Daniel Yurovsky

Assistant Professor, Department of Psychology
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I am a cognitive scientist who studies how humans and machines learn from language. I am particularly interested in how synergies between the structure of input and the expectations of learning mechanisms facilitate learning. Much of the work in my lab has focused on children's language learning as a case study. Because children learn from caregivers motivated to communicate with them, they can get a lot of learning done fast.

Employment

Carnegie Mellon University – Assistant Professor of Psychology (2019-present)

University of Chicago – Assistant Professor of Psychology (2016-2019)

Stanford University – Postdoctoral Fellow (2012-2016)

Education

Indiana University

Ph.D. (2012), Department of Psychological and Brain Sciences

Advisors: Chen Yu and Linda Smith

Thesis title: "Mechanisms of statistical word learning"

Carnegie Mellon University

B.S. (2007) with Honors, Cognitive Science

B.S. (2007), Computer Science

Grants and Awards

NSF EAGER: Language Learning through Machine Theory of Mind. (Co-PI; PI- Y. Bisk). 2021–2023. $300,000.

R01 NICHD 094830, PLAY Project (consultant; PI: K. Adolph). 2018–2023. $18,000.

UChicago SSD Curriculum Innovation Award (PI; Co-I S. Goldin-Meadow). 2018–2019. $13,200.

UChicago SSRC Faculty Seed Grant (PI; Co-I E. Lipnowski). 2018–2020. $30,000.

James S. McDonnell Foundation Scholar Award. 2017-2023. $600,000.

NIH National Research Service Award. 2013–2016. $148,518.

NSF East Asia and Pacific Summer Institutes Fellowsip. 2011.

NSF Graduate Research Fellowship. 2009–2012.

Joseph E. Steinmetz Summer Fellowship. 2008.

NIH Training Grant in Developmental Processes. 2007–2009.

Publications

Books

1. Frank, M. C., Braginsky, M., Yurovsky, D., & Marchman, V. A. (2021). *Variability and consistency in early language learning: The Wordbank project*. MIT Press.

Journal Articles

1. Bergey, C. A., & Yurovsky, D. (under review). Using contrastive inferences to learn about new words and categories.

2. Morris, B. & Yurovsky, D. (in revision). Communicative pressure on caregivers leads to language input that supports children's word learning.

3. Bergey, C., & Marshall, Z., Dedeo, S., & Yurovsky, D. (in press). Learning communicative acts in children's conversations: a Hidden Topic Markov Model analysis of the CHILDES corpus. *Topics in Cognitive Science*.

4. Leung, A., Tunkel, A., & Yurovsky, D. (2021). Parents fine-tune their speech to children's vocabulary knowledge. *Psychological Science*, *32*, 975–984.

5. Klafka, J., & Yurovsky, D. (2021). Characterizing the typical information curves of diverse languages. *Entropy*, *3*, 1300.

6. Zhang, Y., Yurovsky, D., & Yu, C. (2021). Cross-situational learning from ambiguous egocentric input is a continuous process: Evidence using the human simulation paradigm. *Cognitive Science*, *45*, e13010.

7. The ManyBabies Consortium. (2020). Quantifying sources of variability in infancy research using the infant-directed speech preference. *Advances in Methods and Practices in Psychological Science*, *3*, 24–52.

8. Braginsky, M., Yurovsky, D., Marchman, V. A., Frank, M. C. (2019). Consistency and variability in word learning across languages. *Open Mind*, *3*, 52–67.

9. Sanchez, A., Meylan, S. C., Braginsky, M., MacDonald, K., Yurovsky, D., & Frank, M. C. (2019). childes-db: a flexible and reproducible interface to the Child Language Data Exchange System. *Behavior Research Methods*, *51*, 1928–1941.

10. Yurovsky, D. (2018). A communicative approach to early word learning. *New Ideas in Psychology*, *50*, 73–79.

11. Frank, M. C., Bergelson, E., Bergmann, C., Cristia, A., Floccia, C., Gervain, J., Hamlin, J. K., Hannon, E. E., Kline, M., Levelt, C., Lew-Williams, C., Nazzi, T., Panneton, R., Rabagliati, H., Soderstrom, M., Sullivan, J., Waxman, S., & Yurovsky, D. (2017). A collaborative approach to infant research: Promoting reproducibility, best practices, and theory-building. *Infancy*, *22*, 421–435.

12. Frank, M. C., Braginsky, M., Yurovsky, D., Marchman, V. A. (2017). Wordbank: An open repository for developmental vocabulary data. *Journal of Child Language*, *44*, 677–694.

13. MacDonald, K., Yurovsky, D., Frank, M. C. (2017). Social cues modulate the representations underlying cross-situational learning. *Cognitive Psychology*, *94*, 67–84.

14. Yurovsky, D., Case, S., Frank, M. C. (2017). Preschoolers flexibly adapt to linguistic input in a noisy channel. *Psychological Science*, *28*, 132–140.

15. Yurovsky, D., Frank, M. C. (2017). Beyond naïve cue combination: Salience and social cues in early word learning. *Developmental Science*, *20*, e12349.

16. Benitez, V. L., Yurovsky, D., & Smith, L. B. (2016). Competition between multiple words for a referent in cross-situational word learning. *Journal of Memory and Language*, *90*, 31–48.

17. Frank, M. C., Sugarman, E., Horowitz, A. C., Lewis, M. L., & Yurovsky, D. (2016). Using tablets to collect data from young children. *Journal of Cognition and Development*, *17*, 1–17.

18. Yurovsky, D., & Frank, M. C. (2015). An integrative account of constraints on cross-situational word learning. *Cognition*, *145*, 53–62.

19. Yurovsky, D., Fricker, D., C., Yu, C., & Smith, L. B. (2014). The role of partial knowledge in statistical word learning. *Psychonomic Bulletin & Review*, *21*, 1–22.

20. Yurovsky, D., Smith, L.B., & Yu, C. (2014). Statistical word learning at scale: The baby's view is better. *Developmental Science*, *16*, 959–966.

21. Yurovsky, D., Yu, C., & Smith, L. B. (2013). Competitive processes in cross-situational word learning. *Cognitive Science*, *37*, 891–921.

22. Yurovsky, D., Boyer, T., W., Smith, L.B., & Yu, C. (2013). Probabilistic cue combination: Less is More. *Developmental Science*, *16*, 149–158.

Conference Proceedings

1. Kim, J., Singh, S., Yurovsky, D., Fisher, A., & Thiessen, E. (2022). A hierarchical model of attention over time. *Proceedings of the 44th Annual Conference of the Cognitive Science Society*.

2. Ozaki, S., Yurovsky, D., & Levin, L. (2022). How well do LSTM language models learn filler-gap dependencies? *Proceedings of the Society for Computation in Linguistics*

3. Waller, M., Nozari, N., & Yurovsky, D. (2022). Of mouses and mans: the role of production and feedback in language learning. *Proceedings of the 44th Annual Conference of the Cognitive Science Society*.

4. Bergey, C., & Marshall, Z., Dedeo, S., & Yurovsky, D. (2021). Learning communicative acts in children's conversations: a Hidden Topic Markov Model analysis of the CHILDES corpus. *Proceedings of the 43rd Annual Conference of the Cognitive Science Society* [**Computational Modeling Prize for Language**]

5. Leung, A.*, Morris, B. C.*, & Yurovsky, D. (2021). Children know what words other children know. *Proceedings of the 43rd Annual Conference of the Cognitive Science Society*

6. Zettersten, M., . . . , Yurovsky, D. , et al. (2021). Peekbank: Exploring children's word recognition through an open, large-scale repository for developmental eye-tracking data. *Proceedings of the 43rd Annual Conference of the Cognitive Science Society*

7. Zhou, Y., & Yurovsky, D. (2021). A common framework for quantifying the learnability of nouns and verbs. *Proceedings of the 43rd Annual Conference of the Cognitive Science Society*

8. Bergey, C., & Yurovsky, D. (2021). Listeners use descriptive contrast to disambiguate novel referents and make inferences about novel categories. *Experiments in Linguistic Meaning*.

9. Bergey, C.*, Morris, B. C.*, & Yurovsky, D. (2020). Children hear more about what is atypical than what is typical. *Proceedings of the 42nd Annual Conference of the Cognitive Science Society* (pp. 501–507).

10. Leung, A., Hawkins, R. D., & Yurovsky, D. (2020). Parents scaffold the formation of conversational pacts with their children. *Proceedings of the 42nd Annual Conference of the Cognitive Science Society* (pp. 1022–1028.)

11. Denby, J., & Yurovsky, D. (2019). Parents' linguistic alignment predicts children's language development. In A.K. Goel, C.M. Seifert, & C. Freksa (Eds.), *Proceedings of the 41st Annual Conference of the Cognitive Science Society* (pp. 1627–1632). Montreal, QB: Cognitive Science Society.

12. Leung, A., Tunkel, A., & Yurovsky, D. (2019). Parents calibrate speech to their children's Vocabulary Knowledge. *Proceedings of the 41st Annual Conference of the Cognitive Science Society*. In A.K. Goel, C.M. Seifert, & C. Freksa (Eds.), *Proceedings of the 41st Annual Conference of the Cognitive Science Society* (pp. 651–656). Montreal, QB: Cognitive Science Society.

13. Morris, B. C., & Yurovsky, D. (2019). Pressure to communicate across knowledge asymmetries leads to pedagogically supportive language input. In A.K. Goel, C.M. Seifert, & C. Freksa (Eds.), *Proceedings of the 41st Annual Conference of the Cognitive Science Society* (pp. 2399–2405). Montreal, QB: Cognitive Science Society.

14. Yurovsky, D., Meyers, M., Burke, N., & Goldin-Meadow, S. (2018). Children gesture when speech is slow to come. In T.T. Rogers, M. Rau, X. Zhu, & C. W. Kalish (Eds.), *Proceedings of the 40th Annual Conference of the Cognitive Science Society* (pp. 2765–2770). Austin, TX: Cognitive Science Society.

15. Braginsky, M., Yurovsky, D., Marchman, V. A., & Frank, M. C. (2016). From uh-oh to tomorrow: Predicting age of acquisition for early words across languages. In Papafragou, A., Grodner, D., Mirman, D., Trueswell, J. C. (Eds.), *Proceedings of the 38th Annual Conference of the Cognitive Science Society* (pp. 1691–1696). Austin, TX: Cognitive Science Society.

16. Yurovsky, D., Doyle, G., & Frank, M. C. (2016). Linguistic input is tuned to children's developmental level. In Papafragou, A., Grodner, D., Mirman, D., Trueswell, J. C. (Eds.), *Proceedings of the 38th Annual Meeting of the Cognitive Science Society* (pp. 2093–2098). Austin, TX: Cognitive Science Society.

17. Doyle, G., Yurovsky, D., & Frank, M. C. (2016). A robust framework for estimating linguistic alignment in Twitter conversations. *Proceedings of the 25th International Conference on World Wide Web*, 637—648.

18. Braginsky, M., Yurovsky, D., Marchman, V., & Frank, M. C. (2015). Developmental changes in the relationship between grammar and the lexicon. In D. C. Noelle, R. Dale, A. S. Warlaumont, J. Yoshimi, T. Matlock, C. D. Jennings, & P. P. Maglio (Eds.), *Proceedings of the 37th Annual Meeting of the Cognitive Science Society* (pp. 256–261). Austin, TX: Cognitive Science Society.

19. MacDonald, K., Yurovsky, D., & Frank, M. C. (2015). Referential cues modulate attention and memory during cross-situational learning. In D. C. Noelle, R. Dale, A. S. Warlaumont, J. Yoshimi, T. Matlock, C. D. Jennings, & P. P. Maglio (Eds.), *Proceedings of the 37th Annual Meeting of the Cognitive Science Society* (pp. 1452–1457). Austin, TX: Cognitive Science Society.

20. Schneider, R. M., Yurovsky, D., & Frank, M. C. (2015). Large-scale investigations of variability in children's first words. In D. C. Noelle, R. Dale, A. S. Warlaumont, J. Yoshimi, T. Matlock, C. D. Jennings, & P. P. Maglio (Eds.), *Proceedings of the 37th Annual Meeting of the Cognitive Science Society* (pp. 2210–2115). Austin, TX: Cognitive Science Society.

21. Yurovsky, D., Wagner, K., Barner, D., & Frank, M. C. (2015). Signatures of domain-general categorization mechanisms in color word learning. In D. C. Noelle, R. Dale, A. S. Warlaumont, J. Yoshimi, T. Matlock, C. D. Jennings, & P. P. Maglio (Eds.), *Proceedings of the 37th Annual Meeting of the Cognitive Science Society* (pp. 2775–2780). Austin, TX: Cognitive Science Society.

22. Zhang, Y, Yurovsky, D., & Yu, C. (2015). Statistical Word Learning is a Continuous Process: Evidence from the Human Simulation Paradigm. In D. C. Noelle, R. Dale, A. S. Warlaumont, J. Yoshimi, T. Matlock, C. D. Jennings, & P. P. Maglio (Eds.), *Proceedings of the 37th Annual Meeting of the Cognitive Science Society* (pp. 2793–2798). Austin, TX: Cognitive Science Society.

23. Yurovsky, D., & Frank, M. C. (2014). Beyond naïve cue combination: Salience and social cues in early word learning. In P. Bello, M. Guarini, M. McShane, & B. Scassellati (Eds.), *Proceedings of the 36th Annual Conference of the Cognitive Science Society* (pp. 1826-1831). Austin, TX: Cognitive Science Society.

24. Yurovsky, D., Wade, A. & Frank, M. C. (2013). Online processing of speech and social information in early word learning. In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society* (pp. 1641-1646). Austin, TX: Cognitive Science Society.

25. Frank, M. C., Simmons, K.,Yurovsky, D., & Pusiol, G. (2013). Developmental and postural changes in children's visual access to faces. In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society* (pp. 454-459). Austin, TX: Cognitive Science Society.

26. Yurovsky, D., Bion, R. A. H., Smith, L. B., & Fernald, A. (2012). Mutual exclusivity and vocabulary structure. In N. Miyake, D. Peebles, & R. P. Cooper (Eds.), *Proceedings of the 34th Annual Conference of the Cognitive Science Society* (pp. 1197-1202). Austin, TX: Cognitive Science Society.

27. Yurovsky, D., Hidaka, S., & Wu, R. (2012). Quantitative linking hypotheses for infant eye movements. In N. Miyake, D. Peebles, & R. P. Cooper (Eds.), *Proceedings of the 34th Annual Conference of the Cognitive Science Society* (pp. 1203-1208). Austin, TX: Cognitive Science Society.

28. Yurovsky, D., Smith, L. B., & Yu, C. (2012). Does statistical word learning scale? It's a matter of perspective. In N. Miyake, D. Peebles, & R. P. Cooper (Eds.), *Proceedings of the 34th Annual Conference of the Cognitive Science Society* (pp. 1209-1213). Austin, TX: Cognitive Science Society.

29. Yurovsky, D., Wu., R., Yu., C., Kirkham, N. Z., & Smith, L. B. (2011). Model selection for eye movements: Assessing the role of attentional cues in infant learning. In E. J. Davelaar (Ed.), *Connectionist models of neurocognition and emergent behavior: From theory to applications* (pp. 58-75). Singapore: World Scientific.

30. Yurovsky, D., Fricker, D., Yu, C., & Smith, L. B. (2010). The active role of partial knowledge in cross-situational word learning. In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the*

32nd Annual Conference of the Cognitive Science Society (pp. 2609-2614). Austin, TX: Cognitive Science Society.

31. Yurovsky, D., Hidaka, S., Yu, C., & Smith, L. B. (2010). Linking learning to looking: Habituation and association in infant statistical language learning. In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society* (pp. 1589-1594). Austin, TX: Cognitive Science Society.

32. Yurovsky, D., Yu, C., & Smith, L. B. (2010). Statistical speech segmentation and word learning in parallel. In K. Franich, K. M. Iserman, & L. L. Keil (Eds.), *Proceedings of the 34th Annual Boston University Conference on Language Development* (pp. 491-502). Somerville, MA: Cascadilla Press.

33. Yurovsky, D. & Yu, C. (2008). Mutual exclusivity in cross-situational statistical learning. In B. C. Love, K. McRae, & V.M. Sloutsky (Eds.), *Proceedings of the 30th Annual Conference of the Cognitive Science Society* (pp. 715-720). Austin, TX: Cognitive Science Society.

34. Gross, R., Li, Y., Sweeney, L., Jiang, X., Xu, W., & Yurovsky, D. (2007). Robust Hand Geometry Measurements for Person Identification Using Active Appearance Models. *IEEE Conference on Biometrics*, Washington, DC.

35. Jiang, X., Xu, W., Li, Y., Sweeney, L., Gross, R., & Yurovsky, D. (2007). New Direction on Contact-free Hand Recognition. *IEEE International Conference on Image Processing*, San Antonio, Texas.

36. Jiang, X., Xu, W., Li, Y., Sweeney, L., Gross, R., & Yurovsky, D. (2007). 2D image database indexing: A coefficient-based approach. *IEEE International Conference on Multimedia and Expo*, Beijing, China.

Invited Presentations (Selected)

CMU Language Technology Institute Colloquium. December 2020.

Yale Current Works Colloquium. October 2020.

Midwestern Psychological Association Conference. April 2019

UIUC Language Processing Brownbag. November 2018

Psychonomic Society Invited Symposium, "Using big data to discover principles of cognition". November 2017

University of Iowa, Delta Center Colloquium. November 2017

Cognitive Science Society Preconference Workshop, "Emergent meaning". August 2016

UC Berkeley Developmental Psychology Colloquium. November 2015

UC Santa Cruz Developmental Psychology Colloquium. October 2015

CMU Psychology Department 100th Year Anniversary. October 2015

UC Davis Center for Mind and Brain Monday Seminar. April 2014

CMU Developmental Psychology Brownbag. March 2014

UC Boulder Cognitive Lunch. September 2013

OSU Developmental Psychology Brownbag. September 2012

University of Edinburgh Language Evolution and Computation Unit Seminar. July 2011

UofR Brain and Cogntiive Sciences Seminar. November 2011

Mentorship

Ph.D. Students

Megan Waller – current graduate student

Yuchen Zhou – current graduate student

Claire Bergey – current graduate student

Ashley Leung – current graduate student

Benjamin Morris – current graduate student

Master's Students

Joseph Denby – former graduate student (Computational Social Science)

Flora Zhang – former graduate student (Computational Social Science)

Undergraduate Students

Alexandra Tunkel – former honors thesis advisee, PRISM grant winner, Earl Franklin award winner

Madeline Meyers – former honors thesis advisee, PRISM grant winner, Earl Franklin award winner.

Shamini Nair – former honors thesis advisee, Dean's Fund grant

Emilia Ruso – former honors thesis advisee

Professional Service

Editorial Board Membership: Infancy

Grant reviewing: NSF Review Panel (x4)

Ad-hoc reviewing: Behavior Research Methods, Child Development, Cognition, Cognitive Psychology, Cognitive Science, Developmental Psychology, Developmental Science, Journal of Experimental Child Psychology, Journal of Experimental Psychology: General, Language, Learning, & Development, Open Mind, Psychological Review, Psychological Science, and others.

Conference reviewing: Boston University Conference on Language Development, Cognitive Science Conference, International Conference on Development and Learning, Society for Research in Child Development.

Continuing membership in: Association for Psychological Science, Cognitive Development Society, Cognitive Science Society, International Society for Infant Studies, Society for Research in Child Development.