

Debbie M. Yee

Curriculum Vitae

November 2020

Contact

Cognitive, Linguistic, & Psychological Sciences
Brown University
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Education

- 2019- Postdoctoral Research Associate, Brown University
 Advisor: Amitai Shenhav
- 2013-2019 Ph.D. in Psychological & Brain Sciences, Washington University in St. Louis
 Advisor: Todd Braver
 Dissertation: Neural Mechanisms of Motivational Incentive Integration and
 Cognitive Control”
- 2013-2015 M.A. in Psychological & Brain Sciences, Washington University in St. Louis
 Advisor: Todd Braver
- 2007-2011 B.S. in Brain & Cognitive Sciences, Massachusetts Institute of Technology

Honors and Awards

- 2019 Teaching Citation, Washington University
- 2019 Mentorship/Collaboration Award, Scientific Research Network on Decision
 Neuroscience and Aging
- 2017 Outstanding Teaching Assistant Award, Psychological & Brain Sciences, WashU
- 2017 Summer School in Social Neuroscience and Neuroeconomics Fellow
- 2017-2019 NIH National Research Service Award Pre-Doctoral Fellowship (F31)
- 2016 NIH Aging and Development Training Fellowship (T32)
- 2016 Kavli Summer Institute for Cognitive Neuroscience Fellow
- 2015, 2017 Reinforcement Learning & Decision-Making Student Travel Fellowship
- 2014, 2015 National Science Foundation Graduate Research Fellowship, *Honorable Mention*
- 2014-2016 NIH Cognitive, Computational & Systems Neuroscience Training Fellowship (T32)
- 2010 MIT Undergraduate Research Opportunities Program Direct Funding

Research Grants

Research Seed Award Brown University Shenhav (PI) 6/1/2020–6/30/2021
Dissociating Neurocomputational Mechanisms Underlying Positive and Negative Motivations for Cognitive Effort Persistence
Pilot project examining neural and computational mechanisms by which positive and negative incentives influence cognitive effort in humans.
Role: Co-PI
Direct Costs: \$49,000

NIA/NIH Yee (PI) 6/1/2017–8/31/2018
Interactions of Motivational Incentives and Cognitive Control in Older Adult Decision-Making
Pilot project examining the role of motivation and cognitive control in mediating changes in the psychological and neural mechanisms of older adult decision-making.
Role: Subaward PI (on Samanez-Larkin R24-AG054355)
Direct Costs: \$30,000

Mallinckrodt Institute Radiology/Washington University Braver (PI) 12/2017
Dopaminergic and Neural Mechanisms of Incentive Integration and Motivated Cognitive Control
Role: Co-wrote grant, planning/coordinating PET-MR pilot study and data collection.
Direct costs: \$22,749

Publications

*denotes co-first authorship

*Vilgis, V., *Yee, DM., Silk, T., Vance, A. Distinct Neural Profiles of Verbal vs. Spatial Working Memory in Boys with Attention-Deficit/Hyperactivity Disorder and Boys with Persistent Depressive Disorder. *Under Review*

Yee, DM., Crawford, J.L., Lamichhane, B., Braver, T.S. Dorsal Anterior Cingulate Cortex Encodes the Integrated Incentive Motivational Value of Cognitive Task Performance. *Under Review*

Crawford, J., Yee, DM., Hallenback, H.W., Naumann, A., Shapiro, K., Thompson, R.J., Braver, T.S. (2020). Dissociable effects of monetary, liquid, and social incentives and cognitive control. *Frontiers in Psychology*.

Yee, DM., Adams, S., Beck, A., Braver, T.S. (2019). Age-Related Differences in Motivational Integration and Cognitive Control. *Cognitive, Affective, Behavioral Neuroscience*. 19(3):692-714. OSF directory: <https://osf.io/4urc6/>

Yee, DM., Braver, T.S. (2018). Interactions of Motivation and Cognitive Control. *Current Opinion in Behavioral Sciences*. 19:83-90.

Yee, DM., Krug, M.K., Allen, A.Z., Braver, T.S. (2016). Monetary and Liquid Incentives Combine to Motivate Cognitive Task Performance. *Frontiers in Psychology*. 6:2037. OSF directory: <https://osf.io/ajgp3/>

Solway, A., Diuk, C., Cordova, N., **Yee, D.**, Barto, A., Niv, Y., Botvinick, M. M. (2014). Optimal Behavioral Hierarchy. *PLoS Computational Biology*. 10(8)

Blackburne, L.K., Eddy, M., Kalra, P., **Yee, D.**, Sinha, P., Gabrieli, J.D.E. (2014). Neural Correlates of Letter Reversal in Children and Adults. *PLoS ONE*. 9(5)

Book Chapters

Yee, DM., Braver TS. (in press). Computational Models of Attention and Cognitive Control. To appear in R. Sun (Ed.), *The Cambridge Handbook of Computational Cognitive Sciences*. Cambridge University Press.

Yee, DM., Braver, TS. (2020). Computational Models of Cognitive Control: Past and Current Approaches. To appear in P. Series (Ed.), *Computational Psychiatry: A Primer* (pp.83-104). MIT Press.

Recent Preprints

Yee, DM., Crawford, J.L., Braver, TS. (2020). Dorsal Anterior Cingulate Cortex Encodes the Integrated Incentive Motivational Value of Cognitive Task Performance. *bioRxiv*.
doi: <https://doi.org/10.1101/2020.09.20.305482>

Leng, X., **Yee, D.**, Ritz, H., Shenhav, A. (2020) Dissociable influences of reward and punishment on adaptive cognitive control. *bioRxiv*.
doi: <https://biorxiv.org/cgi/content/short/2020.09.11.294157v1>

Manuscripts in Prep

Yee, DM., Shapiro, K., Braver, TS. Adolescent Motivation and Cognitive Control.

Yee, DM., Shenhav, A., Braver, T.S. Aversive motivation and cognitive control: a candidate framework for elucidating its neural and monoaminergic mechanisms

Yee, DM., Dean Wolf, C., Shenhav, A., Braver, TS. A Hierarchical Drift Diffusion Model of Motivation-Cognitive Control Interactions.

Conference Talks

Yee, DM., Braver, TS. Interactions Between Motivation and Cognitive Control in Older Adult Decision-Making. *Scientific Research Network on Decision Neuroscience and Aging Conference*. (Honolulu, HI, March 8-9, 2020).

Yee, DM., Braver, TS. Neural Mechanisms of Motivational Incentive Integration and Cognitive Control. *Cognitive Neuroscience Society Data Blitz*. (San Francisco, CA, Mar 22-26, 2019).

Yee, DM., Braver, TS. Neural mechanisms of motivational integration and cognitive control: Implications for healthy aging. *48th Annual Meeting for the Society for Neuroscience*. (San Diego, CA, November 3-7, 2018)

Conference Papers

Leng, X., Ritz, H., **Yee, DM.**, Shenhav, A. Dissociable influences of reward and punishment on adaptive cognitive control. *Cognitive Science Society*. (Toronto, Canada, July 2020)

Conference Posters

Crawford, JL., **Yee, DM.**, Lamichhane, B., Di Rosa, E., Braver, TS. Neural Mechanisms of Motivated Cognitive Control in Older Adults. *Organization for Human Brain Mapping*. (Montreal, Canada, June 26-30, 2020).

Leng, X., **Yee, DM.**, Shenhav, A. Disentangling the influence of positive and negative incentives on cognitive effort. *Cognitive Neuroscience Society*. (Boston, MA, March 14-17, 2020)

Leng, X., **Yee DM.**, Shenhav, A. The influence of positive and negative incentives on cognitive effort persistence. *7th International Symposium on Motivation and Cognitive Control*. (Berlin, Germany, Sept 16-18, 2019).

Yee, DM., Dean Wolf, C.K., Shenhav, A., Braver, TS. A Hierarchical Drift Diffusion Model of Motivation-Cognitive Control Interactions. *Reinforcement Learning and Decision Making* (Montreal, CA, July 2019).

Yee DM., Braver, TS. Neural Mechanisms of Motivational Incentive Integration and Cognitive Control. *7th International Symposium on Motivation and Cognitive Control*. (Berlin, Germany, Sept 16-18, 2019).

Yee, DM., Braver, TS. Neural Mechanisms of Motivational Incentive Integration and Cognitive Control. *Cognitive Neuroscience Society Annual Meeting*. (San Francisco, CA, Mar 22-26, 2019).

Nauman, AN., **Yee, DM.**, Hallenback, HW., Thompson, RJ., Braver, TS. Motivational Integration and Cognitive Control: Dissociable Effects of Monetary, Liquid, and Social Incentives. *Society for Affective Science*. (Boston, MA, March 21-23, 2019).

Hallenback, HW., **Yee, DM.**, Nauman, AN., Thompson, RJ., Braver, TS. Depression and Motivation: Parsing Monetary, Social, and Liquid Incentives. *Society for Affective Science*. (Boston, MA, March 21-23, 2019).

Crawford, JL., **Yee, DM.**, Braver, TS. Age-related changes in motivational integration and socio-emotional incentives. *Dallas Aging and Cognition Conference*. (Dallas, TX, Jan 27-28, 2019)

Yee, DM., Braver, TS. Neural Mechanisms of Motivational Incentive Integration and Cognitive Control. *Society for Neuroeconomics Annual Meeting*. (Philadelphia, PA, Oct 5-7, 2018)

Yee, DM., Braver, TS. Neural Mechanisms of Motivational Incentive Integration and Cognitive Control. *Eighth International Symposium on Biology of Decision Making*. (Paris, France, May 24-26, 2018)

Yee, DM., Braver, TS. Reward and Punishment Effects on the Integration of Monetary and Liquid Incentives on Cognitive Control: Effects of Age. *Cognitive Aging Conference*. (Atlanta, GA, May 3-6, 2018)

Yee, DM., Dean Wolf, C., Braver, TS. Reinforcement and Punishment Effects on Incentive Integration and Motivated Cognitive Control. *25th Annual Cognitive Neuroscience Society Meeting*. (Boston, MA, March 24-27, 2018)

Yee, DM., Braver, TS. Reinforcement and Valence Effects on Incentive Integration and Motivated Cognitive Control. *Multi-Disciplinary Conference on Reinforcement Learning and Decision Making*. (Ann Arbor, MI, June 11-14, 2017)

Yee, DM., Adams, S., Weiss, J., Braver, TS. Motivation-Cognition Interactions in Older and Younger Adults. *Association for Psychological Science*. (Boston, MA, May 25-27, 2017)

Yee, DM., Adams, S., Weiss, J., Braver, TS. Motivation-Cognition Interactions in Older and Younger Adults. *The Society for Affective Science*. (Boston, MA, April 27, 2017)

Yee, D., Braver, T. Monetary and Liquid Incentives Combine to Modulate Cognitive Task Performance. *56th Annual Meeting of The Psychonomic Society*. (Chicago, IL, November 21, 2015)

Yee, D., Braver, T. Monetary and Liquid Incentives Combine to Modulate Cognitive Task Performance. *Society for Neuroeconomics Annual Meeting*. (Miami, FL, September 25, 2015)

Oksanen, K., **Yee, D.**, Koller, J., Black, K., Braver, T. Applying simultaneous PET/MR to Explore Relationships Between Task-Evoked BOLD Signals and Dopamine. *Organization of the Human Brain Mapping Meeting*. (Honolulu, HI, June 15, 2015).

Botvinick, M. M., Diuk, C., **Yee, D.**, Cheong, J., Weinstein, A., Niv, Y. & Barto. A. A general form for state-space representations in frontal and temporal cortex. *44th Annual Meeting of the Society for Neuroscience*. (Washington D.C., November 18, 2014).

Solway, A., Diuk, C., Cordova, N., **Yee, D.**, Barto, A., Niv, Y., Botvinick, M. Optimal Task Decomposition. *Multi-Disciplinary Conference on Reinforcement Learning and Decision Making Meeting*, (Princeton, NJ, October 25, 2013).

Diuk, C., **Yee, D.**, Ribas-Fernandes, J, Cordova, N., Schapiro A., Niv, Y., Botvinick., M. Divide and Conquer: Task Decomposition in Humans. *42nd Annual Meeting of the Society for Neuroscience*, (New Orleans, LA, October 16, 2012).

Blackburne, L.K., Eddy, M., Kalra, P., **Yee, D.**, Del Tufo, S., Sinha, P., Gabrieli, J.D.E. Neural Correlates of Letter Reversal in Children and Adults. *19th Annual Cognitive Neuroscience Society Meeting*, (Chicago, IL, April 2, 2012).

Blackburne, L.K., Palti, D., Perea, M., Kim, J., Huang, C., **Yee, D.**, Gabrieli, J.D.E. Attention and Reading Skill Modulate Selectivity of the Left Occipitotemporal Region. *Organization of Human Brain Mapping Meeting*, (Barcelona, Spain, June 6, 2010).

Blackburne, L.K., Palta, D., Perea, M., Kim, J., Huang, C., Yee, D., Gabrieli, J.D.E. Functional Connectivity of Left Fusiform to Phonological Processing Regions Increases with Reading Skill. *39th Annual Meeting of the Society for Neuroscience*, (Chicago, IL, October 20, 2009).

Invited Articles

Weston, S.J., Yee, D. Why You Should Become a User: A Brief Introduction to R. *The Observer* (29)3, Association for Psychological Science. (March 2017).

Open Datasets

Etzel, J., Yee, D., Lamichhane, B., Jeffers, M., Di Rosa, E., Crawford, J., An, H., Braver, T. (2018). Multiband Acquisition Dataset.
website: <https://openneuro.org/datasets/ds001399/versions/00002>

Invited Talks

2020 Cognitive and Affective Neuroscience Lab Meeting, Boston College (Boston, MA)
Neural Mechanisms of Motivation and Cognition Workshop (Bern, Switzerland)
2019 Social and Cognitive Seminar, Brown University (Providence, RI)
2018 Cognitive, Computational, and Systems Neuroscience Retreat (St. Louis, MO)
2017 Shenhav Lab Meeting, Brown University (Providence, RI)
Washington University Neuroscience Retreat (St. Louis, MO)

Teaching Experience and Certifications

2019 Completed Teaching Citation at Washington University

2014-2017 Co-Instructor, Annual Introductory R & Advanced R workshops
Developed programming for and co-taught two-day workshop to introduce basics of R-Statistical programming language to students, postdoctoral fellows, and faculty in the Psychological and Brain Sciences Department. Additionally presented monthly 1-hour workshops to Psychology department on relevant packages, including R-markdown, psych, ggplot2, dplyr, tidyr, and yaRrr.
Workshop materials can be found here: <https://debyeeneuro.com/r-tutorials/>

2016 Fall Teaching Assistant, Psych 5066: Graduate Quantitative Methods I
Guest Lecturer, Graduate Quantitative Methods I

2017 Spring Teaching Assistant, Psych 5067: Graduate Quantitative Methods II
Guest Lecturer, Graduate Quantitative Methods II
NOTE: Quantitative Methods I and II are the requisite graduate level statistics courses for first year Psychological & Brain Sciences PhD students

2018 Fall Guest Lecturer, Cognitive Neuroscience
Introductory survey course on cognitive neuroscience for undergraduate students
Title: “Executive functions (& its interactions with reward)”

2019 Spring Guest Lecturer, Advanced Cognitive Neuroscience
Upper level seminar course on cognitive neuroscience for undergraduate students
Title: “Performance Monitoring and the Anterior Cingulate Cortex”

Undergraduate Mentoring

At Washington University in St. Louis

2014-2015	Harold Lee
2015-2016	Jessica Weiss
2015-2016	Carolyn Dean Wolf
2015-2016	Rachel Lilenbaum
2015-2018	Katie Shapiro
2016-2017	Marisa Gong
2016-2017	Aaditya Manirajan
2017	Sarah Finlay
2018	Casey Mason
2018	Sara Hendrix

Pre-Doctoral Research Experiences

2011-2013	Research Specialist, Princeton University PI: Matthew Botvinick M.D., Ph.D.
2009-2010	Research Assistant, Massachusetts Institute of Technology PI: John Gabrieli, Ph.D.
2008	Research Assistant, Massachusetts Institute of Technology PI: Ed Boyden, Ph.D.

Professional Memberships

Association for Psychological Science
Association for Women in Science, *St. Louis Chapter Co-President (2014-2017)*
Cognitive Neuroscience Society
Psychonomics
Society for Affective Science
Society for Neuroeconomics
Society for Neuroscience

Ad Hoc Journal Reviewer

Social and Personality Compass; Collabra; Frontiers in Human Neuroscience; Neuropsychologia;
Scientific Reports; Developmental Cognitive Neuroscience; Psychological Research;
Cognitive Affective & Behavioral Neuroscience; Journal of Gerontology; NeuroImage; Journal of
Experimental Psychology: General; PLOS One; Behavioral and Brain Sciences; International
Journal of Developmental Sciences

Additional Training

2013-2014	Completion of Cognitive, Computational, and Systems Neuroscience Pathway
2016	Computational Psychiatry Course, <i>Translational Neuromodeling Unit, Zurich, CH</i>
2017	AFNI Bootcamp
2018	Computational Psychiatry Workshop, <i>San Diego, CA</i>
2019	Harmonization Workshop, Scientific Research Network on Decision Neuroscience and Aging, <i>Miami, FL</i>
2020	Carney Computational Modeling Workshop, <i>Brown University, Providence, RI</i>

University and Community Service

Diversity & Inclusion CLPS Department (2020)
Organizer, Growing Up in Aging Neuroscience Minisymposium (2020)
Teen Science Café Network Conference Panel: Understanding the Motivations of Scientist-Presenters, Panelist (2018)
Teen Science Cafe, *St. Louis Science Center, Academy of Science STL, Cahokia HS* (2018)
Washington University NIH Fellowship Writing Workshop Mentor (2017)
Cognitive, Computational Systems Neuroscience, *Steering Committee* (2015-2018)
Psychology Grad Student Association, *Diversity Committee* (2014-2016)
Association for Women in Science – St. Louis Chapter, *President* (2014-2017)
MIT Educational Counselor (2011-2018), *Regional Chair* (2015-2018)

Other Skills

Programming: R (expert), Matlab (expert), bash/tcsh (intermediate), Python (beginner)
Languages: English (native), French (intermediate, conversational), Chinese (conversational)