

Abhilasha A. Kumar

abhilasha.kumar@wustl.edu
<http://abhilashak.weebly.com/>
☎+1-314-662-5443

Academic Appointments

- 2021 - 2022 **Postdoctoral Research Associate**, Indiana University
PI: Dr. Michael N. Jones, Psychological & Brain Sciences
Focus: Semantic Memory and Language Modeling
- 2016 - 2021 **Ph.D. in Psychological & Brain Sciences**, Washington University in St. Louis
PI: Dr. David A. Balota
- 2016 - 2018 **M.A. in Psychological & Brain Sciences**, Washington University in St. Louis
PI: Dr. David A. Balota
- 2014 - 2016 **M.A. in Liberal Arts (Computer Science & Psychology)**, Ashoka University
PI: Dr. Sudheendra Hangal
- 2009 - 2014 **Integrated M. Tech in Mathematics & Computing**, IIT Delhi, India
PI: Dr. B. Chandra

Fellowships and Awards

- 2021 **2021 Graduate Student Conference Award** (\$1000)
62nd Annual Meeting of the Psychonomic Society
- 2020 **Diverse Intelligences Summer Fellowship**, UCLA (\$1500 honorarium)
Scotland (Online due to COVID-19), Templeton World Charity Foundation
- 2019 **Outstanding Assistant to the Instructor Award** (\$500)
Hierarchical Linear Models, Washington University in St. Louis
- 2019 **Graduate Certificate in Quantitative Data Analysis**
Washington University in St. Louis
- 2018, 2019 **Three Minute Thesis Winner** (\$1000) and **Finalist** (\$2000 honorarium)
Graduate School of Arts and Sciences, Washington University in St. Louis
McDonnell International Symposium, Beijing, China

Peer-Reviewed Publications

*shared first-authorship, #theoretical review, ^undergraduate author

9. **Kumar, A.A.**, Steyvers, M., Balota, D.A. (in press). Semantic Memory Search and Retrieval in a Novel Cooperative Word Game: A Comparison of Associative and Distributional Semantic Models. *Cognitive Science*. [[PDF](#)] [[open materials](#)]
8. **#Kumar, A.A.**, Balota, A., Steyvers, M. (2021). A Critical Review of Network-based and Distributional Approaches to Semantic Memory Structure and Processes. Invited Special Issue, *Topics in Cognitive Science*. [[PDF](#)]

7. **Kumar, A. A.** (2021). *Modeling Semantic Structure and Spreading Activation in Retrieval Tasks* [Doctoral dissertation]. Washington University in St. Louis. ProQuest Dissertations Publishing. [[Abstract](#)]
6. **#Kumar, A.A.** (2021). Semantic Memory: A Review of Methods, Models, and Current Challenges. *Psychonomic Bulletin & Review*, 28, pp. 40-80. [[PDF](#)]
5. **Kumar, A.A.**, Balota, D.A., Steyvers, M. (2020). Distant Connectivity and Multiple-Step Priming in Large-Scale Semantic Networks. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 46 (12), pp. 2261-2276. [[PDF](#)] [[open materials](#)]
4. **Kumar, A.A.**, Balota, D.A. (2020). Attempted Prime Retrieval is a Double-Edged Sword: Facilitation and Disruption in Repeated Lexical Retrieval. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 46(8), 1505–1532. [[PDF](#)] [[open materials](#)]
3. ***Kumar, A.A.**, *Balota, D.A., Habbert, J., Scaltritti, M., Maddox, G.B. (2019). Converging Semantic and Phonological Information in Lexical Retrieval and Selection in Young and Older Adults. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 45(12), 2267–2289. [[PDF](#)] [[open materials](#)]
2. **Kumar, A.A.**, Hangal, S., Rosen, A.C. (2019). Autobiographical Recall of Personally Familiar Names and Temporal Information in E-mails: An Automatic Analytic Approach using E-mail Communications. *Behavior Research Methods*, 51(4), 1510-1530. [[PDF](#)] [[open materials](#)]
1. Maddox, G.B., Balota, D.A., **Kumar, A.A.**, Millar, P., ^Churchill, L. (2019). The Immediate Benefits and Long-Term Costs of Briefly Presented Primes on Episodic Recollection. *Journal of Memory and Language*. 106, 77-94. [[PDF](#)]

Peer-Reviewed Conference Proceedings

3. **Kumar, A.A.**, Garg, K., Hawkins, R.D. (2021). Contextual Flexibility Guides Efficient Communication in a Cooperative Word Game. In *Proceedings of the 43rd Annual Meeting of the Cognitive Science Society*. [[PDF](#)] [[open materials](#)]
2. **Kumar, A.A.**, Balota, D.A., De Deyne, S. (October 2020). Modeling Free Associations Using Distributional Semantic Models and Spreading Activation. Paper at *Grace Hopper Conference*. [[PDF](#)]
1. **Kumar, A.A.**, Balota, D.A., Steyvers, M. (2019). Distant Concept Connectivity in Network-Based and Spatial Word Representations. In *Proceedings of the 41st Annual Meeting of the Cognitive Science Society*, 1348-1354. [[PDF](#)] [[open materials](#)]

Other Manuscripts

3. Balota, D.A., **Kumar, A.A.**, Han, L. (in prep.). Priming Recollection in a Free Recall Paradigm.
2. **Kumar, A.A.**, Balota, D.A. (in prep.). Modeling Human Performance in the Cloze Task using Context-free and Contextual Word Embeddings.
1. **Kumar, A.A.**, Wilson, J., Garg, K. (in prep.). Walking and Foraging through Semantic Space in a Cooperative Word Game.

Teaching and Mentoring Experience

Guest Lecturer, Washington University in St. Louis

- Generalized Hierarchical Linear Models, *Hierarchical Linear Models*, April 2019
- Three-level Hierarchical Linear Models, *Hierarchical Linear Models*, March 2019
- Introduction to Data Visualization in R, *Methods in Linguistics Research*, October 2018
- Regression and Statistical Methods in Computational Linguistics, *Introduction to Computational Linguistics*, April 2018
- Confidence Intervals and t-tests, *Introduction to Psychological Statistics*, March 2018

Memory Distortions and Failures, *Introduction to Psychology*, September 2017

Assistant to the Instructor, Washington University in St. Louis

Psychology of Language (undergraduate-level class), 2020

- Supervised 20+ student projects on language acquisition, semantic models, and speech

Hierarchical Linear Models (graduate-level class), 2019

- Created R modules on advanced plotting and constructing complex contrast matrices

Methods in Linguistics Research (undergraduate-level class), 2018

- Lectured class of 20+ students on plotting in R; advised students on analysis and research

Introduction to Psychological Statistics (undergraduate-level class), 2018

- Advised class of 100+ students on coding-based/statistical projects and assignments

Introduction to Psychology (undergraduate-level class), 2017

- Lectured class of 100+ students on false memory and eyewitness testimony

Research Mentoring, Washington University in St. Louis

Students and Teachers as Research Scientists (STARS program, high-school students), 2017

- Mentored 2 high-school students in conducting independent research projects

Cognitive Psychology Lab: 15+ undergraduates (research mentoring), 2016-present

- Developed manuals on introductory statistics, experimental software, & analysis protocols

- Trained students to recruit participants, analyze experimental data, and present papers

Teaching Assistant, Ashoka University, India

Probability, Statistics & Data Science (undergraduate-level class), 2016

Human-Computer Interaction (undergraduate-level class), 2015

Mathematical Thinking (undergraduate-level class), 2014

Tutoring

Knowledge is Power Program (KIPP) Victory Academy, St. Louis, Jan-Mar 2020

Learning Lodge Program, Washington University in St. Louis, May 2020

National Service Scheme, IIT Delhi, 2009-2016

Professional Development in Teaching Program, 2016-2020

Completed a formalized training program in pedagogy involving 3 mentored experiences

Attended advanced workshops on effective evidence-based teaching practices:

Philosophy and Implementation of Collaborative Learning, January 2020

Applying Cognitive Science to Improve Teaching, April 2019

Providing Verbal Feedback to Students, February 2019

Who's in Charge Here? Strategies for Managing a Classroom, August 2017

Talks

"Language Games: A Window into Complex Cognition". *Games for Intelligence Workshop*, 43rd Annual Meeting of the Cognitive Science Society, July 2021, Virtual.

"Fostering International Student Participation in Cognitive Science", International Cognitive Science Affinity Group, 43rd Annual Meeting of the Cognitive Science Society, July 2021, Virtual.

"Computational Models of Semantic Memory Representation, Search, and Retrieval". *Indiana University*, April 2021 [Invited Talk], Virtual.

"Semantic Memory: Representation, Search, and Retrieval". *Bowdoin College*, November 2020 [Invited Talk], Virtual.

"Computational Models of Semantic Memory". The Stanford Language and Cognition Lab, *Stanford University*, September 2020 [Invited Talk], Virtual.

"Combining Structure and Process Models of Semantic Memory". Computational Behavioral Science Lab. *University of Pennsylvania*, October 2020 [Invited Talk], Virtual.

“Priming for Distant Concepts: Insights from Semantic Networks”. Behavior, Brain, and Cognition Brownbag, *Washington University in St. Louis*, October 2019, St. Louis, MO.

“What’s in an Abstract?”. Institute for Public Health Summer Research Program, *Washington University in St. Louis*. June 2019, St. Louis, MO.

“Distant Connectivity in three 5000-word Semantic Networks in English”. *Midwestern Psychological Association*, April 2019, Chicago, IL.

“Lexical Retrieval Inhibition from Semantically Related Retrieval Primes”, Aging and Development Brownbag, *Washington University in St. Louis*, December 2018, St. Louis, MO.

“That Word at the Tip of Your Tongue”. Public Health and Aging Session, *McDonnell Academy 7th International Symposium*, October 2018, Beijing, China.

“Network Path Length as a Measure of Semantic Distance in a 5000-word English Lexicon”, Data Blitz at *Show Me State Conference on Cognition*, May 2018, St. Louis, MO.

“Remembering Names from Emails: Cognitive Experiments with Life-Logs (CELL): A Novel Approach to Study Name Retrieval”, *Personal Digital Archiving*, March 2017, Stanford University, Palo Alto, CA

“Cognitive Experiments on Life-Logs (CELL): A New Approach to Study Recall of Personally Familiar Proper-Names using Emails”, *International Conference on Memory*, July 2016, Budapest, Hungary.

Technical Experience

NLP Research Scientist Intern, Capacity, St. Louis, Oct.-Dec. 2019

Finetuned language model on customer queries to improve question-answering system
Identified semantic features in queries that optimally represent conversation gist

Relevant Courses

Natural Language Processing (NLP) Specialization, deeplearning.ai

- Developed NLP-based autocorrect, autocomplete, and part-of-speech tagging algorithms

Deep Learning Specialization, deeplearning.ai

- Built shallow and deep neural networks for computer vision applications

Machine Learning, Washington University in St. Louis

- Implemented decision trees, random forests, & boosting algorithms for classification problems

Multivariate Analysis; Hierarchical Linear Models, Washington University in St. Louis

- Applied linear mixed effects models, clustering, and factor analysis to psychological data

Analytical and Technical Skills

Programming Experience: R, Python, MATLAB, HTML/CSS, JavaScript

Experimental Platforms: Psychopy, JSPsych, Qualtrics, E-Prime, Collector

Qualitative Research Methods: Individual/group interviews, observation, think-aloud protocols

Quantitative Research Methods: Survey design/sampling, hypothesis testing, online experiments (RTs), game-based designs

Modeling Experience: Word embedding algorithms, sentiment analysis, foraging/random walk models, network analysis

Professional Service and Affiliations

Professional Service: Remote Conference Committee (Cognitive Science Society);

International Affinity Group Committee (Cognitive Science Society)

Ad hoc Reviewer: Cognitive Science; Journal of Experimental Psychology: Learning, Memory,

and Cognition; Topics in Cognitive Science; Psychological Review; Journal of Memory and Language; Journal of Experimental Psychology: General; Psychological Science; Behavior Research Methods

Member: Cognitive Science Society (CSS); Psychonomic Society; Women in Cognitive Science (WiCS); Women in Network Science (WiNS); Graduate Women in Science; Psychology Graduate Student Association (Washington University)

Poster Presentations

Kumar, A.A., Balota, D.A., (November 2020). Searching Semantic Memory for Conceptual Associates, *Psychonomic Society 61st Annual Meeting*, Psychonomic Society, Virtual.

Kumar, A.A., Balota, D.A., Steyvers, M. (November 2019). Evaluating Association Networks and Distributional Semantic Models in a Cooperative Word Game, *Psychonomic Society 60th Annual Meeting*, Psychonomic Society, Montreal, Canada.

Kumar, A.A., Balota, D.A., Steyvers, M. (November 2018). Distant Semantic Network Connectivity and Semantic Priming: Evidence from a 5000-word Semantic Network, *Psychonomic Society 59th Annual Meeting*, Psychonomic Society, New Orleans, LA.

Kumar, A.A., Balota, D.A. (May 2018). Prime Retrieval Failure Disrupts Lexical Retrieval to Definitions in Younger and Older Adults, *2018 Cognitive Aging Conference*, Atlanta, GA.

Kumar, A.A., Balota, D.A., Habbert, J., Scaltritti, M., Maddox, G.B. (November 2017). Priming Lexical Retrieval to Definitions in Younger and Older Adults, *Psychonomic Society 58th Annual Meeting*, Psychonomic Society, Vancouver, British Columbia, Canada.

Kumar, A.A., Hangal, S., Piratla, V., Rosen, A.C. (July 2017). Whom Did I Send This Message To: An Automatic Analytic Approach to 59000 Email Communications, *2017 Leading Edge Workshop: Beyond the Lab: Using Big Data to Discover Principles of Cognition*, Psychonomic Society, Madison, WI.