

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,
The 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;
relocated in 2022 to 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

Peer-Reviewed and Book Chapters

- **Liu, Y.**, Wolfe, J. M., & Trueblood, J. S. (2024) Risky hybrid foraging: the impact of risk, reward value, and prevalence on foraging behavior in hybrid visual search. *Journal of Experimental Psychology: General*.
- Hasan, E., **Liu, Y.**, Owens, N., & Trueblood, J. (2024). A registered report on presentation factors that influence the attraction effect. *Judgment and Decision Making*.
- Ramsey, A. T., **Liu, Y.**, Trueblood, J.S. (2024). Can invalid information be ignored when it is detected? *Psychological Science*.
- **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.**, Newell, B., Lee, J. E., & Hayes, B. (2024). Examining the Relationship Between Selective Attention and the Formation of Learning Traps. In Proceedings of the Annual Meeting of the Cognitive Science Society (Vol. 46).
- **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:

- Trueblood, J.S., **Liu, Y.,** Hayes, W. M., Murrow, M. A., & Holmes, W. R. (submitted). Attentional dynamics explain the elusive nature of context effects. *Psychological Review*.
- **Liu, Y.,** & Townsend, J.T., Examine the underlying relationship between categorization and decision.

Conference Presentations

Talks

- **Liu., Y.,** Watson.P., Lee, W.J., Lee, J., Newell, B. R., & Hayes, B.K. (Apr., 2024) The role of selective attention in learning traps. Talk presented at the Australasian Experimental Psychology Conference, Adelaide, SA, Australia.
- **Liu., Y.,** Newell,B.R., Lee,J., & Hayes, B.K. (Feb., 2024). An examination of the Relationship Between Attention Selectivity and Learning Trap. Talk presented at the 29th Australasian Mathematical Psychology Conference, Perth, WA, Australia.
- **Liu., Y.,** & Townsend, J.T. (May, 2023). Interactive relationship between categorization and decision-making. Talk presented at Busemeyer Celebration Conference, Bloomington, IN, USA.
- **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 Sciences, 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 62nd 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 Sciences, 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 Sciences, 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

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| 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

Yanjun Liu

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| 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, CogSci.*

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

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

Teaching Assistant

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| Fall 2019 | Introduction to Applied Statistical Methods |
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Yanjun Liu

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

References

Brett K. Hayes

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Jennifer S. Trueblood

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Jerome R. Busemeyer

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