

Xiamin Leng

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EDUCATION

- | | |
|-------------|---|
| 2018 - 2024 | Doctor of Philosophy - Cognitive Science
Brown University, Providence, USA
Supervisor: Dr. Amitai Shenhav |
| 2012 - 2014 | Master of Applied Science - Electrical and Computer Engineering
Queen's University, Kingston, Canada
Supervisor: Dr. Scott Yam |
| 2008 - 2012 | Bachelor of Science - Information Engineering
Zhejiang University, Hangzhou, China |

RESEARCH EXPERIENCE

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|----------------|---|
| 2024 - Present | Postdoctoral Scholar
Department of Psychology,
University of California, Berkeley, Berkeley, CA, USA |
| 2014 - 2018 | Research Associate I
The Canadian Biomarker Integration Network in Depression (CAN-BIND)
Principle investigator: Dr. Sidney H. Kennedy
Toronto General Hospital, Toronto, Canada |

AWARDS AND FUNDINGS

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|-------------|--|
| 2022 - 2023 | Eimas Graduate Research Award, Brown University (\$1,000 USD) |
| 2020 - 2022 | NIH Training Program for Interactionist Cognitive Neuroscience (T32) |

PUBLICATIONS

Peer-Reviewed Articles

*: with equal contribution

1. Grahek, I.*, **Leng, X.***, and Shenhav, A., in press. Control adjustment costs limit goal flexibility: Empirical evidence and a theoretical account. *Psychological Review*.
2. **Leng, X.**, Frömer, R., Summe, T., and Shenhav, A. (2025). Mutual inclusivity improves decision-making by smoothing out choices competitive edge. *Nature Human Behavior*, 9(3), 521-533.
3. Fahey, M. P., Yee, D. M., **Leng, X.**, Tarlow, M., and Shenhav, A. (2025). Motivational context determines the impact of aversive outcomes on mental effort allocation. *Cognition*, 254, 105973.
4. Zhang, Y., **Leng, X.**, and Shenhav, A. (2024). Make or break: The influence of expected challenges and rewards on the motivation and experience associated with cognitive effort exertion. *Journal of Cognitive Neuroscience*, 1-23.
5. Yee, D. M., **Leng, X.**, Shenhav, A., and Braver, T. S. (2022). Aversive motivation and cognitive control. *Neuroscience and Biobehavioral Reviews*, 133, 104493.
6. Ritz, H., **Leng, X.**, and Shenhav, A. (2022). Cognitive Control as a Multivariate Optimization Problem. *Journal of Cognitive Neuroscience*, 123.

7. **Leng, X.**, Yee, D., Ritz, H., and Shenhav, A. (2021). Dissociable influences of reward and punishment on adaptive cognitive control. *PLoS Computational Biology*, 17(12), e1009737.
8. Slyepchenko, A., Allega, O.R., **Leng, X.**, Minuzzi, L., Eltayebani, M.M., Skelly, M., Sassi, R.B., Soares, C.N., Kennedy, S.H. and Frey, B.N. (2019). Association of functioning and quality of life with objective and subjective measures of sleep and biological rhythms in major depressive and bipolar disorder. *Australian and New Zealand Journal of Psychiatry*, 53(7), pp.683-696.
9. Allega, O.R., **Leng, X.**, Vaccarino, A., Skelly, M., Lanzini, M., Hidalgo, M.P., Soares, C.N., Kennedy, S.H. and Frey, B.N. (2018). Performance of the biological rhythms interview for assessment in neuropsychiatry: an item response theory and actigraphy analysis. *Journal of affective disorders*, 225, pp.54-63.

Peer-Reviewed Conference Proceedings

*: with equal contribution

1. Cheng, Z., **Leng, X.**, Shenhav, A. (2025). Incentive Effects Capture Variability in Task-General Control Allocation. Proceedings of the 47th Annual Meeting of the Cognitive Science Society. San Francisco, CA. [Talk]
2. Yee, D., Prater Fahey, M., **Leng, X.**, Cheng, Z., Tarlow, M., Kim, J., Mundy, K., Nevins, S., Shenhav, A. (2024) Neurocomputational mechanisms of motivational influences on mental effort. *Computational Cognitive Neuroscience*. Boston, MA. [Talk]
3. **Leng, X.**, Fengler, A., Shenhav, A., and Frank, M. J. (2024). The perils of omitting omissions when modeling evidence accumulation. In *Proceedings of the Annual Meeting of the Cognitive Science Society* (Vol. 46). [Talk]
4. Kim, J., Frömer, R., **Leng, X.**, and Shenhav, A. (2022). Confidently conflicted: The impact of value confidence on choice varies with choice context. In *Multidisciplinary Conference on Reinforcement Learning and Decision Making*. Providence, RI. [Poster]
5. Kim, J., Frömer, R., **Leng, X.**, and Shenhav, A. (2022). Approximate Bayesian Inference captures differential effects of value confidence on obligatory and voluntary choices. *Cognitive Computational Neuroscience*. San Francisco, CA. [Poster]
6. **Leng, X.**, Frömer, R., Summe, T., and Shenhav, A. (2022). Leaving alternatives behind: A theoretical and experimental investigation of the role of mutual inhibition in shaping choice. *Cognitive Computational Neuroscience*. San Francisco, CA. [Poster].
7. Prater Fahey, M., Yee, D., **Leng, X.**, Tarlow, M., Shenhav, A. (2022). Disentangling influences of aversive motivation on control allocation across distinct motivational contexts. In *Multidisciplinary Conference on Reinforcement Learning and Decision Making*. Providence, RI. [Poster].
8. Grahek, I.*, **Leng, X.***, Prater Fahey, M., Yee, D., and Shenhav, A. (2022). Empirical and Computational Evidence for Reconfiguration Costs During Within-Task Adjustments in Cognitive Control. In *Proceedings of the 44th Annual Meeting of the Cognitive Science Society*. Toronto, Canada. [Talk]
9. **Leng, X.**, Ritz, H., Yee, D. and Shenhav, A. (2020). Dissociable influences of reward and punishment on adaptive cognitive control. In *Proceedings of the 42th Annual Conference of the Cognitive Science Society*. Toronto, Canada. [Poster]

Book Chapters

1. **Leng, X.**, Su, Y.H., Froemer, R., and Shenhav, A. (in press), Breaking the tug-of-war: What neuroeconomics can gain by moving past competition-only models. In *Neuroeconomics: Core Topics and Current Directions*, edited by D. Smith, D. Fareri, and P. Lockwood. Springer Nature.

CONFERENCE PRESENTATIONS

1. **Leng, X.**, Froemer, R., Summe, T., and Shenhav, A., Mutual inclusivity improves decision-making by smoothing out choices competitive edge. *Interdisciplinary Symposium on Decision Neuroscience*. Philadelphia, 2023. [Talk]

2. Kim, J., Frömer, R., **Leng, X.**, and Shenhav, A. In the eye of the decider: gaze patterns distinguish levels of mutual exclusivity in value-based choice. *Cognitive Neuroscience Society*. San Francisco, 2023. [Poster]
3. **Leng, X.**, Froemer, R., and Shenhav, A. Neural dynamics underlying divergent influences of reward and punishment on control allocation. *Society for NeuroEconomics Annual Meeting*. Washington DC, 2022. [Poster]
4. **Leng, X.**, Froemer, R., Summe, T., and Shenhav, A., All You Can Choose: The Influence of Choice Exclusivity on The Process and Experience of Decision-Making. *11th Annual Interdisciplinary Symposium on Decision Neuroscience*. Virtual meeting, 2021. [Data Blitz Talk]
5. Zhang, Y., **Leng, X.** and Shenhav, A., The influence of positive and negative incentives on physical effort persistence. *Cognitive Neuroscience Society*. Virtual meeting, 2021. [Poster]
6. **Leng, X.**, Yee, D. and Shenhav, A., Disentangling the influences of positive and negative incentives on cognitive effort. *Cognitive Neuroscience Society*. Virtual meeting, 2020. [Poster]
7. **Leng, X.**, Yee, D. and Shenhav, A., The influence of positive and negative incentives on cognitive effort persistence. *7th International Symposium on Motivational and Cognitive Control*. Berlin, Germany, 2019. [Poster]

INVITED TALKS

September 2024	Cognition Seminar, UC Berkeley
October 2023	Cognitive Seminar Series, Brown University
February 2022	Princeton Neuroscience Institute (P6 meeting)

TEACHING

Spring 2022	Teaching Assistant, Making Decisions, Brown University
Fall 2021	Teaching Assistant, Computational Cognitive Neuroscience, Brown University
Spring 2020	Teaching Assistant, Multivariate Statistical Techniques, Brown University
Fall 2019	Teaching Assistant, Computational Cognitive Neuroscience, Brown University

MENTORING

Undergraduate Research Assistants

2024-2025	Henry Lin, UC Berkeley
2023-2024	Ainsley Bonin (summer student through the Leadership Alliance Program)
2022-2024	Maya Hoffman, Brown University
2021-2022	Emma Campagnari (from University of Michigan, Ann Arbor)
2020-2021	Thomas Summe, Brown University
2019-2021	Yue (Linda) Zhang, Brown University (awarded Premium for Excellence in Cognitive Neuroscience)

SCIENTIFIC SERVICE

Reviewer-Conferences

Cognitive Science Society - Cognitive Computational Neuroscience

Reviewer-Journals

Behavioral Brain Research - Cognition - Communications Psychology - Emotion Review - Motivation and Emotion - Nature Communications - Neuroimage - Progress in Neurobiology