Yanjun Liu

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School of Psychology, Science

The University of New South Wales

Sydney, Australia

Education

2014-2020	Ph.D. in Cognitive Psychology Indiana University, Bloomington, IN, U.S.
2014-2017	M.S. in Applied Statistics Indiana University, Bloomington, IN, U.S.
2010-2013	B.A. in Psychology and B.A. in Economics-Mathematics Graduate with highest distinction and departmental honors. Indiana University, Bloomington, IN, U.S.

Research Positions

2023-present	Research Associate, P.I. Brett Hayes and Ben Newell School of Psychology, Science, University of New South Wales, Sydney, Australia
2020-2023	Postdoctoral Research Fellow, Computational Decision-making Lab, P.I. Jennifer S. Trueblood Cognition and Cognitive Neuroscience, Vanderbilt University, Department of Psychological and Brain Sciences, Indiana University Bloomington.
2014-2020	Graduate Research Assistant, Mathematical Psychology Lab, P.I. James T. Townsend, Indiana University Bloomington,
2011-2013	Undergraduate Research Assistant, Decision Making Lab, P.I. Jerome R. Busemeyer, Indiana University Bloomington,

Research Interests

I take a joint approach of empirical work and computational modeling to study human perception, judgement, and decision-making in the presence of multi-dimensional input information. I am interested in understanding (1) how people process multi-dimensional information when making perceptual judgment and preferential decisions; (2) how different inter-stage structures of decision events interfere with each other and influence subsequent decision; (3) how decision-making unfolds as a temporal dynamic process and interacts with experience and learning.

Publications

Submitted

- **Liu, Y.**, Wolfe, J. M., & Trueblood, J. S. (Sep., 2023) Risky hybrid foraging: the impact of risk, reward value, and prevalence on foraging behavior in hybrid visual search. *Journal of Experimental Psychology: General*.

- Ramsey, A. T., **Liu, Y.**, Trueblood, J.S. (under revision). Can in valid information be ignored when it is detected? *Psychological Science.*

- Trueblood, J.S., **Liu, Y.**, Hayes, W. M., Murrow, M. A., & Holmes, W. R. (Dec., 2022). Attentional dynamics explain the elusive nature of context effects. *Psychological Review.*

Peer-Reviewed and Book Chapters

- **Liu, Y.,** Trueblood, J.S. (2023). The impact of experience on preference formation and context effects in multi-alternative, multi-attribute choice. *Cognition.*

- **Liu, Y.**, Townsend, J.T., & Wenger, M. J. (2022). Don't be a square: the processing mechanisms characterizing the elemental dimensions of width and height. *Quarterly Journal of Experimental Psychology.* 76(4), 792-826. https://doi.org/10.1177/17470218221096950

- Townsend, J.T., & **Liu, Y.** (2022). Varieties of Selective Influence: Toward a more complete taxonomy and implications for systems identification. *Mathematics, 10*(7), 1059*.*
  - Liu, Y. is the corresponding author.

- Smith, P., **Liu, Y.**, Townsend, J.T., & Van Zandt, T. (2022). Mathematical Psychology. In Cooper, H., Coutanche, M. N., McMullen, L. M., & Panter, A. T. (Eds.). *APA Handbook of Research Methods in Psychology* (2nd Edition, Chapter 22). American Psychological Association.

- Wenger, M.J., Townsend, J.T., Stefano, L.A., & **Liu, Y.** (2021). Effects of shifts in response preferences on characteristics of representation and real-time processing: An application to the Hering illusion. *Attention, Perception, & Psychophysics, 84*(1), 101-123*.*

- Townsend, J.T., & **Liu, Y.** (2020). Can the wrong horse win: the ability of race models to predict fast or slow errors. *Journal of Mathematical Psychology, 97,*

102360.
- Liu, Y. is the corresponding author.

- Smith, P., **Liu, Y.**, Townsend, J.T., & Van Zandt, T. (2020). Mathematical Psychology. In Dunn, D. S. (Ed.). *Oxford Bibliographies in Psychology.* New York: Oxford University Press. DOI: 10.1093/OBO/9780199828340-0266

- Townsend, J.T., **Liu, Y.**, Zhang, R., & Wenger, J.W. (2020). Interactive parallel models: no Virginia, violation of Miller's race inequality does not imply coactivation and yes Virginia, context invariance is testable. *The Quantitative Methods for Psychology, 16*(2), 192-212.

- Zhang, R., **Liu, Y.**, & Townsend, J.T. (2019). A theoretical study of process dependence for critical statistics in standard serial models and standard parallel models. *Journal of Mathematical Psychology, 92,* 102277.

- Zhang, R., **Liu, Y.**, & Townsend, J.T. (2018). A theoretical study of process dependence for standard two-process serial and two-process parallel models. In Lachmann T., & Weiss, T. (Eds.). *Invariances in Human Information Processing* (pp. 117-142). New York: Routledge.

- Townsend, J. T., **Liu, Y.**, & Zhang, R. (2017). Selective influence and classificatory separability (perceptual separability) in perception and cognition: Similarities, distinctions and synthesis. In Little, D.R., Altieri, N., Fific', M., & Yang, C. T. (Eds.). *Systems Factorial Technology: A Theory Driven Methodology for the Identification of Perceptual and Cognitive Mechanisms* (pp. 93-114). New York: Academic Press.

Conference Publications:

- **Liu, Y.**, Wolfe, J.M., & Trueblood, J.S. (2023). The impact of risk and prevalence on foraging behavior in hybrid visual search. *Proceedings of the Annual Meeting of the Cognitive Science Society 45.*

- Wenger, M., Bryant, D., Townsend, J.T., Zhang, R., & **Liu, Y.** (2018). Detecting mean shift integrality using the Hering illusion: initial results using general recognition theory and systems factorial theory. *Journal of Vision*, *18*(10), 797.

- Townsend, J.T., **Liu, Y.**, & Jefferson, B. (2018). Tutorial on a theory-driven methodology for identification of vital properties of elementary cognitive processes: systems factorial technology. *Computational and Mathematical Models in Vision.*

- Wenger, M., DeStefano, L., Townsend, J.T., **Liu, Y.**, & Zhang, R. (2017). Examining a shift in response bias through two lenses: A concurrent examination of process and informational characteristics. *Journal of Vision*, *17*(10), 172.

- **Liu, Y.**, Zhang, R., Townsend, J. T., Wenger, M., & De Stefano, L. (2017). An investigation of the characteristic properties of cognitive processes with perceptually integral stimuli. *Journal of Vision*, *17*(10), 470.

- Zhang, R., **Liu, Y.**, Townsend, J. T., Wenger, M. J., & De Stefano, L. A. (2017). A concurrent investigation of perceptual separability and process arrangement using perceptually separable stimuli. *Journal of Vision*, *17*(10), 1257.

- **Liu, Y.**, Abdolvahab, M., Townsend, J. T., Wenger, M., & De Stefano, L. (2016). An empirical examination of perceptual integrality with both non-parametric and parametric methods. *Journal of Vision, 16*(12), 408.

Works in Progress:

- **Liu, Y.**, Townsend, J.T., & Examine the underlying relationship between categorization and decision.

Conference Presentations

Talks

- **Liu., Y.**, & Townsend (May, 2023). Interactive relationship between categorization and decision-making. Talk presented at Busemeyer Celebration Conference.

- **Liu, Y.**, Trueblood, J.S. (Feb., 2023). The impact of preference learning on context effects. Talk presented at the Australasian Mathematical Psychology Conference, Virtually.

- **Liu, Y.**, Townsend, J.T., & Wenger, M. (November, 2022). Don't be a square: the processing characteristics of the perception of width and height. Talk presented at *Configural Processing Consortium*, Boston, Massachusetts, USA.

- **Liu, Y.**, & Trueblood, J.S. (October, 2022). The impact of preference learning on context effects. Talk presented at *Cog Lunch Colloquium*, Department of Psychological and Brain Science*s*, Indiana University Bloomington.

- **Liu, Y.,** & Trueblood, J.S. (July, 2022). The impact of experience on preference formation and context effects in multi-alternative, multi-attribute choice. Paper presented at *55th Annual Meeting of the Society for Mathematical Psychology,* Virtually. Via mathpsych.org/presentation/787.

- **Liu, Y.,** & Townsend, J.T., (Nov, 2021). The Inter-relationship Between Categorization and Action Decision Underlying the Interference Effect in Choice Behavior. Talk presented at *The* 62*nd Annual Meeting of the Society for Psychonomic Society,* Virtually.

- **Liu, Y.,** & Townsend, J.T., (Sep, 2021). Parallel systems with OR or AND stopping rules: the costs and gains associated with correlated channels. Talk presented at *The* 2021 *Fechner's Day Meeting,* Virtually.

- **Liu, Y.,** & Townsend, J.T., (July, 2021). Inter-relationship of categorization and decision in a two-stage paradigm. Talk presented at *The 54th Annual Meeting of the Society for Mathematical Psychology,* Virtually.

- **Liu, Y.,** & Townsend, J.T., (October, 2020). Parallel Channels with OR or AND stopping rules: the costs and gains associated with correlated channels. Talk presented at *Brown Bag*, Cognition and Cognitive Neuroscience, Vanderbilt University.

- **Liu, Y.,** & Townsend, J.T., (March, 2020). Parallel Channels with OR or AND stopping rules: the costs and gains associated with correlated channels. Talk presented at *Cog Lunch Colloquium*, Department of Psychological and Brain Science*s*, Indiana University Bloomington.

- Townsend, J.T., & **Liu, Y.** (February, 2020). Assessing the capacity and architecture of information processing: applications to visual perception. Talk presented at *Cog Lunch Colloquium*, Department of Psychological and Brain Science*s*, Indiana University Bloomington.

- **Liu, Y.,** & Townsend, J.T., (July, 2019). An Investigation of the characteristic properties of cognitive processes. Talk presented at *The 52nd Annual Meeting of the Society for Mathematical Psychology,* Montreal, Quebec, Canada.

- Townsend, J.T., & **Liu, Y.** (July, 2019). Categorization + Decision Making: Investigation of the Markov property, quantal models and other good stuff. Talk presented at *The 52nd Annual Meeting of the Society for Mathematical Psychology,* Montreal, Canada.

- **Liu, Y.**, Zhang, R., & Townsend, J.T. (July, 2018). Parallel channels with OR or AND stopping rules: the costs and gains associated with correlated channels. Talk presented at *The 51st Annual Meeting of the Society for Mathematical Psychology,* Madison, WI.

- **Liu, Y.**, & Townsend, J. T. (July, 2017). Potential linkage between two non-parametric theories: examining the characteristic properties of cognitive process with perceptual integral stimuli. Talk presented at *the Midwest Cognitive Science Annual Meeting*, Oxford, OH.

- Townsend, J. T., **Liu, Y.**, Zhang, R., & Wenger, M. J. (November 2016). Correlated channels in race models: help or hurt? Talk presented at *the 2016 Configural Processing Consortium*, Dayton, OH.

Posters

- **Liu, Y.,** & Trueblood, J.S. (Nov. 2022). The impact of preference learning on context effects. Poster presented at *63rd. Annual Meeting of Psychonomic Society*, Boston, Massachusetts, USA.

- **Liu, Y.**, & Trueblood, J.S. (Feb., 2022). Context effects with prior experience of options. Poster presented at *the Society of Judgment and Decision Making 2021 annual meeting*, virtually.

- **Liu, Y.**, Zhang, R., Townsend, J.T., & Wenger, M.J. (November, 2017). Converging characteristic properties of information processes with perceptual

integral stimuli examined by two non-parametric theories. Poster presented at *the Psychonomic 58th annual meeting*, Vancouver, B.C., Canada.

- **Liu, Y.**, Zhang, R., Townsend, J.T., Wenger, M.J. & De Stefano, L. (May, 2017). An investigation of the characteristic properties of cognitive processes with perceptually integral stimuli. Poster presented at the *2017 Meeting of the Vision Sciences Society*, St. Pete Beach, FL.

- **Liu, Y.**, Townsend, J.T., Wenger, M.J. & De Stefano, L. (May, 2016). An empirical examination of the perceptual integrality with both non-parametric methods and parametric methods. Poster presented at the *2016 Meeting of the Vision Sciences Society*, St. Pete Beach, FL.

- Wenger, M. J., DeStefano, L., Townsend, J. T., Abdolvahab, M., & **Liu, Y.** (May 2016). Exploring the effects of decisional bias on perceptual process characteristics in the context of a visual illusion. Poster presented at the *2016 Meeting of the Vision Sciences Society*, St. Pete Beach, FL.

- **Liu, Y** & Townsend, T.J. (October 2015). Building a strategic-switch model for underlying cognitive process in the context of a two-attribute gamble. Poster presented at *the 2015 PBS Alumni Returning Meeting*, Bloomington, IN.

- **Liu, Y.**, & Townsend, T. J. (May 2015). An empirical examination of the failure of perceptual separability and timed marginal response invariance with recognition theory including response time (RTGRT). Poster presented at the *2015 Midwest Cognitive Science Conference*, Mackinac Island, MI.

- Townsend, J. T., Khodadadi, A. & **Liu, Y.** (October 2014). A real-time non-linear dynamic approach to approach-avoidance decision-making: MOT (motivational oscillatory theory) is resurrected. Talk presented at *the 2014 International Theory of Visual Attention Meeting*, Copenhagen, Denmark.

- **Liu, Y**., & Busemeyer, R. B (April 2013). An empirical examination of the existence of the disjunction effect and the sure-thing principle. Talk presented at *the 5th Annual Midwest Undergraduate Cognitive Science Conference*, Bloomington, IN.

Honors and Awards

2022	Provost's Travel Award for Women in Science, $450.
2021	First-degree Black Belt, Hombu Dojo Karate International.
2019	Women of MathPsych Travel Award, $150.

2019	Provost's Travel Award for Women in Science, $500.
2019	William K. Estes Summer Research Award, $4500
2018	MathPsych/ICCM Student Participation Award, $100.
2017	GPSP Travel Award, $500.
2017	Provost's Travel Award for Women in Science, $1325.
2016	Commendation on Doctoral Qualifying Exams.
2016	Provost's Travel Award for Women in Science, $540.
2015	Provost's Travel Award for Women in Science. $400.
2013	Phi Beta Kappa Honor Society
2013	Dean's List of Art and Science.
2011-2013	Indiana University Founders Scholar.
2011	IU Japanese Speech Contest "Best Speech" winner.
2011	Golden Key International Honor Society.
2011	Psi Chi Honor Community.

Skills

Proficient in programming and statistical analysis software, e.g., R, Matlab, Python
Statistical modeling, e.g., linear regression, mixed regression models, time series, Bayesian analysis, mathematical and computational modeling.

Selected Graduate Courses

Choice Behavior	Representation of Structures in Psychological Data
Models in Cognitive Science	Introduction to Mathematical Psychology
Applied Linear Models	Introduction to Bayesian Data Analysis
Machine Learning	Advanced Statistics in Psychology
Nonparametric Theory	Time Series

Services

Ad-hoc Reviewer for *NSF CAREER Award*, *Nature Human Behavior, Psychological Review, Psychonomic Bulletin & Review, Cognition, Attention, Perception, & Psychophysics, Journal of Mathematical Psychology, The Quantitative methods for Psychology, Systems Factorial Technology: A Theory Driven Methodology for the Identification of Perceptual and Cognitive Mechanisms, Computational Brain & Behavior.*

Session Chair for 52nd *Annual Meeting of the Society for Mathematical Psychology.*

Volunteer for the Involvement Fair at the department of Psychological and Brain Sciences, Indiana University Bloomington, 2018.

Volunteer organizer for the Midwest Cognitive Science, Indiana University Bloomington, 2018.

Mentor for undergraduate research assistant Alex Cuc (admitted to the Clinical Psychology program at Indianan University of Pennsylvania), Vanderbilt University, 2020-2022; undergraduate research assistants, Indiana University, 2017-2019; STEM summer camp attendees, Indiana University, 2017.

Assistant Instructor for the Nashville Shotokan Club, Nashville, TN, 2020-2022.

Secretary for the Karate Club at Indian University Bloomington, IN, 2017-2020.

Language Cluster Facilitator for the Global Village program, Indiana University Bloomington, 2016.

Past and Current Professional Affiliations

Society of Mathematical Psychology, Cognitive Science Society, Psychonomic Society, Vision Science Society, Society for Judgment and Decision Making, the Society of Neuroeconomics.

Teaching Experience

Associated Instructor

Spring 2019	Introduction to Applied Statistics
Spring 2016	Methods of Experimental Psychology

Teaching Assistant

Fall 2019	Introduction to Applied Statistical Methods
Fall 2018	Abnormal Psychology
Summer 2018	Introduction to Developmental Psychology
Fall 2017	Introduction to Applied Statistical Methods
2011-2012	Abnormal Psychology

References

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