

# George Kachergis

Assistant Professor

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## Education

- Postdoctoral Researcher on active sensemaking, New York University, Advisors: Todd Gureckis and Marjorie Rhodes, Varieties of Understanding Project, *January, 2015–August, 2016*.
- Postdoctoral Researcher on knowledge representation, Leiden University, Advisor: Bernhard Hommel, RoboHow Project, *January, 2013–December 2014*.
- Ph.D. (December 15, 2012), Indiana University, Department of Psychological and Brain Sciences and Cognitive Science Program. Advisors: Richard M. Shiffrin and Chen Yu.
- B.A. Cognitive Studies and Computer Science, Carleton College, 2007. *Magna cum laude* with distinction in Cognitive Studies.

## Awards and Grants

- **Global TIES for Children Seed Award**, Testing an Adaptive Tablet Game System for Self-guided Literacy and Numeracy Education in Developing Nations (\$12,000), *Fall 2016*
- **Institute of Human Development and Social Change Seed Award**, Applying Computer Science Models of Self-Directed Learning to New Measures of Young Children's Academically-Oriented Soft Skills (\$9,280), *Fall 2015*
- **Irving J. Saltzman Award for Outstanding Graduate Achievement**, Indiana University Psychology Department, *2015*
- **Robert J. Glushko Dissertation Prize** for outstanding interdisciplinary work (\$10,000), *2013*
- **Best Paper: Experiment Combined with Computational Model, International Conference on Development and Learning-EpiRob**, *2012*
- **Marr Prize for Best Student Paper, Cognitive Science Society**, *2012*
- **National Science Foundation East Asia & Pacific Summer Institute / Japan Society for the Promotion of Science** (OISE-1209475; JAIST, (~\$10,000), *2012*
- **Robert J. Glushko and Pamela Samuelson Foundation Student Travel Grant**, Cognitive Science Society, *2012*

- **William K. Estes Summer Research Award**, Indiana University Psychology Department, 2011
- **European Neural Network Society Student Travel Award**, 2011
- **Society for Mathematical Psychology Student Travel Award**, 2009, 2010, 2011
- **Indiana University Cognitive Science Supplemental Research Fellowship**, 2009, 2011

## Publications

### Journal Articles

1. **Kachergis, G.**, Rhodes, M., and Gureckis, T. (in submission). *Desirable difficulties in the development of active inquiry skills.*
2. **Kachergis, G.** and Yu, C. (in submission). *Observing and modeling developing knowledge and uncertainty during cross-situational word learning.*
3. **Kachergis, G.**, de Kleijn, R., and Hommel, B. (in submission). *Predictive movements and human reinforcement learning of sequential action.*
4. Romberg, A., **Kachergis, G.**, and Yu, C. (in submission). *Adults integrate information across contexts to learn word meanings.*
5. Cox, G., **Kachergis, G.**, and Shiffrin, R. M. (in submission). *Trade-offs between category size and item distinctiveness in recognition memory for unfamiliar artificial stimuli: A model-based analysis.*
6. de Kleijn, R., van Es, L., **Kachergis, G.**, and Hommel, B. (in submission). *Individual differences in anthropomorphization affect empathy toward robots.*
7. **Kachergis, G.**, Yu, C., and Shiffrin, R. M. (2016). *A bootstrapping model of frequency and contextual diversity effects in word learning.* Cognitive Science.
8. **Kachergis, G.**, Yu, C., and Shiffrin, R. M. (2014). *Cross-situational word learning is both implicit and strategic.* Frontiers in Cognitive Science. doi: 10.3389/fpsyg.2014.00588
9. **Kachergis, G.**, Wyatte, D., O'Reilly R. C., de Kleijn, R., and Hommel, B. (2014). *A continuous time neural model for sequential action.* Philosophical Transactions of the Royal Society B, 369: 20130623.
10. de Kleijn, R., **Kachergis, G.**, and Hommel, B. (2014). *Everyday robotic action: Lessons from human action control.* Frontiers in Neurorobotics. doi: 10.3389/fnbot.2014.00013
11. **Kachergis, G.**, Yu, C., and Shiffrin, R. M. (2013). *Actively Learning Object Names Across Ambiguous Situations.* Topics in Cognitive Science, 5(1), 200–213.
12. **Kachergis, G.**, Yu, C., and Shiffrin, R. M. (2012). *An Associative Model of Adaptive Inference for Learning Word-Referent Mappings.* Psychonomic Bulletin & Review, 19(2), 317–324.
13. Cox, G., **Kachergis, G.**, Recchia, G., and Jones, M. N. (2011). *Towards a Scalable Holographic Word-form Representation.* Behavior Research Methods, 43(3), 602–615.

## Refereed Conference Papers and Chapters

14. Adams, K. and **Kachergis, G.** (in submission). *Executive function and attention predicts preschoolers' active category learning in 1D and 2D Spaces.*
15. \*Adams, K., \***Kachergis, G.**, and Markant, D. (in submission). *Children's familiarity preference in self-directed study improves recognition memory.* \*Equal contribution.
16. Hidaka, S., Torii, T., and **Kachergis, G.** (in submission). *Leveraging mutual exclusivity for faster cross-situational word learning: A theoretical analysis.*
17. Hidaka, S., Torii, T., and **Kachergis, G.** (in submission). *Quantifying the impact of active choice in word learning.*
18. **Kachergis, G.**, Rhodes, M., and Gureckis, T. (2016). Desirable difficulties in the development of active inquiry skills. *Proceedings of the 37th Annual Conference of the Cognitive Science Society.* Austin, TX: Cognitive Science Society.
19. **Kachergis, G.**, de Kleijn, R., and Hommel, B. (2016). A Dream Model: Reactivation and re-encoding mechanisms for sleep-dependent memory consolidation. *Proceedings of the 37th Annual Conference of the Cognitive Science Society.* Austin, TX: Cognitive Science Society.
20. **Kachergis, G.**, Berends, F., de Kleijn, R., and Hommel, B. (2016). Human reinforcement learning of sequential action. *Proceedings of the 37th Annual Conference of the Cognitive Science Society.* Austin, TX: Cognitive Science Society.
21. de Kleijn, R., **Kachergis, G.**, and Hommel, B. (2015). Robotic action control: On the crossroads of cognitive psychology and robotics. In H. Samani (Ed.), *Cognitive Robotics.* Taylor & Francis.
22. **Kachergis, G.** and Yu, C. (2014). Continuous measure of word learning supports associative model. *IEEE Conference on Development and Learning-EpiRob 2014.*
23. **Kachergis, G.**, Berends, F., de Kleijn, R. and Hommel, B. (2014). Reward effects on sequential action learning in a trajectory serial reaction time task. *IEEE Conference on Development and Learning-EpiRob 2014.*
24. **Kachergis, G.**, Berends, F., de Kleijn, R. and Hommel, B. (2014). Trajectory effects in a novel serial reaction time task. *Proceedings of the 36th Annual Conference of the Cognitive Science Society.* Austin, TX: Cognitive Science Society.
25. **Kachergis, G.**, Yu, C. and Shiffrin, R. M. (2014). Developing semantic knowledge through cross-situational learning. *Proceedings of the 36th Annual Conference of the Cognitive Science Society.* Austin, TX: Cognitive Science Society.
26. **Kachergis, G.**, Cox, G. E., and Shiffrin, R. M. (2013). The Effects of Repeated Sequential Context on Recognition Memory. In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society.* Austin, TX: Cognitive Science Society.

27. **Kachergis, G.** and Yu, C. (2013). More Naturalistic Cross-situational Word Learning. In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
28. Cox, G. E., **Kachergis, G.**, and Shiffrin, R. M. (2013). Similarity and Strategic Effects in Recognition Memory. In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
29. Kievit-Kylar, B., Kachergis, G., and Jones, M. N. (2013). Naturalistic Word-Concept Pair Learning With Semantic Spaces. In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
30. **Kachergis, G.**, Yu, C., and Shiffrin, R. M. (2012). Cross-situational Word Learning is Better Modeled by Associations than Hypotheses. *IEEE Conference on Development and Learning-EpiRob 2012*. **Best Experiment Combined with Computational Model** .
31. **Kachergis, G.** (2012). *Learning Words with Domain-General Associative Learning Mechanisms*. In N. Miyake, D. Peebles, & R. P. Cooper (Eds.), *Proceedings of the 34th Annual Conference of the Cognitive Science Society* (pp. 533-538). Austin, TX: Cognitive Science Society.
32. **Kachergis, G.**, Yu, C., and Shiffrin, R. M. (2012). Actively Learning Nouns Across Ambiguous Situations. In N. Miyake, D. Peebles, & R. P. Cooper (Eds.), *Proceedings of the 34th Annual Conference of the Cognitive Science Society* (pp. 527-532). Austin, TX: Cognitive Science Society.  
**Marr Prize Winner**
33. Hendrickson, A. T. **Kachergis, G.**, Fausey, C., and Goldstone, R. L. (2012). Re-learning labeled categories reveals structured representations. In N. Miyake, D. Peebles, & R. P. Cooper (Eds.), *Proceedings of the 34th Annual Conference of the Cognitive Science Society* (pp. 1668-1673). Austin, TX: Cognitive Science Society.
34. Cox, G. E., **Kachergis, G.**, and Shiffrin, R. M. (2012). Gaussian Process Regression for Trajectory Analysis. In N. Miyake, D. Peebles, & R. P. Cooper (Eds.), *Proceedings of the 34th Annual Conference of the Cognitive Science Society* (pp. 1440-1445). Austin, TX: Cognitive Science Society.
35. **Kachergis, G.**, Recchia, G., and Shiffrin, R. M. (2011). Adaptive Magnitude and Valence Biases in a Dynamic Memory Task. In L. Carlson, C. Hölscher, & T. Shipley (Eds.), *Proceedings of the 33rd Annual Conference of the Cognitive Science Society* (pp. 819-824). Austin, TX: Cognitive Science Society.
36. **Kachergis, G.**, Cox, G. E., and Jones, M. N. (2011). OrBEAGLE: Integrating Orthography into a Holographic Model of the Lexicon. *21st Annual International Conference on Artificial Neural Networks*, Espoo, Finland. *June 2011*.
37. Trueblood, J. S., **Kachergis, G.**, and Kruschke, J. K. (2011). A Cue Imputation Bayesian Model of Information Aggregation. In L. Carlson, C. Hölscher, & T. Shipley (Eds.), *Proceedings of the 33rd Annual Conference of the Cognitive Science Society* (pp. 1298-1303). Austin, TX: Cognitive Science Society.

38. Gangwani, T., **Kachergis, G.**, and Yu, C. (2010). Simultaneous Cross-situational Learning of Category and Object Names. In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society* (pp. 1595-1600). Austin, TX: Cognitive Science Society.
39. Hendrickson, A. T., **Kachergis, G.**, Gureckis, T. M., and Goldstone, R. L. (2010). Is categorical perception really verbally mediated perception? In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society* (pp. 1216-1221). Austin, TX: Cognitive Science Society.
40. **Kachergis, G.**, Yu, C., and Shiffrin, R. M. (2010). Cross-Situational Statistical Learning: Implicit or Intentional? In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society* (pp. 2362-2367). Austin, TX: Cognitive Science Society.
41. **Kachergis, G.**, Yu, C., and Shiffrin, R. M. (2010). Adaptive Constraints and Inference in Cross-Situational Word Learning. In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society* (pp. 2464-2469). Austin, TX: Cognitive Science Society.
42. **Kachergis, G.**, Yu, C., and Shiffrin, R. M. (2009). Frequency and Contextual Diversity Effects in Cross-Situational Word Learning. In N.A. Taatgen & H. van Rijn (Eds.), *Proceedings of the 31st Annual Conference of the Cognitive Science Society* (pp. 2220-2225). Austin, TX: Cognitive Science Society.
43. **Kachergis, G.**, Yu, C., and Shiffrin, R. M. (2009). Temporal Contiguity in Cross-Situational Statistical Learning. In N.A. Taatgen & H. van Rijn (Eds.), *Proceedings of the 31st Annual Conference of the Cognitive Science Society* (pp. 1704-1709). Austin, TX: Cognitive Science Society.
44. Barbella, D., **Kachergis, G.**, Liben-Nowell, D., Sallstrom, A., and Sowell, B. Depth of Field and Cautious-Greedy Routing in Social Networks. *18th International Symposium on Algorithms and Computation*, Sendai, Japan. 17 December 2007.

## Thesis

45. Mechanisms for Cross-Situational Learning of Word-Referent Mappings: Empirical and Modeling Evidence. (winner of Glushko Prize). Ph.D. Advisory Committee: Richard M. Shiffrin, Michael N. Jones, John Kruschke, Robert Goldstone, Chen Yu.

## Selected Conference Presentations

- **Kachergis, G.**, Tubridy, S., and Gureckis, T. (2016). *Predictable stimulus onsets improve memory*. Poster presented at the 38th Annual Meeting of the Cognitive Science Society, Philadelphia, PA.
- **Kachergis, G.**, Rhodes, M., and Gureckis, T. (2015). Understanding developmental bottlenecks in active inquiry. Poster presented at the Annual Meeting of the Cognitive Development Society. Columbus, OH. *October 2015*.

- **Kachergis, G.**, Rhodes, M., and Gureckis, T. (2015). *Understanding Developmental Bottlenecks in Active Inquiry*. Poster presented at the 37th Annual Meeting of the Cognitive Science Society, Pasadena, CA. *July 2015*.
- **Kachergis, G.**, de Kleijn, R., and Hommel, B. (2015). Should androids dream of electric sheep? Mechanisms for sleep-dependent memory consolidation. *International Conference on Cognitive Modeling*. *April 2015*.
- **Kachergis, G.**, de Kleijn, R., and Hommel, B. *A Spiking Neural Model for Sequential Action Control*. 14th Annual Summer Interdisciplinary Conference, Cortina, Italy. *26 July 2013*.
- **Kachergis, G.** and Hidaka, S. *Towards a Cognitive Bayesian Model of Word Learning*. 46th Annual Meeting of the Society for Mathematical Psychology, Berlin, Germany. *August 7, 2013*.
- Cox, G. E., **Kachergis, G.** and Shiffrin, R. M. *Perceptual Similarity, Encoding Strategy, and Decision Dynamics in Recognition Memory*. 46th Annual Meeting of the Society for Mathematical Psychology, Berlin, Germany. *August 6, 2013*.
- Brown, S., **Kachergis, G.**, Donkin, C., Heathcote, A., Rae, B. *How do people make fast decisions?*. 45th Annual Meeting of the Society for Mathematical Psychology, Columbus, OH. *July 21, 2012*.  
**Kachergis, G.** (2012). *Learning Words with Domain-General Associative Learning Mechanisms*. 34th Annual Meeting of the Cognitive Science Society, Sapporo, Japan. *August 2012*.  
**Kachergis, G.**, Yu, C., and Shiffrin, R. M. (2012). *Actively Learning Nouns Across Ambiguous Situations*. 34th Annual Meeting of the Cognitive Science Society, Sapporo, Japan. *August 2012*.
- **Kachergis, G.**, Cox, G. E., Shiffrin, R. M. *Dynamic Effects of Perceptual and Categorical Similarity on Recognition Memory*. Poster presented at the Context and Episodic Memory Symposium, Bloomington, IN. *May 10, 2012*.
- **Kachergis, G.**, Yu, C., Shiffrin, R. M. *Modeling Cross-situational Word Learning: Hypotheses or Associations?*. Midwest Cognitive Science Conference, Bloomington, IN. *May 7, 2012*.
- **Kachergis, G.**, Yu, C., Shiffrin, R. M. *Active Cross-situational Statistical Word Learning*. Poster presented at the 33rd Annual Meeting of the Cognitive Science Society, Boston, MA. *July 2011*.
- **Kachergis, G.**, Yu, C., Shiffrin, R. M. *An Associative Model of Inference in Statistical Word Learning*. 44th Annual Meeting of the Society for Mathematical Psychology, Boston, MA. *July 2011*.
- **Kachergis, G.**, Yu, C., Shiffrin, R. M. *Modeling the Acquisition of the Mental Lexicon*. 43rd Annual Meeting of the Society for Mathematical Psychology, Portland, OR. *August 2010*.
- **Kachergis, G.**, Yu, C., Shiffrin, R. M. *Modeling Frequency and Context Effects in Statistical Word Learning*. 42nd Annual Meeting of the Society for Mathematical Psychology, Amsterdam, the Netherlands. *August 2009*.
- Gangwani, T., **Kachergis, G.**, Yu, C. *Simultaneous Noun and Category Learning via Cross-Situational Statistics*. 31st Annual Meeting of the Cognitive Science Society, Amsterdam, the Netherlands. *July 2009*.

- **Kachergis, G.**, Yu, C., Shiffrin, R. M. *The Semantics of Eye Movements in Cross-Situational Statistical Word Learning*. 41st Annual Meeting of the Society for Mathematical Psychology, Washington, D.C. 27 July 2008.
- **Kachergis, G.**, Yu, C., Shiffrin, R. M. *Temporal Continuity in Cross-Situational Statistical Learning*. 30th Annual Meeting of the Cognitive Science Society, Washington, D.C. 25 July 2008.
- **Kachergis, G.**, Yu, C., Shiffrin, R. M. *The Automaticity of Statistical Word Learning*. 30th Annual Meeting of the Cognitive Science Society, Washington, D.C. 25 July 2008.
- **Kachergis, G.**, Shiffrin, R. M. *The Effects of Repeated Sequential Context on Recognition*. 7th Annual Summer Interdisciplinary Conference, Madonna di Campiglio, Italy. 10 July 2008.
- **Kachergis, G.**, Yu, C., Shiffrin, R. M. *The Automaticity of Cross-Situational Statistical Learning*. Redhawk Mental Life, Oxford, OH. 8 March 2008.
- Ohnesorge, C., **Kachergis, G.** *Testing the Whorfian Hypothesis: Lateralized Presentation and Color Recognition*. 48th Annual Meeting of the Psychonomic Society, Long Beach, CA. 17 November 2007.
- **Kachergis, G.**, Ohnesorge, C. *Whorf hypothesis not supported at a perceptual level*. MidBrains, Macalester College, St. Paul, MN. 28 April 2007.
- Ohnesorge, C., Fanta, A., **Kachergis, G.** *Color Recognition and Laterality: Does Language Affect Color Processing?* 6th Annual Summer Interdisciplinary Conference, Kalymnos, Greece. 28 June 2007.
- **Kachergis, G.**, Olson, J. F. *Lexical Variety in Human Processing of Syntactically Ambiguous Sentences*. Minnesota Undergraduate Psychology Conference, University of St. Thomas, St. Paul, MN. 22 April 2006.

## Teaching, Supervision, and Departmental Service

- Supervised Doctoral students: Roy de Kleijn 2013–present
- Supervised Master’s students: Floris Berends, 2014–present
- Coordinator for Radboud University’s Good AIfternoon talk series, 2016–present
- Coordinator for NYU’s Concepts and Categories (ConCats) talk series, 2015–2016
- *Cognitive Modeling to Study Language and Improve Education*, guest lecture in Topics of AI course at Radboud University, Fall, 2016
- *Inverting the Classroom*, Pedagogy Seminar Talk, Indiana University, Spring, 2012
- Teaching Assistant for Human Learning and Cognition, Spring, 2012
- *Categorization*, guest lecture in Intro. to Psychology, Instr. Hilary Kalagher, Spring, 2009

- Coordinator for Indiana University Cognitive Lunch talk series, *Fall 2010 to Fall 2011*
- Instructor for Experimental Methods in Psychology (P211), Indiana University *Spring, 2010*
- Grader for Artificial Intelligence, Prof. David Musicant, Carleton College *Winter, 2007*
- Prefect for Data Structures, Prof. David Liben-Nowell, Carleton College *Winter, 2006*
- Supervised undergraduate research assistants: J. Booher, E. Farmer, T. Gangwani, Z. Horwitz, K. Mullen, E. Lee, P. LaFree, A. Salisbury, B. Jenkins

## Invited Talks

- *A Model with Memory- and Uncertainty-guided Attention to Learn Nouns—and more!*, Radboud University, *May 3, 2016*
- *How People Learn: Memory- and Uncertainty-driven Attention*, Brown University, *April 8, 2016*
- *How People Learn Nouns: Memory- and Uncertainty-driven Attention*, University of North Carolina, Charlotte, *February 29, 2016*
- *How People Learn Nouns (and more)*, Syracuse University, *December 3, 2015*
- *How People Learn Nouns*, New York University, *April 24, 2015*
- *Word Learning Trajectories on Different Timescales*, University of Groningen, *November 25, 2014*
- *Word Learning Trajectories on Different Timescales*, University of Edinburgh, *July 2, 2014*
- *Word Learning Trajectories on Different Timescales*, Stanford University, *May 20, 2014*
- *How People Learn Words: Modeling Semantic Bootstrapping and Frequency Effects*, Swansea University, *April 2, 2014*
- *Similarity and Strategic Effects in Recognition Memory: Attack of the Blobs!*, Indiana University, *October 9, 2013*
- *Explaining Word Learning Using Domain-General Mechanisms*, University of Colorado at Boulder, *September 30, 2013*
- *Domain-General Mechanisms for Learning Word-Referent Mappings*, Leiden University, *October 10, 2012*
- *Domain-General Mechanisms for Learning Word-Referent Mappings*, Japan Advanced Institute for Science and Technology, *June 27, 2012*
- *How Children Learn Words*, Carleton College, *April 25, 2012*
- *Domain-General Mechanisms for Learning Word-Referent Mappings*, Syracuse University, *April 15, 2012*



- *Dynamic Effects of Perceptual and Categorical Similarity on Recognition Memory*, Syracuse University, April 15, 2012
- *Domain-General Mechanisms for Learning Word-Referent Mappings: Empirical and Modeling Evidence*, Cognitive Lunch, Indiana University, April 4, 2012
- *Actively Learning Nouns Across Ambiguous Situations Using Associative Mechanisms*, Stanford University, February 21, 2012
- *Modeling the Acquisition of the Mental Lexicon*, Cognitive Lunch, Indiana University, April 28, 2010

## Membership and Professional Service

- **Associate Editor**, *Frontiers in Psychology: Cognition*, July 2016–Present
- **Ad hoc reviewer**: *Cognition*; *Memory & Cognition*; *Psychological Review*; *Applied Psycholinguistics*; *Behavior Research Methods*; *Cognitive Science Journal*; *Cognitive Science Conference*; *Journal of Mathematical Psychology*; *Journal of Speech, Language, and Hearing Research*; *Frontiers in Behavioral Neuroscience*; *Language Learning*; *NeuroImage*; *PLOS ONE*; *IEEE Conference on Development and Learning (ICDL-EpiRob)*
- **Member** of Cognitive Science Society, 2005–Present
- **Member** of The Society for Mathematical Psychology, 2008–Present

## Other Education

- Probabilistic Models of Cognition Summer School, Institute for Pure and Applied Mathematics, UCLA, 2011.
- Budapest Semester in Cognitive Science, Eötvös Loránd Science University, Fall 2005.

Last updated: February 3, 2017