistics | Seattle, WA 2020–2022 |
| University of California, San Diego B.A. in Philosophy | La Jolla, CA 2016–2020 |

EXPERIENCE

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| Posh Technologies NLP Research Intern | Boston, MA Summer 2021 |
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PEER REVIEWED JOURNAL PUBLICATIONS

- [1] N. Imel, Q. Guo, and S. Steinert-Threlkeld. An efficient communication analysis of modal typology. (under review). <https://ling.auf.net/lingbuzz/007392>.
- [2] S. Steinert-Threlkeld, N. Imel, and Q. Guo. A semantic universal for modality. *Semantics and Pragmatics* (2023). <https://doi.org/10.3765/sp.16.1>.

CONFERENCE PROCEEDINGS AND WORKSHOP PAPERS

- [3] N. Imel and N. Zaslavsky. Culturally transmitted color categories in LLMs reflect a learning bias toward efficient compression. In: *CogInterp: Interpreting Cognition in Deep Learning Models (CogInterp @ NeurIPS)*. 2025. <https://arxiv.org/abs/2509.08093>.
- [4] N. Imel, J. Culbertson, S. Kirby, and N. Zaslavsky. Iterated language learning is shaped by a drive for optimizing lossy compression. In: *Proceedings of the 46th Annual Meeting of the Cognitive Science Society*. 2025. <https://escholarship.org/uc/item/63d7n4v0>.
- [5] M. Taliaferro, N. Imel, N. Zaslavsky, and E. Blanco-Elorrieta. Bilinguals exhibit semantic convergence while maintaining near-optimal efficiency. In: *Proceedings of the 46th Annual Meeting of the Cognitive Science Society*. 2025. <https://escholarship.org/uc/item/4128j529>.
- [6] N. Imel, C. Haberland, and S. Steinert-Threlkeld. The Unnatural Language Toolkit (ULTK). In: *Proceedings of the Society for Computation in Linguistics*. 2025. <https://doi.org/10.7275/scil.3144>.
- [7] N. Imel and N. Zaslavsky. Optimal compression in human concept learning. In: *Proceedings of the 46th Annual Meeting of the Cognitive Science Society*. 2024. <https://escholarship.org/uc/item/7pc1g61d>.
- [8] N. Imel and Z. Hafen. Citation-similarity relationships in astrophysics. In: *AI for Scientific Discovery: From Theory to Practice Workshop (AI4Science @ NeurIPS)*. 2023. <https://openreview.net/pdf?id=mISayy7DPI>.

- [9] N. Imel, R. Futrell, M. Franke, and N. Zaslavsky. Noisy population dynamics lead to efficiently compressed semantic systems. In: *NeurIPS Workshop on Information-Theoretic Principles in Cognitive Systems Workshop (InfoCog @ NeurIPS)*. 2023. <https://openreview.net/pdf?id=9oEXdXmMNR>.
- [10] N. Imel. The evolution of efficient compression in signaling games. In: *Proceedings of the 45th Annual Meeting of the Cognitive Science Society*. 2023. <https://escholarship.org/uc/item/5dr5h4q0>.
- [11] N. Imel and S. Steinert-Threlkeld. Modals in natural language optimize the simplicity/informativeness trade-off. In: *Proceedings of Semantics and Linguistic Theory (SALT 32)*. 2022. <https://doi.org/10.3765/salt.v1i0.5346>.
- [12] Q. Guo, N. Imel, and S. Steinert-Threlkeld. A Database for Modal Semantic Typology. In: *Proceedings of the 4th Workshop on Research in Computational Linguistic Typology and Multilingual NLP*. Seattle, Washington: Association for Computational Linguistics, July 2022. <https://aclanthology.org/2022.sigtyp-1.6/>.

WORKS IN PROGRESS

- [13] N. Imel, R. Futrell, M. Franke, and N. Zaslavsky. Minimalistic agent-level dynamics may yield efficiently compressed population-level vocabularies. (2025). (in prep).
- [14] N. Imel and Z. Hafen. Density, asymmetry and citation dynamics in scientific literature. (2025). <https://arxiv.org/abs/2506.23366>.
- [15] W. Uegaki, A. Mucha, N. Imel, and S. Steinert-Threlkeld. Deontic priority in the lexicalization of impossibility modals. (2023). <https://psyarxiv.com/h63y9/>.

TALKS AND PRESENTATIONS

Iterated learning is shaped by a drive for optimizing lossy compression

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| Cogsci 2025 (San Francisco, CA) | 8/01/25 |
| NYU C&P Miniconvention (New York, NY) | 9/26/25 |

Optimal compression in human concept learning

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| Cogsci 2024 (Rotterdam, NL) | 7/24/24 |
| PhilLab at Dartmouth College (virtual) | 11/12/24 |

Noisy population dynamics lead to efficiently compressed semantic systems

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| University of Tübingen Linguistics Colloquium (virtual) | 7/04/23 |
| MIT Computational Psycholinguistics Lab (Cambridge, MA) | 10/17/23 |
| Evolang 2024 (Madison, WI) | 5/19/24 |

Citation-similarity relationships in astrophysics literature

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| Santa Fe Institute Workshop on Intelligence and Representation (Cambridge, UK) | 8/18/23 |
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Modals in natural language optimize the simplicity/informativeness trade-off

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| Semantics and Linguistic Theory (Mexico City, CDMX) | 6/08/22 |
| Experiments in Linguistic Meaning (Philadelphia, PA) | 5/18/22 |

AWARDS

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| Santa Fe Institute Complexity GAINs Summer Fellowship | 2023 |
| North American Summer School for Logic, Language and Information Student Fellowship (USC) | 2023 |
| Merit Fellowships (UC Irvine School of Social Sciences) | 2022 |

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| Accepted to Summer School in Logic and Formal Epistemology (CMU) | 2021 |
| Best paper “Desire Semantics”, selected for UC San Diego undergraduate philosophy journal <i>Intuitions</i> | 2020 |

TEACHING

Grader

- ANOVA (NYU) – w. Ajua Duker Fall 2025

Teaching Assistant

- Lab in Cognition and Perception (NYU) – w. Noga Zaslavsky Spring 2025
- Introduction to Syntax (UCI) – w. Galia Bar-Sever Winter, Spring 2024
- Introduction to Linguistics (UCI) w. Ben Mis Fall 2023
- Basic Economics I (UCI) w. Jiawei Chen Spring 2023
- Introduction to Symbolic Logic – w. Toby Meadows (UCI) Winter 2023

SERVICE

Organizing

- Co-organizer for InfoCog Workshop @ CogSci 2025
- Organizing Committee for Society for Computation in Linguistics Conference 2023
- Co-organizer for InfoCog Workshop @ Neurips 2023
- Department Colloquium Committee (UCI Language Science) 2023

Reviewing

- Journal reviewing: JML, Mind & Language 2024-2025
- Conferences/Workshops: CogSci, InfoCog Workshop @ NeurIPS, EvoLang, California Annual Meeting of Psycholinguistics 2023–2025

SKILLS

- **Programming Languages:** Python, Java, C++, MATLAB
- **Libraries & Frameworks:** NumPy, PyTorch, pandas, plotnine, matplotlib, huggingface, NLTK, Hydra
- **Cloud & Computing:** high-performance computing with Condor & Slurm, Google Cloud Platform, Lambda AI
- **DevOps & Tools:** GitHub Workflows/Actions, containerization (Singularity)