

# Shadab Tabatabaeian

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## RESEARCH INTERESTS

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My research centers on the cognitive and neural mechanisms underlying creative problem-solving, particularly within STEM disciplines. I apply innovative statistical methodologies from information theory and complex systems theory to explore how the interactions between the brain, body, environment, and other individuals contribute to the emergence of creative solutions.

## EMPLOYMENT

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**Senior Data Scientist** | **SoCal Charter School Networks** July 2023 - present

Currently, I lead the data analytics team, servicing four charter schools in southern California: Mission Vista Academy, Pacific Coast Academy, Cabrillo Point Academy, SoCal Scholars Academy.

## EDUCATION

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2018 - 2023 Ph.D. in Cognitive and Information Sciences at **University of California, Merced**

2018 - 2022 M.S. in Cognitive and Information Sciences at **University of California, Merced**

2015 - 2018 M.A. in Interdisciplinary Humanities at **University of California, Merced**

2010 - 2014 B.Sc. in Archaeology at **University of Tehran, Iran**

2008 - 2012 B.A. in Persian Literature and Linguistics at **University of Tehran, Iran**

## PUBLICATIONS

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Tabatabaeian, S., Ortega, A., Deluna O'bi, A., Landy, D., & Marghetis, T. (2024). Stepping back to see the connection: Movement during problem solving facilitates creative insight. *Proceedings of the Annual Meeting of the Cognitive Science Society*, 46(46).

Jennings, C. D., & Tabatabaeian, S. (2023). Attention, technology, and creativity. In D. G. Burnett & J. E. H. Smith (Eds.), *Scenes of attention: Essays on mind, time, and the senses* (pp. 124–141). Columbia University Press.

Tabatabaeian, S., Deluna O'bi, A., Landy, D., & Marghetis, T. (2023). What does the body do, when the body is doing mathematics? *Proceedings of the Annual Meeting of the Cognitive Science Society*, 45(45).

Tabatabaeian, S., & Jennings, C. D. (2023). Dynamic attentional mechanisms of creative cognition. *Philosophy and the Mind Sciences*, 4.

Tabatabaeian, S., & Marghetis, T. (2023). Seeing the connection: Manipulating access to visual information facilitates creative insight. *Proceedings of the Annual Meeting of the Cognitive Science Society*, 45(45).

Tabatabaeian, S., Deluna, A., Landy, D., & Marghetis, T. (2022). Mathematical insights as novel connections: Evidence from expert mathematicians. *Proceedings of the Annual Meeting of the Cognitive Science Society*, 44(44).

Lobato, E. J. C., Tabatabaeian, S., Fleming, M., Sulzmann, S., & Holbrook, C. (2019). Religiosity predicts evidentiary standards. *Social Psychological and Personality Science*, 11(4), 546–551.

Tabatabaeian, S., Holbrook, C., & Jennings, C. D. (2019). A re-examination of the interrelationships between attention, eye behavior, and creative thought. *Proceedings of the Annual Conference of the Cognitive Science Society*, 41(41).

Tabatabaeian, S., & Jennings, C. D. (2018). Toward a neurophysiological foundation for altered states of consciousness. *Behavioral and Brain Sciences*, 41.

## CONFERENCE TALKS

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- **Tabatabaeian, S.**, Ortega, A., Deluna O'bi, A., Landy, D., & Marghetis, T. (July, 2024). Stepping back to see the connection: Movement during problem solving facilitates creative insight. *47th Annual Meeting of The Cognitive Science Society*, Rotterdam, Netherlands. [19% acceptance rate]
- **Tabatabaeian, S.**, Deluna O'bi, A., Landy, D., & Marghetis, T. (July, 2022). Mathematical insights as novel connections: Evidence from expert mathematicians. *44th Annual Meeting of The Cognitive Science Society*, Toronto, Canada. [27% acceptance rate]
- **Tabatabaeian, S.**, Deluna O'bi, A., Landy, D., & Marghetis, T. (October, 2021). Mathematical insight within the distributed system of brain-body-blackboard. *Complexity and Cognition (CompCog) Conference*. Lyon, France.
- **Tabatabaeian, S.**, Holbrook, C., & Jennings, C. D. (October, 2020). The missing link: a new account of the link between creative cognition and altered states of consciousness. *Society for the Neuroscience of Creativity (SfNC)*. Virtual Conference.
- **Tabatabaeian, S.** (December, 2017). Effects of darkness on perceptual and cognitive processes: creativity enhancement. *116th Annual Meeting of the American Anthropological Association*. Washington, DC.

## SELECTED RESEARCH PRESENTATIONS

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- *Information-theoretic early warning signals of mathematical insight*. Department of Cognitive and Information Sciences, University of California, Merced. April, 2023.
- *Seeing the connection: Manipulating access to visual information facilitates creative insight*. Language, Interaction, & Cognition Lab, University of California, Merced. March, 2023.
- *Dynamic attentional mechanisms of creative cognition*. Philosophy Lab. University of California, Merced. February, 2023.
- *Modeling mathematical creativity in its natural habitat*. Department of Cognitive and Information Sciences, University of California, Merced. February, 2022.
- *Creative performance under threat: A Bayesian analysis*. Advanced Statistics for Cognitive Science Course, Dr. Rachel Ryskin, University of California, Merced. November, 2021.
- *Modeling neural correlates of creative cognition via simulated annealing algorithm*. Complex Adaptive Systems Course, Dr. Michael Spivey, University of California, Merced. April, 2020.
- *A re-examination of the interrelationships between attention, eye behavior, and creative thought*. Department of Cognitive and Information Sciences, University of California, Merced. May, 2019.

## ORGANIZED WORKSHOPS

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- *Designing online behavioral experiments using Qualtrics and Prolific*. Trained undergraduate research assistants to create and conduct online studies, focusing on experiment design, participant recruitment, and data collection on Qualtrics and Prolific platforms (Marghetis Lab, Fall 2023)
- *Coding gestures in a naturalistic video corpus and enhancing inter-rater reliability*. Led a workshop for undergraduate research assistants focused on coding gestures, resolving rater disagreements, and statistical methods for reliability assessment (Marghetis Lab, Spring 2022).
- *Using eye-tracking technology to capture cognitive processes*. Trained undergraduate research assistants on the utilization of eye-tracking devices in experimental research. The workshop focused on equipment setup, experimental design, and data analysis techniques (Holbrook Lab, 2019).
- *Data analysis and Visualization with R Tidyverse and ggplot*. Conducted a workshop to help Master's students with data analysis and visualization in R. Included hands-on training in data manipulation, statistical analysis, and creating visualizations to effectively communicate research findings (Spring 2022).

- *Time series data analysis in R*. Led a specialized workshop for PhD students on time series data analysis, covering key concepts, methodologies, and advanced techniques for analyzing time-dependent data to uncover patterns and trends (Spring 2021).

## SELECTED POSTERS

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- **Tabatabaeian, S.**, Deluna O’bi, A., Landy, D., & Marghetis, T. (July, 2023). What does the body do, when the body is doing mathematics? *45th Annual Meeting of The Cognitive Science Society*, Sydney, Australia.
- **Tabatabaeian, S.**, & Marghetis, T. (July, 2023). Seeing the connection: Manipulating access to visual information facilitates creative insight. *45th Annual Meeting of The Cognitive Science Society*, Sydney, Australia.
- **Tabatabaeian, S.** (April, 2018). Potential Links between Eye-movement Trajectories and Creative Thought. *10th Annual California Cognitive Science Conference (CCSC)*, University of California, Berkeley.

## GRANTS, AWARDS, AND FELLOWSHIPS

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| 2023    | <b>Graduate Dean’s Dissertation Fellowship</b> (\$20,000), UC Merced.  |
| 2023    | <b>Cognitive &amp; Information Science Graduate Student Spotlight Award</b> , UC Merced.   |
| 2022    | <b>Diversity and Inclusion Awards for the Cognitive Science Society Conference</b> (\$1,000), Cognitive Science Society.   |
| 2022    | <b>Grace Hopper Celebration Scholarship</b> to attend GHC conference for Women in Tech, AnitaB.org Foundation.   |
| 2021    | <b>Graduate Student Opportunity Program</b> (\$45,000), UC Merced.   |
| 2021    | <b>John Templeton Foundation grant</b> (\$30,000), for “A Beginner’s Guide to Neural Mechanism,” a project that aims to provide online and open-access academic videos on topics of neuroscience and philosophy, in collaboration with Fabrizio Calzavarini, Zina Ward, Nick Byrd, and Rafael Gerraty. |
| 2021    | <b>John Templeton Foundation grant</b> (\$8,000), for “No Need to Go It Alone: Ecologically Valid Studies of Group Reasoning,” in collaboration with Daina Carafa, Nick Byrd, Austin Baker, and Trey Boone.  |
| 2019    | <b>Fellowship for the Summer Seminars in Neuroscience and Philosophy (SSNAP)</b> (\$1,000), Duke University.   |
| 2014    | Graduated with honors as the top student in both Archaeology and Literature and Linguistics, University of Tehran.   |
| 2014    | Ranked 1st in the nation in the entrance exam of Archaeology graduate programs.  |
| 2010-14 | Granted the annual top student scholarship of the Archaeology program at University of Tehran four years in a row.   |
| 2008    | Winner of the gold medal in the National Olympiad of Literature and Linguistics (ranked 1st among 25,000 participants).  |

## EDITORIAL AND PEER-REVIEW EXPERIENCE

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- Journal reviewer for Cognitive Science (2024).
- Collaborated in editing and proofreading the following academic publication: Jennings, C. D. (2020). *The Attending Mind*. Cambridge: Cambridge University Press.
- Journal reviewer for Developmental Science (2019).

## TEACHING ASSISTANT AND TUTORING EXPERIENCE

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- **Culture and Cognition**, Dr. Tyler Marghetis, University of California, Merced (Fall 2022).
- **Graduate Student Academic Writing Tutor**, University of California, Merced (Spring 2021).
- **Critical Reasoning**, Dr. Daniel Hicks, University of California, Merced (Fall 2021).
- **Neuroscience of Consciousness**, Dr. Carolyn Dicey Jennings, University of California, Merced (Spring 2020).

- **Contemporary Moral Issues in Philosophy**, Dr. David Jennings, University of California, Merced (Spring 2019).
- **Introduction to Philosophy**, Dr. Rolf Johansson, University of California, Merced (Fall 2019).
- **Introduction to Cognitive Science**, Dr. Michael Spivey (Fall 2018 and Fall 2015), Dr. Paul Smaldino (Spring 2018), University of California, Merced.
- **History of Anthropological Thought and Practice**, Dr. Annith Hundle, University of California, Merced (Fall 2017).
- **Human Origins**, Dr. Heather Jarrell, University of California, Merced (Spring 2017).
- **Introduction to Socio-cultural Anthropology**, Dr. Robin Delugan, University of California, Merced (Fall 2016).

## MENTORSHIP

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- As part of the Grad-Excel peer mentor program at the University of California, I volunteered to mentor four junior graduate students. I met with my mentees regularly, ensuring they adjusted well to their new environment, providing information about funding opportunities, and assisting them in navigating the challenges they encountered in graduate school.

## TECHNICAL SKILLS

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<b>Programming Languages</b>	R (Tidyverse, ggplot, rstan, brms), Python (Pandas, Numpy, PyTorch, scikit-learn, Keras, TensorFlow), MATLAB, SQL.
<b>Statistical Analyses</b>	Bayesian statistics, Stochastic modeling, Mixed-effects and logistic regression, Time series analysis.
<b>Machine Learning Techniques</b>	Deep Learning, Natural Language Processing (NLP), Classification, Decision Trees, Random Forest, Clustering, Principal Component Analysis (PCA).
<b>Methods</b>	Experimental design, Survey design, Qualtrics, Analysis of naturalistic data.
<b>Tools</b>	Eye-tracking, Virtual reality, EEG.
<b>Languages</b>	English, Farsi, French.