

Vael Gates

Stanford HAI (Institute for Human-Centered AI) Network Affiliate, 2022-Present

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Professional Positions

Postdoctoral Researcher at Stanford University, 2021-2022

Institute for Human-Centered AI (HAI) & Center for International Security and Cooperation (CISAC)

Education

PhD in Neuroscience (Computational Cognitive Science), 2016-2021

University of California, Berkeley

Advisor: Tom Griffiths (Psychology, Cognitive Science), GPA: 3.99/4.00

Thesis: "Formalizing and Testing Computational Cognitive Models of Social Collaboration"

Master of Philosophy in Biological Science (Psychology), 2015-2016

University of Cambridge

Advisor: Zoe Kourtzi (Experimental Psych.), one-year research (not taught) program

Thesis: "Impact of Task Structure on Strategies in Statistical Learning"

BA in Neuroscience, 2011-2015

Wellesley College (research at Wellesley College, M.I.T., and Harvard Medical School)

Magna cum laude (GPA: 3.82/4.00), departmental honors, Phi Beta Kappa, Sigma Xi

Advisor: Bevil Conway (Neuroscience)

Thesis: "Neural Correlates of the Bezold-Brücke Perceptual Color Shift"

Publications

**Previously, published under M.A. Gates*

Gates, V.*, Callaway, F.*, Ho, M.K., and Griffiths, T. (2021). A rational model of people's inferences about others' preferences based on response times. *Cognition*, 217, 104885. **Authors contributed equally.*

Gates, V., Suchow, J.W., and Griffiths, T.L. (2021). Memory transmission in small groups and large networks: An empirical study. *Psychonomic Bulletin and Review*, 1-8.

Gates, V., Hsiao, M., Zieve, G.G., Courry, R., and Persons, J.B. (2021). Relationship to CBT outcome and dropout of decision support tools of the written case formulation, list of treatment goals and

plot of symptom scores. *Behaviour Research and Therapy*, 142, 103874.

Gates, V., Griffiths, T. L., and Dragan, A. D. (2020). How to be helpful to multiple people at once. *Cognitive Science*, 44(6). <http://dx.doi.org/10.1111/cogs.12841>.

Ibraheem, S., **Gates, V.**, DeNero, J., and Griffiths, T. L. (2020). Investigating the Behavior of Malicious Actors Through the Game of Mafia. *Proceedings of the 42nd Annual Conference of the Cognitive Science Society*.

Gates, V. and Persons, J.B. (2019, November). Effects of therapist decision-making tools on outcome and dropout of naturalistic cognitive behavioral therapy. In J.B. Persons (Chair), *Improving Treatment Outcome with Clinical Decision-making Tools*. Symposium conducted at the Association for Behavioral and Cognitive Therapies, Atlanta, GA.

Gates, M.A., Veuthey, T.L., Tessler, M.H., Smith, K.A., Gerstenberg, T., Bayet, L., and Tenebaum, J.B. (2018). Tiptoeing around it: Inference from absence in potentially offensive speech. *Proceedings of the 40th Annual Conference of the Cognitive Science Society*.

Fisac, J.F., **Gates, M.A.**, Hamrick, J.B., Liu, C., Hadfield-Menell, D., Palaniappan, M., Malik, D., Sastry, S.S., Griffiths, T.L. and Dragan, A.D. (2017). Pragmatic-Pedagogic Value Alignment. *International Symposium on Robotics Research*. Awarded second place for the Blue Sky Paper awards.

Gates, M.A., Suchow, J.W., and Griffiths, T.L. (2017). Empirical tests of large-scale collaborative recall. *Proceedings of the 39th Annual Conference of the Cognitive Science Society*. Selected for oral presentation.

Wang, R., **Gates, M.A.**, Perez-Pozuelo, I., Shen, Y., Tino, P., Welchman, A., and Kourtzi, Z. Learning predictive temporal structure under uncertainty. Program No. 085.18. 2018 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2018. Online.

Gagin, G., Bohon, K.S., Butensky, A., **Gates, M.A.**, Hu, J.Y., Lafer-Sousa, R., Pulumo, R.L., Qu, J., Stoughton, C.M., Swanbeck, S.N. and Conway, B.R. (2014). Color-detection thresholds in rhesus macaque monkeys and humans. *Journal of Vision*, 14(8), 12.

Awards

Center for Brains, Minds, and Machines (CBMM) Summer Course, Marine Biological Laboratory at Woods Hole, MA, Aug. 2017

NSF Graduate Research Fellowship Honorable Mention, 2017

Goldwater Scholarship Honorable Mention, Barry Goldwater Scholarship and Excellence in Education Foundation, 2014

Beckman Scholar, Arnold and Mabel Beckman Foundation, 2014-2015

Center for Brains, Minds, and Machines (CBMM) Summer Undergraduate Research Program, M.I.T., Summer 2014

Skills

- Developing social science web-based research experiments using MTurk/Prolific. From these platforms I have collected data from over 5500 online participants, and collected more than 420 hours of data from in-person participants
- Analyzing data for publication using Python, R, (MATLAB)
- Implementing statistical analyses using frequentist, Bayesian, and machine learning methods to compare hypothesized computational models to participant data. Includes ANOVA, χ^2 -tests, multiple and logistic regression, neural network models, and inverse reinforcement learning models
- Producing research relevant to the value alignment problem in AI safety (Fisac et al., 2017; Gates et al., 2020)
- Working in cross-disciplinary teams, especially with psychologists and computer scientists
- Writing science communication articles, with an interest in psychotherapy
- Clinical experience. *Limited Clinical Training Program, Fall 2019-Spring 2020*. Supplementary training program in clinical intervention alongside graduate students in U.C. Berkeley's Clinical Science PhD. Included courses on research, assessment, and intervention, and supervision in seeing clients in U.C. Berkeley's clinic. I conducted this work alongside my thesis research to learn about effective clinical interventions and limitations.

Science Communication

"Beyond the Therapist's Couch: The Research Behind Psychotherapy", *Apr. 2019, Berkeley Science Review*

"Natural Language Processing for Psychotherapy", *Mar. 2019, Berkeley Science Review*

"Technology Meets Psychotherapy: A Wild West", *Jan. 2019, Golgi Productions*

Teaching

Postdoctoral Fellow for THINK65, Stanford University, *Spring 2022*

Taught two 15-student sections twice weekly, for THINK 65: Preventing Human Extinction. Helped update AI-related required readings; designed section content from scratch.

Certificate of Teaching and Learning in Higher Education, UC Berkeley, *May 2021*

Graduate Student Instructor for MCB160L, UC Berkeley, *Fall 2020*

Co-taught a 31-student section twice weekly, for Molecular and Cell Biology 160L: Neurobiology Laboratory. Worked with a team of three other GSIs and three instructors.

Graduate Student Instructor for CogSci131, UC Berkeley, *Spring 2018*

Taught two 25-student sections weekly, for Cognitive Science 131: Computational Models of Cognition. Worked with a team of six other GSIs and the instructor.

Math Tutor for the Prison University Project, San Quentin State Prison, *Summer 2017*

Tutored a student in algebra. The Prison University Project offers a liberal arts education, included college and college-preparatory classes, to people incarcerated at San Quentin.

Online Resources

Science Outreach Website Developer, *Summer 2016-Present*

Science outreach website aimed at undergraduates in science, especially female undergraduates and undergraduates in computational cognitive science: <http://womenincocosci.com>

Beyond Academia Blog Writer, *Spring 2018-Spring 2019*

Blogger and interviewer for Beyond Academia, a student-run organization focused on assembling resources for graduates pursuing careers outside of the traditional academia track.