

RUSSELL RICHIE

Email: drrichie@sas.upenn.edu
Website: <https://drussellmrchie.github.io/>

412 S 13th St., Apt 602
Philadelphia, PA 19147

EMPLOYMENT

Data Scientist	2021-
Department of Biomedical and Health Informatics Children's Hospital of Philadelphia	
Postdoctoral fellow	2018-2021
Psychology University of Pennsylvania	
Postdoctoral fellow	2017-2018
Marketing The Wharton School, University of Pennsylvania	
Co-Lab Manager	2009-2011
Psychology Temple Infant and Child Laboratory	

EDUCATION

PhD	University of Connecticut, Psychological Science	2017
	Dissertation: "Conventionalization and reduction in communication: An experimental and computational modeling investigation"	
	Advisors: Drs. Marie Coppola and Whitney Tabor	
MS	University of Connecticut, Psychological Science	2013
	Thesis: "Modeling the Emergence of natural language lexicons"	
	Advisors: Drs. Marie Coppola and Whitney Tabor	
	Linguistics Society of America Summer Institute	2011, 2013
BS	Bates College, Psychology	2009

HONORS AND AWARDS

CT Institute for Brain and Cognitive Sciences Graduate Summer Fellowship	2016
EvoLang Conference Runner-up for Best Poster	2016
UConn IGERT Innovation Incentive Awards (2x)	2013
Paula Menyuk Travel Award, BUCLD	2013

Society for Language Development Travel Award	2013
Cognitive Science Conference Computational Modeling Prize	2013
Artificial Intelligence Journal Travel Award	2013
Linguistics Society of America Summer Institute Fellowship	2013
University of Connecticut Outstanding Scholar Fellowship	2011

TEACHING AND MENTORSHIP EXPERIENCE

Courses

University of Pennsylvania

Introduction to Cognitive Science, co-instructor (taught remotely)	2020
Guest lecture on NLP, Data and Analysis for Marketing Decisions	2018, 2019

University of Connecticut

Foundations in Cognitive Science, co-instructor	2017
Foundations of Research in Psychological Sciences I (graduate intro statistics), TA	2016
Foundations of Cognitive Science, TA	2015, 2016
Principles of Research in Psychology, TA	2014
General Psychology II, TA	2012
General Psychology I, TA	2011

Workshops

Text Analysis for Behavioral Science (Instructional Assistant)	2019
Introduction to Data Analysis with Python	2017, 2019
Introduction to Python	2014
Zipf's Law and Related Power Laws in Language	2014

PUBLICATIONS

Journal Publications

Giovanne, N., Fitzroy, A. B., **Richie, R.**, Jasińska, K., Wood, S., Landi, N., Coppola, M. & Breen, M. (in prep). Prosodic phrase boundary processing in native signers of American Sign Language.

Richie, R., & Verheyen, S. (in prep). Using cross-validation to select dimensionality in multidimensional scaling.

He, L.*, **Richie, R.***, & Bhatia, S. (in prep). Naturalistic, memory-based active function learning. **Equal contribution*

Richie, R., Aka, A., & Bhatia, S. (in prep). Free association in bidirectional memory networks.

- Han, S., Shi, L., **Richie, R.**, Tsui, F.R. (under review). Building Siamese attention-augmented-recurrent convolutional neural networks for document similarity scoring.
- Singh, M.*, **Richie, R.***, & Bhatia, S. (in press). Representing and predicting everyday behavior. *Computational Brain & Behavior*. [PsyArXiv preprint](#). *Equal contribution
- Bhatia, S., & **Richie, R.** (in press). Transformer networks of human concept knowledge. *Psychological Review* [PsyArXiv preprint](#).
- Richie, R.**, & Bhatia, S. (2021). Similarity judgment within and across categories: A comprehensive model comparison. *Cognitive Science*, 45(8), e13030 [PsyArXiv preprint](#).
- Zhao, W.J., **Richie, R.**, & Bhatia, S. (2021). Process and content in decisions from memory. *Psychological Review*. Advance online publication. [PsyArXiv preprint](#)
- Richie, R.***, Hall*, M., Cho, P.W., & Coppola, M. (2020). Converging evidence: Enhanced conventionalization of gestural referring expressions in richly-connected networks. *Language Dynamics and Change*, 10(2), 259-290. [PsyArXiv preprint](#). *Equal contribution
- Richie, R.**, White, B., Hout, M.C., & Bhatia, S. (2020). [The spatial arrangement method of measuring similarity can capture high-dimensional, semantic structures](#). *Behavior Research Methods*, 52, 1906–1928. [PsyArXiv preprint](#).
- Richie, R.**, Zou, W., & Bhatia, S. (2019). [Predicting High-Level Human Judgment Across Diverse Behavioral Domains](#). *Collabra: Psychology*, 5(1), 50. [PsyArXiv preprint](#).
- Bhatia, S., **Richie, R.**, & Zou, W. (2019). [Distributed semantic representations for modeling human judgment](#). *Current Opinion in Behavioral Sciences*, 29, 31-36.
- Richie, R.** (2016). [Functionalism in the lexicon: Where is it, and how did it get there?](#) In G. Jarema, G. Libben, & V. Kuperman (Eds.), Thematic Issue of *The Mental Lexicon: New Questions for the Next Decade*, 11(3), 429–466. Amsterdam: John Benjamins. doi 10.1075/ml.11.3.05ric. [PsyArXiv preprint](#).
- Richie, R.**, Yang, C., & Coppola, M. (2014). [Modeling the emergence of natural language lexicons in homesign systems](#). *Topics in Cognitive Science*, 6(1), 183-195.
- Roseberry, S., **Richie, R.**, Hirsh-Pasek, K., Golinkoff, R.M., Shipley, T. (2011). [Babies catch a break: 7- to 9-month-olds track transitional probabilities in continuous dynamic events](#). *Psychological Science*, 22(11), 1422-1424.

Book chapters

Richie, R. (in press). Functionalism in the lexicon: Where is it, and how did it get there? In G. Jarema, G. Libben, & V. Kuperman (Eds.), *Polylogues on the Mental Lexicon: An exploration of fundamental issues and directions*. Amsterdam: John Benjamins.

Richie, R., & Bhatia, S. (in press). Knowledge in everyday judgment and decision making: An introduction to the distributed semantics approach. In R. Boyd & M. Dehghani (Eds.) *The Atlas of Language Analysis in Psychology*. Guilford Press. [PsyArXiv preprint](#).

Conference Papers

Richie, R., & Verheyen, S. (2020). Using cross-validation to select dimensionality in multidimensional scaling. *Proceedings of the 18th Annual Meeting of the International Conference on Cognitive Modeling*.

Zhao, W.J., **Richie, R.,** & Bhatia, S. (2020). Process and content in decisions from memory. *Proceedings of the 42nd Annual Conference of the Cognitive Science Society*.

Richie, R., White, B., Hout, M.C., & Bhatia, S. (2020). The spatial arrangement method of measuring similarity can capture high-dimensional, semantic structures. *Proceedings of the 42nd Annual Conference of the Cognitive Science Society*.

Richie, R., Zou, W., & Bhatia., S. (2019). Distributional semantic representations predict high-level human judgment in seven diverse behavioral domains. *Proceedings of the 41st Annual Conference of the Cognitive Science Society*.

Hall M., **Richie R.** & Coppola M. (2016). The impact of communicative network structure on the conventionalization of referring expressions in gesture. In S.G. Roberts, C. Cuskley, L. McCrohon, L. Barcelo-Coblijn, O. Feher & T. Verhoef (eds.) *The Evolution of Language: Proceedings of the 11th International Conference (EVOLANG11)*. Available online: <http://evolang.org/neworleans/papers/134.html>

Tabor, W., **Richie, R.,** Dankowicz, H. (2014). Language emergence in the laboratory: A method suitable to dynamical systems analysis. In E. A. Cartmill, S. Roberts, H. Lynn, & H. Cornish (Ed.) *Proceedings of the 10th Biennial Evolution of Language Conference (EVOLANG10)*, Vienna, Austria.

Richie, R., Coppola, M., & Yang, C. (2014). Emergence of natural language lexicons: Empirical and modeling evidence from homesign and Nicaraguan Sign Language. *Proceedings of the 38th Boston University Conference in Language Development*, Boston, MA.

**This paper received a 2013 Computational Modeling Prize from the Cognitive Science Society.

Richie, R., Yang, C., & Coppola, M. (2014). Modeling the emergence of lexicons in homesign systems. In M. Knau_, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Cognitive Science Society Conference* (pp 1223-1228), Berlin, Germany.

Richie, R., Fanghella, J., & Coppola, M. (2013). Emergence of lexicons in family-based homesign systems in Nicaragua. In L. Geer (Ed.) *Proceedings of the 13th annual Texas Linguistics Society Meeting*, pp. 55-67, Austin, TX.

PRESENTATIONS

Invited presentations

Tsui Lab, Children's Hospital of Philadelphia	June 2021
Social and Cultural Working Group, University of Pennsylvania	Jan 2019
Brown University	June 2013

Paper presentations

Richie, R., & Bhatia, S. (2020). *Similarity judgment within and across categories: A comprehensive model comparison*. Paper presented at Semantic Spaces at the Intersection of NLP, Physics, and Cognitive Science (SemSpace2020).

Richie, R., Hall, M., Coppola, M., Tabor, W. (2017). *Conventionalization and reduction in an emerging communication system: An experimental and computational modeling investigation*. Paper presented at the 30th annual CUNY Conference on Human Sentence Processing, Cambridge, MA, USA.

Tabor, W., **Richie, R.,** Dankowicz, H. (2014). *Language emergence in the laboratory: A method suitable to dynamical systems analysis*. Paper presented at the 10th Biennial Evolution of Language Conference, Vienna, Austria.

Richie, R., Yang, C., & Coppola, M. (2013). *Modeling the emergence of lexicons*. Paper presented at the 38th Annual Boston University Conference on Language Development, Boston, MA.

Tabor, W., **Richie, R.,** Brozdowski, C., Dankowicz, H. (2013). *Human coordination in a group number game exhibits physics-like energy loss and symmetry breaking*. Paper presented at the Workshop on Collective Behaviors and Social Dynamics at the 12th European Conference on Arti_cial Life, Taormina, Italy.

Richie, R., Yang, C., & Coppola, M. (2013). *Modeling the emergence of lexicons in homesign systems*. Paper presented at the 35th Annual Cognitive Science Society Conference, Berlin, Germany.

Richie, R., Fanghella, J., Coppola, M. (2012). *Emergence of lexicons in family-based homesign systems in Nicaragua*. Paper presented at the 13th Annual Texas Linguistics Society Meeting, Austin, TX.

Roseberry, S., **Richie, R.**, Hirsh-Pasek, K., & Golinko, R.M. (2011). *Babies catch a break: 7- to 9-month-olds track statistical probabilities in continuous, dynamic events*. Paper presented in A. Stahl and S. Roseberry (chairs) Carving events for word learning: Discovering the mechanisms behind infant event segmentation. The Society for Research in Child Development, Montreal, Canada

PROFESSIONAL AFFILIATIONS

Cognitive Science Society
Psychonomics Society
Society for Mathematical Psychology
Society for Judgment and Decision Making

REVIEWING

Granting agencies: National Science Foundation (PAC)

Publishers: Cambridge University Press

Journals: Cognition, Language, Behavior Research Methods (3x), Cognitive Science, Social Science and Medicine, Social Science Computer Review, PLOS One, Language Learning

Conferences: CogSci (2x), CUNY Conference on Human Sentence Processing (2x), EvoLang

LANGUAGES

English: Native Language

American Sign Language: beginner, structural knowledge

Nicaraguan homesign systems: structural knowledge, fieldwork

Nicaraguan Sign Language: structural knowledge, fieldwork

TECHNICAL SKILLS

Language and Technologies:

- **Expert:** Python, Pandas, NumPy, SciPy, Matplotlib, Seaborn, scikit-learn, statsmodels, NLTK
- **Basic:** spaCy, gensim, NetworkX, pymc3, keras, huggingface, Beautiful Soup, Selenium, bash, HTML, R

Statistics and machine learning: general(ized) linear models, k-NN, SVM, random forests, deep neural networks (MLP, RNN, transformers), PCA, MDS

Platforms: Qualtrics, Prolific Academic

OTHER

Alumni-in-admissions interviewer for Bates College

REFERENCES

Dr. Marie Coppola

Associate professor
Psychological Sciences
Linguistics
University of Connecticut
Email: marie.coppola@uconn.edu

Dr. Whitney Tabor

Associate professor
Psychological Sciences
University of Connecticut
Email: whitney.tabor@uconn.edu

Dr. Sudeep Bhatia

Assistant professor
Psychology
University of Pennsylvania
Email: bhatiasu@sas.upenn.edu