

Mark Thornton

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EMPLOYMENT AND EDUCATION

| | |
|----------------|--|
| 2020 - present | Assistant Professor, Psychological and Brain Sciences, Dartmouth College |
| 2017 - 2020 | Postdoctoral Research Associate, Psychology & PNI, Princeton University |
| 2011 - 2017 | Ph.D., Psychology, Harvard University |
| 2011 - 2013 | A.M., Psychology, Harvard University |
| 2007 - 2011 | A.B., Psychology, Princeton University |

PUBLICATIONS

Wheatley, T., Thornton, M. A., Stolk, A., & Chang, L.J., (Accepted). The emerging science of interacting minds. *Perspectives on Psychological Science*.

Lin, C., Bulls, L. S., Tepfer, L. J., Vyas, A., Thornton, M. A., (Accepted). Advancing naturalistic affective science with deep learning. *Affective Science*.
[\[Preprint\]](#)

Tamir, D. I., & Thornton, M. A., (Accepted). Predicting other people shapes the social mind. *Advances in Experimental Social Psychology*.

Lin, C., & Thornton, M. A. (2023). Evidence for bidirectional causation between trait and mental state inferences. *Journal of Experimental Social Psychology*, 108, 104495.
[\[PDF\]](#) [\[Preprint\]](#) [\[Data & code\]](#)

Thornton, M. A., Rmus, M., Vyas, A. D., & Tamir, D. I. (2023). Transition dynamics shape mental state concepts. *Journal of Experimental Psychology: General*.
[\[PDF\]](#) [\[Preprint\]](#) [\[Data & code\]](#) [\[Blog\]](#)

Thornton, M. A., Wolf, S., Reilly, B. J., Slingerland, E. G. & Tamir, D. I. (2022). The 3d Mind Model characterizes how people understand mental states across modern and historical cultures. *Affective Science*, 3(1), 93-104.
[\[Paper\]](#) [\[Preprint\]](#) [\[Data & code\]](#)

Thornton, M. A., & Tamir, D. I. (2022). Six dimensions describe action understanding: the ACT-FASTaxonomy. *Journal of Personality and Social Psychology*, 122(4), 577-605.
[\[Paper\]](#) [\[Preprint\]](#) [\[Data & code\]](#) [\[Blog\]](#)

- Zhao, Z., Thornton, M. A., & Tamir, D. I. (2022). Accurate emotion prediction in dyads and groups and its potential social benefits. *Emotion*, 22(5), 1030-1043.
[\[Paper\]](#) [\[Preprint\]](#) [\[Data & code\]](#)
- Barrick, E. M., Thornton, M. A., & Tamir, D. I. (2021). Mask exposure during COVID-19 changes emotional face processing. *PLoS ONE*, 0258470.
[\[Paper – open access\]](#) [\[Preprint\]](#) [\[Data & code\]](#)
- Weaverdyck, M. E., Thornton, M. A., & Tamir, D. I. (2021). Stable neural representations of mental states across target people and stimulus modalities. *NeuroImage*, 238, 118258.
[\[Paper – open access\]](#) [\[Preprint\]](#) [\[Data & code\]](#)
- Thornton, M. A., & Tamir, D. I. (2021). The organization of social knowledge is tuned for prediction. In M. Gilead & K. Ochsner (Ed.) *The Neural Basis of Mentalizing*. Springer Nature.
[\[Chapter\]](#) [\[Book\]](#)
- Thornton, M. A., & Tamir, D. I. (2021). People accurately predict the transition probabilities between actions. *Science Advances*, 7(9), eabd4995.
[\[Paper – open access\]](#) [\[Preprint\]](#) [\[Data & code\]](#) [\[Blog\]](#)
- Thornton, M. A., & Tamir, D. I. (2020). Perceiving actions before they happen: Psychological dimensions scaffold neural action prediction. *Social Cognitive and Affective Neuroscience*, 16(8), 807-815.
[\[Paper – open access\]](#) [\[Preprint\]](#) [\[Data & code\]](#) [\[Blog\]](#)
- Thornton, M. A., & Tamir, D. I. (2020) People represent mental states in terms of rationality, social impact, and valence: Validating the 3d Mind Model. *Cortex*, 125, 44-59.
[\[Paper\]](#) [\[Preprint\]](#) [\[Data & code\]](#) [\[Blog\]](#)
- Thornton, M. A., Weaverdyck, M. E., & Tamir, D. I. (2019). The brain represents people as the mental states they habitually experience. *Nature Communications*, 10, 2291.
[\[Paper – open access\]](#) [\[Preprint\]](#) [\[Data & code\]](#) [\[Blog\]](#)
- Thornton, M. A., Weaverdyck, M. E., Mildner, J. N., & Tamir, D. I. (2019) People represent their own mental states more distinctly than those of others. *Nature Communications*, 10, 2117.
[\[Paper – open access\]](#) [\[Preprint\]](#) [\[Data & code\]](#) [\[Blog\]](#)
- Thornton, M. A., Weaverdyck, M. E., & Tamir, D. I. (2019). The social brain automatically predicts others' future mental states. *The Journal of Neuroscience*, 39(1), 140-148.
[\[Paper\]](#) [\[Preprint\]](#) [\[Data & code\]](#) [\[Blog\]](#)
- Tamir, D. I.*, Thornton, M. A.* (2018). Modeling the predictive social mind. *Trends in Cognitive Sciences*, 22(3) 201-212.
[\[PDF\]](#) [\[Commentary by Rebecca Saxe\]](#)

- Thornton, M. A., & Mitchell, J. P. (2018). Theories of person perception predict patterns of neural activity during mentalizing. *Cerebral Cortex*, 28(10), 3505-3520.
[\[PDF\]](#) [\[Data & code\]](#) [\[Blog\]](#)
- Thornton, M. A., & Mitchell, J. P. (2017). Consistent neural activity patterns represent personally familiar people. *Journal of Cognitive Neuroscience*, 29(9), 1583-1594.
[\[PDF\]](#) [\[Data & code\]](#) [\[Blog\]](#)
- Thornton, M. A., & Tamir, D. I. (2017). Mental models accurately predict emotion transitions. *Proceedings of the National Academy of Sciences of the United States of America*, 14(23), 5982-5987.
[\[PDF\]](#) [\[Data & code\]](#) [\[Blog\]](#)
- Rodriguez, S. B.*, Thornton, M. A.*, & Thornton, R. J. (2017). Discrimination of Wine Lactic Acid Bacteria by Raman Spectroscopy. *Journal of Industrial Microbiology and Biotechnology*, 48(8), 1167-1175.
[\[PDF\]](#) [\[Data & code\]](#) [\[Blog\]](#)
- Tamir, D. I.*, Thornton, M. A.*, Contreras, J. M., & Mitchell, J. P. (2016). Neural evidence that three dimensions organize mental state representation: rationality, social impact, and valence. *Proceedings of the National Academy of Sciences of the United States of America*, 113(1), 194-199.
[\[PDF\]](#) [\[Data & code\]](#) [\[Blog\]](#) [\[Commentary by Dubois & Adolphs\]](#)
- Rodriguez, S. B., Thornton, M. A., & Thornton, R. J. (2013). Raman spectroscopy and chemometrics for identification and strain discrimination of the wine spoilage yeasts *Saccharomyces cerevisiae*, *Zygosaccharomyces bailii*, and *Brettanomyces bruxellensis*. *Applied and Environmental Microbiology*, 79(20), 6264-6270.
[\[PDF\]](#) [\[Blog\]](#)
- Thornton, M. A., & Conway, A. R. A. (2013). Working memory for social information: Chunking or domain-specific buffer? *NeuroImage*, 70, 233-239.
[\[PDF\]](#)

*equal contributions.

PREPRINTS AND MANUSCRIPTS

- Sievers, B. & Thornton, M.A., (2023). Deep social neuroscience: The promise and peril of using artificial neural networks to study the social brain. *PsyArXiv*.
[\[Preprint\]](#)
- Thornton, M. A., & Tamir, D. I. (2023). The brain represents situations and mental states as sums of their action affordances. *PsyArXiv*.
[\[Preprint\]](#) [\[Data & code\]](#)

Nencheva, M. L., Nook, E. C., Thornton, M. A., Lew-Williams, C., & Tamir, D. (2023). The co-emergence of emotion vocabulary and organized emotion dynamics in childhood. *PsyArXiv*.

[\[Preprint\]](#) [\[Data & code\]](#) [\[Blog\]](#)

Barrick, E., Thornton, M. A., Zhao, Z., & Tamir, D. I. (2023) Individual differences in emotion prediction and implications for social success. *PsyArXiv*.

[\[Preprint\]](#) [\[Data & code\]](#) [\[Blog\]](#)

Lin, C., Keles, U., Thornton, M. A., & Adolphs, R. (accepted in principle, registered report). Trait impressions from faces shape mental state inferences. *Nature Human Behaviour*.

[\[Stage 1 Protocol\]](#) [\[Data & code\]](#)

Lin, C., & Thornton, M. A. (2021). Fooled by beautiful data: Visualization aesthetics bias trust in science, news, and social media. *PsyArXiv*.

[\[Preprint\]](#) [\[Data & code\]](#)

HONORS AND AWARDS

| | |
|------|---|
| 2021 | Association for Psychological Science Rising Star |
| 2015 | Sackler Scholar in Psychobiology |
| 2015 | Social and Affective Neuroscience Society Trainee Award |
| 2014 | Harvard University Certificate of Distinction in Teaching |
| 2013 | Harvard University Certificate of Distinction in Teaching |
| 2012 | National Science Foundation Graduate Research Fellowship |
| 2011 | Edward E. Jones Memorial Thesis Prize, Princeton University |
| 2011 | Summa cum laude, Phi Beta Kappa, and Sigma Xi, Princeton University |
| 2009 | Shapiro Prize for Academic Excellence, Princeton University |

FUNDING

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|------|--|
| 2023 | Hopkins Arts Integration Program grant, Dartmouth College |
| 2022 | CompX Grant, Neukom Institute for Computational Science, Dartmouth College |
| 2015 | Sackler Scholar in Psychobiology, Harvard University |
| 2012 | National Science Foundation Graduate Research Fellowship |

INVITED TALKS

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| 2023 | Gordon Research Conference, Visualization in Science and Education |
| 2023 | Tel Aviv University, Empathies, Brain, and the Moving Image |
| 2021 | University of Pennsylvania, Social and Behavioral Science Initiative |
| 2021 | Harvard University, Computational Approaches to Social Cognition |
| 2020 | IMT School Lucca, Neuroscience Research Seminar |
| 2019 | Johns Hopkins University, Social Cognition from Flies to Humans |
| 2019 | Dartmouth University, Methods in Neuroscience at Dartmouth |

- 2018 Brown University, Social Cognitive Science Brown Bag
- 2018 Harvard University, Methods Dinners
- 2018 Technische Universität Dresden, Understanding Others
- 2018 Dartmouth University, Methods in Neuroscience at Dartmouth
- 2018 New York University, Concepts and Categories Seminar
- 2018 Princeton University, Social Research Seminar
- 2017 Dartmouth College, Center for Social Brain Sciences
- 2017 Princeton University, Neuroscience of Social Decision Making

CONFERENCE PRESENTATIONS

- Thornton, M. A. (2023, February). Understanding Mental State Representation Across Time, Space, and Language. Talk presented at the Society for Personality and Social Psychology annual meeting (Atlanta, GA).
- Thompson, J.C., Chang, L. J., & Thornton, M.A. (2022, May). Computational Symposium: SANS Naturalistic Data Analysis Challenge. Poster presented at the Social and Affective Neuroscience Society annual meeting (online).
- Thornton, M. A. (2021, July). People accurately and automatically predict affective dynamics. Talk presented at the Interdisciplinary Advances in Affective Cognition Workshop at the 43rd Annual Meeting of the Cognitive Science Society (online).
- Thornton, M. A. (2021, June). Detecting and visualizing human body pose in naturalistic video. Talk presented at the NIMH Advanced Statistical Methods and Dynamic Data Visualizations for Mental Health Studies workshop (online).
- Thornton, M. A. & Tamir, D. I. (2021, May). Universal dimensions characterize how people understand others' minds across modern and historical cultures. Poster presented at the Social and Affective Neuroscience Society annual meeting (online).
- Thornton, M. A. (2021, February). People represent situations and other people as sums of their typical actions and mental states. Talk presented at the Society for Personality and Social Psychology annual meeting (online).
- Thornton, M. A. (2021, February). People represent situations and other people as sums of their typical actions and mental states. Talk presented at the Society for Personality and Social Psychology annual meeting (online).
- Thornton, M. A. (2021, January). Representational similarity analysis workshop. Talk presented at the Society for Social Neuroscience annual meeting (online).
- Thornton, M. A. (2020, May). Using deep learning to automatically annotate behavior in naturalistic fMRI stimuli. Talk scheduled for the Computational SAN preconference of the Social and Affective Neuroscience Society annual meeting, Santa Barbara, CA. Cancelled due to covid19.

- Thornton, M. A. (2020, February). Mental state dynamics shape mental state concepts. Talk presented at the Social Cognition preconference of the Society for Personality and Social Psychology annual meeting, New Orleans, LA.
- Gureckis, T. M., Daw, N. D., Thornton, M. A., & Borst, J. P. (2019, September). How can we test cognitive models with brain-activity data? Cross-collaboration breakout session led at the Conference on Cognitive Computational Neuroscience, Berlin, Germany.
- Chen, J., Thornton, M. A., & Calhoun, A. J. (2019, September). How can we measure and model the dynamics of interacting minds? Cross-collaboration breakout session led at the Conference on Cognitive Computational Neuroscience, Berlin, Germany.
- Thornton, M. A. & Tamir, D. I. (2019, May). Neural representations of others' current actions accurately predict their likely future actions. Talk presented at the Social and Affective Neuroscience Society annual meeting, Miami, FL.
- Thornton, M. A., Burkart, D., & Tamir, D. I. (2019, February). Comparing the conceptual structure of affect across cultures via the application of word embeddings to international social media. Talk presented at the Society for Personality and Social Psychology annual meeting, Portland, OR.
- Thornton, M. A., & Tamir, D. I. (2019, February). Perceptions accurately predict the transitional probabilities between actions. Poster presented at the Social Cognition preconference of the Society for Personality and Social Psychology annual meeting, Portland, OR.
- Thornton, M. A., Weaverdyck, M. E., & Tamir, D. I. (2018, May). Neural representations of people and mental states reflect predictive coding of future states. Talk presented at the Association for Psychological Science annual meeting, San Francisco, CA.
- Thornton, M. A., Weaverdyck, M. E., & Tamir, D. I. (2018, May). Neural representations of people and mental states reflexively encode predictions of future states. Poster presented at the Social and Affective Neuroscience Society annual meeting, Brooklyn, NY.
- Thornton, M. A., Weaverdyck, M. E., & Tamir, D. I. (2018, March). Neural representations of people and mental states reflexively encode predictions of future states. Poster presented at the Society for Personality and Social Psychology annual meeting, Atlanta, GA.
- Thornton, M. A., Weaverdyck, M. E., & Tamir, D. I. (2017, March). Neural representations of others' mental states grow less distinct with psychological distance. Poster presented at the Social and Affective Neuroscience Society annual meeting, Los Angeles, CA.

- Thornton, M. A., & Mitchell, J. P. (2017, January). Theories of person perception predict patterns of neural activity during mentalizing. Talk presented at the Society for Personality and Social Psychology annual meeting, San Antonio, TX.
- Thornton, M. A., & Tamir, D. I. (2017, January). Mental models accurately predict emotion transitions. Talk presented at the Society for Personality and Social Psychology annual meeting, San Antonio, TX.
- Thornton, M. A., & Mitchell, J. P. (2016, April). Theories of person perception predict patterns of neural activity during mentalizing. Poster presented at the Social and Affective Neuroscience Society annual meeting, New York, NY.
- Thornton, M. A., & Mitchell, J. P. (2016, February). Theories of person perception predict patterns of neural activity during mentalizing. Talk presented at the Social Brain Sciences Symposium, Waltham, MA.
- Thornton, M. A., & Tamir, D. I. (2016, January). Representing other minds. Poster presented at the Society for Personality and Social Psychology annual meeting, San Diego, CA.
- Thornton, M. A., & Mitchell, J. P. (2016, January). Theories of person perception predict patterns of neural activity during mentalizing. Poster presented at the Society for Personality and Social Psychology annual meeting Social Cognition Preconference, San Diego, CA.
- Thornton, M. A., & Mitchell, J. P. (2015, April). Ventral medial prefrontal cortex supports a multidimensional code for similarity to self. Talk presented at the Social and Affective Neuroscience annual meeting, Boston, MA.
- Thornton, M. A., & Mitchell, J. P. (2015, March). Ventral medial prefrontal cortex supports a multidimensional code for similarity to self. Poster presented at Cognitive Neuroscience Society annual meeting, San Francisco, CA.
- Thornton, M. A., & Mitchell, J. P. (2014, April). The neural organization of person knowledge. Poster presented at Social and Affective Neuroscience Society annual meeting, Denver, CO.
- Thornton, M. A., Tamir, D. I., Contreras, J. M., & Mitchell, J. P. (2014, April). Neural organization of mental state knowledge. Poster presented at Cognitive Neuroscience Society annual meeting, Boston, MA.
- Thornton, M. A., Tamir, D. I., Contreras, J. M., & Mitchell, J. P. (2014, February). Neural representations of mental states are encoded according to agency and experience. Talk presented at Social Brain Sciences Symposium, Chestnut Hill, MA.

Thornton, M. A., & Mitchell, J. P. (2013, July). Efficiency in social working memory. Poster presented at Wellcome Trust Summer School on the Biology of Social Cognition, Hinxton, UK.

Thornton, M. A., Contreras, J. M., & Mitchell, J. P. (2012, December). Greater FFA pattern similarity for other-race than same-race faces. Talk presented at Social Brain Sciences Symposium, Cambridge, MA.

TEACHING AND ADVISING

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|-------------|--|
| 2022-2023 | Instructor Psyc 23: Social Psychology Dartmouth College, Department of Psychological and Brain Science |
| 2021-2023 | Instructor Psyc 83.08: Social and Neural Networks Dartmouth College, Department of Psychological and Brain Science |
| 2021-2023 | Instructor Psyc 43: Emotion Dartmouth College, Department of Psychological and Brain Science |
| 2021 | Instructor Psyc 10: Experimental Design, Methodology, and Data Analysis Procedures Dartmouth College, Department of Psychological and Brain Science |
| 2018 - 2019 | Instructor/Pop-up PI Methods in Neuroscience at Dartmouth (MIND) Computational Summer School |
| 2013 - 2015 | Teaching Fellow Psych 1950, Intermediate Statistical Analysis in Psychology Harvard University, Department of Psychology |
| 2011 | Senior Peer Academic Advisor Princeton University |
| 2008 | Mathematics Instructor and Summer Advisor Upward Bound, Central High School, Fresno, California |

PROFESSIONAL SERVICE AND MEMBERSHIPS

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| Service to field: | |
| 2024 (expected) | Lead organizer, SPSP Computational Preconference |
| 2023 | Co-organizer, Methods in Neuroscience at Dartmouth |

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| 2023-present | Social Media Co-chair, SANS |
| 2022-present | Director-at-Large, SANS Board |
| 2022-2023 | Panelist, Princeton Academic Job Market Panel |
| 2022 | Co-organized SANS Naturalistic Data Analysis Challenge |
| 2021 | SANS program committee |

Departmental service:

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|----------------|--|
| 2023 - 2024 | Member, Committee on Faculty, Dartmouth College |
| 2023 - 2024 | Member, Neuroscience Committee, Dartmouth PBS |
| 2022 - 2023 | Member, Norms and Wellbeing Committee, Dartmouth PBS |
| 2022 - 2023 | Member, Behavioral/Systems Faculty Search Committee, Dartmouth PBS |
| 2021 - present | Departmental Twitter account operator, Dartmouth PBS |
| 2021 - 2022 | Member, Wellbeing Committee, Dartmouth PBS |
| 2020 - 2021 | Member, Inclusivity, Diversity, and Culture Committee, Dartmouth PBS |

Ad hoc reviewer:

Proceedings of the National Academy of Sciences, Nature Human Behaviour, Nature Communications, Current Biology, Journal of Personality and Social Psychology: Attitudes and Social Cognition, Social Cognitive and Affective Neuroscience, NeuroImage, Cortex, Cerebral Cortex, Psychological Review, Frontiers in Psychology, Social Neuroscience, The Journal of Neuroscience, Neuropsychologia, Journal of Experimental Psychology: General, Cognitive Affective and Behavioral Neuroscience, Neuroscience and Biobehavioral Reviews, Collective Intelligence, Memory and Cognition, Psychonomic Bulletin & Review, Journal of Research in Personality, Developmental Science, Organizational Behavioral and Human Decision Processes, Translational Neurodegeneration, eLife, Journal of Experimental Social Psychology, Social Psychological and Personality Science, Scientific Reports, iScience

Memberships:

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|------------------------|---|
| 2013 - present | Social and Affective Neuroscience Society |
| 2015 - present | Society for Personality and Social Psychology |
| 2018 - 2019, 2022-2023 | Association for Psychological Science |
| 2018 - 2019 | Society for Neuroscience |
| 2013 - 2015 | Cognitive Neuroscience Society |