Giwon **Bahg**

Postdoctoral Fellow

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Education & Employment

Postdoctoral Fellow, Department of Psychology, Vanderbilt University — *Nashville, Tennessee, USA*

Advisor: Dr. Thomas J. Palmeri — *Jan. 2022 - Present*

Ph.D. in Psychology, The Ohio State University — *Columbus, Ohio, USA*

Advisor: Dr. Brandon M. Turner — *Aug. 2016 - Dec. 2021*

- Dissertation Title: The Effects of Personalization on Category Learning

Master of Science in Statistics, The Ohio State University — *Aug. 2017 - Dec. 2021*

Master of Arts in Psychology, Seoul National University — *Seoul, Republic of Korea*

Advisor: Dr. Jooyong Park — *Mar. 2013 - Feb. 2015*

- Thesis Title: The Effect of Strategy Instruction on Promoting Analogy Use in Problem-solving Settings

B.A. in Psychology & B.A. in Philosophy, Seoul National University — *Seoul, Republic of Korea*

Summa cum laude

- Minor: Brain-Mind-Behavior Program

Research Interests

Computational Cognitive Science

I study **how representations of concepts and categories interact with attention, information search, decisions, and other higher-order cognitive activities**, inhibiting or reinforcing each other. This interest in the bidirectional relationship between learning and higher-order cognition also connects me to studies of **active learning** in which cognitive agents explore what to learn by themselves. I use **computational cognitive modeling** as a major research tool.

- How representational learning guides categorization, information search, problem-solving, and creative processes (and vice versa)
- Human-algorithm interaction
- Active learning
- Bayesian cognitive modeling

Integrative Cognitive Modeling & Model-based Cognitive Neuroscience

Cognitive processes are manifested in the brain and behavior across various levels (e.g., physiological and hemodynamic neural measures, eye movement, choice, natural language), each of which sheds light on cognition from distinct perspectives. I use cognitive models and machine learning techniques to **understand the underlying common cognitive processes from diverse levels of manifestations**. **Simultaneous modeling of neural and behavioral data** is my current interest.

Current Projects

Can cognitive models help explain the time course of physiological data across modalities?

- Can a neurophysiologically motivated cognitive model be used to describe the electrophysiological measures of cognition?
- Attention-driven visual search processes and the N2pc event-related potential component

Can multi-stage decision processes be decomposed using behavioral data?

- Modeling multi-stage visual decision processes using evidence accumulation models

How do “personalization” algorithms (mis)guide concept and category learning?

- How do computer-generated recommendations fine-tuned to individuals distort category representations?
- How can biased category learning be corrected? Do algorithms offer counterbalancing solutions?
- Modeling the effect of personalized learning on attention, representation, and generalization

Publications

Boag, R.J., Innes, R.J., Stevenson, N., **Bahg, G.**, Busemeyer, J.R., Cox, G.E., Donkin, C., Frank, M.J., Hawkins, G.E., Heathcote, A., Hedge, C., Lerche, V., Lilburn, S.D., Logan, G.D., Matzke, D., Miletić, S., Osth, A.F., Palmeri, T.J., Sederberg, P.B., Singmann, H., Smith, P.L., Stafford, T., Steyvers, M., Strickland, L., Trueblood, J.S., Tsetsos, J., Turner, B.M., Usher, M., van Maanen, L., van Ravenzwaaij, D., Vandekerckhove, J., Voss, A., Weichart, E.R., Weindel, G., White, C.N., Evans, N.J., Brown, S.D., Forstmann, B.U. (in press). An expert guide to planning experimental tasks for evidence accumulation modeling. Accepted for publication in *Advances in Methods and Practices in Psychological Science*.

Bahg, G., Sloutsky, V. M., & Turner, B. M. (in press). Algorithmic personalization of information can cause inaccurate generalization and overconfidence. Accepted for publication in *Journal of Experimental Psychology: General*.

Yoo, M., **Bahg, G.**, Turner, B. M., & Krajbich, I. (2025). People display consistent recency and primacy effects in behavior and neural activity across perceptual and value-based judgments. *Cognitive, Affective, & Behavioral Neuroscience*. `https://doi.org/10.3758/s13415-025-01285-1`

Weichart, E. R., Evans, D. G., Galdo, M., **Bahg, G.**, & Turner, B. M. (2022). Distributed Neural Systems Enable Flexible Attention Updating during Category Learning. *Journal of Cognitive Neuroscience*, 34, 1761-1779.

Bahg, G., Evans, D. G., Galdo, M., & Turner, B. M. (2020). Gaussian Process Linking Functions for Mind, Brain and Behavior. *Proceedings of the National Academy of Sciences of the United States of America*, *117*, 29398-29406.

Bahg, G., Sederberg, P. B., Myung, J., Li, X., Pitt, M., Lu, Z.-L., & Turner, B. M. (2020). Real-time Adaptive Design Optimization within Functional MRI Experiments. *Computational Brain & Behavior*, *3*, 400-429.

Galdo, M., **Bahg, G.**, & Turner, B. M. (2020). Variational Bayesian Methods for Cognitive Science. *Psychological Methods*, *25*, 535-559.

Molloy, M. F., **Bahg, G.**, Lu, Z.-L., & Turner, B. M. (2019). Individual Differences in the Neural Dynamics of Response Inhibition. *Journal of Cognitive Neuroscience*, *31*, 1-21.

Molloy, M. F., Galdo, M., **Bahg, G.**, Liu, Q., & Turner, B. M. (2019). What's in a Response Time?: On the Importance of Response Time Measures in Constraining Models of Context Effects. *Decision*, *6*, 171-200.

Molloy, M. F., **Bahg, G.**, Li, X., Steyvers, M., Lu, Z.-L., & Turner, B. M. (2018). Hierarchical Bayesian analyses for modeling BOLD time series data. *Computational Brain & Behavior*, *2*, 184-213.

Palestro, J. J., **Bahg, G.**, Sederberg, P. B., Lu, Z.-L., Steyvers, M., & Turner, B. M. (2018). A Tutorial on Joint Models of Neural and Behavioral Measures of Cognition. *Journal of Mathematical Psychology*, *84*, 20-48.

Publications: Book Chapters

Turner, B. M., **Bahg, G.**, Galdo, M., & Liu, Q. (2024). Advancements in Joint Modeling of Neural and Behavioral Data. In Forstmann, B. U. & Turner, B. M. (Eds.), An Introduction to Model-based Cognitive Neuroscience (2nd ed).

Manuscripts in Progress and under Review

Bahg, G., Cox, G. E., Logan, G. D., Palmeri, T. J., & Schall, J. D. (resubmitted). A neurocomputational model of visual search explains an attention-related event-related potential.

Ad-hoc Reviewer

- Advances in Methods and Practices in Psychological Science
- Behavioral Research Methods
- Computational Brain & Behavior
- Journal of Mathematical Psychology
- Psychological Review
- Trends in Cognitive Sciences

Teaching

Graduate Teaching Assistant — *Columbus, Ohio, USA*

Department of Psychology, The Ohio State University — *Aug. 2018 - Dec. 2021*

• Psychology of Emotion	Autumn 2018
• Data Analysis in Psychology	Spring 2019
• Introduction to Cognitive Neuroscience	Spring 2019, Autumn 2019
• Psychology of Creativity	Autumn 2019
• Research Methods in Psychology	Spring 2020
• Perception & Sensation, Memory & Cognition, Introduction to Cognitive Sciences	Autumn 2021