

Roberto Vargas

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robertov@andrew.cmu.edu | robertj.vargas@gmail.com

GitHub: https://github.com/ExCaLBBR/ExCaLBBR_Projects

ORCID: <https://orcid.org/0000-0002-1792-6657>

Academic Appointments

Carnegie Mellon University

08.2022 – present Presidential Postdoctoral Fellow (PPFP)

Education

07.2016 – 06.2022 PhD., Cognitive Neuroscience, Carnegie Mellon University
Advisor: Timothy Verstynen

07.2016 – 08.2020 Center for the Neural Basis of Cognition Graduate Training

07.2016 – 05.2018 MS., Psychology, Carnegie Mellon University
Advisor: Marcel Adam Just

07.2008 – 08.2012 B.A., Psychology, University of Texas at San Antonio
Cum Laude

Honors and Awards

2022 **Presidential Postdoctoral Fellowship Program (PPFP) Awardee**
Affiliated university: Carnegie Mellon University
Mentor(s): Dr. Timothy Verstynen & Dr. Kevin Jarbo

2022 **Carnegie Mellon Graduate Student Service Award (Nominated)**

2022 **Carnegie Mellon Graduate Student Teaching Award (Nominated)**

2022 **Dick Hayes Departmental Graduate Student Service Award**

2021 **Dick Hayes Departmental Graduate Student Service Award**

2021 **Herb Simon Departmental Graduate Student Teaching award**

2020 – 2022 **Eberly Center Future Faculty Program**

2017 – 2019 **Behavioral Brain (B2) Research Training Program**

2017 **Ford Foundation Predoctoral Fellowship: Honorable Mention List**

2010 **COLFA Research Conference, University of Texas at San Antonio**
Research Poster, *1st Place*

Research Grants

Amount: \$25,250 Dietrich College Seed Grant
Award date: 4-5-2023 Project funded: Using fMRI-measured Attitudes and Actions to Predict Biased Decisions among Black and White Americans
Role: Principal Investigator

Amount: \$1,000 Small Undergraduate Research Grants
Award date: 11-22-2022 Student mentees: Ashley Gelber; Max Labovitz

Amount: \$19,980 American Psychological Foundation Visionary Grant
Award date: 10-15-2021 Project funded: Using fMRI-measured Attitudes and Actions to Predict Biased Decisions to Punish across Racial Identities.
Role: Principal Investigator

Academic Service

2024 – present	CMU Dietrich College DEIB Strategic Plan Action Committee member
2023; 2024	Summer Program for Undergraduate Research (SPUR)
	Co-organizer and NSF REU: site grant co-author
2022 – 2023	CMU Psychology Diversity & Inclusion Committee
2020 – 2022	CMU Diverse Recruitment Committee (Co-founder)
	<ul style="list-style-type: none">· Establishing CMU presence at ABRCMS (2020 & 2021)· Compiling admissions resources for applicants from underrepresented backgrounds· Serving as Psychology department liaison for college-wide organization at ABRCMS
2021 – 2021	Summer Program for Undergraduate Research (SPUR)
	Leadership Coordinator
2017 – 2020	CMU Psychology Diversity & Inclusion Committee

Teaching Experience

Spring 2025	Data Science for Psychology and Neuroscience (Instructor of Record)
Fall 2020	Cognitive Neuroscience Research Methods (Instructor of Record)
Spring 2019	Cognitive Neuroscience Research Methods (Teaching Assistant)
Spring 2018	Cognitive Neuroscience Research Methods (Teaching Assistant)
Spring 2017	Cognitive Brain Imaging (Laboratory Instructor)

Lab Affiliations:

Carnegie Mellon University: Experience, Concept-association, Language, Brain/Behavioral Representation Lab (ExCaLBRR)
Carnegie Mellon University: Cognitive Axon Lab (CoAx)
Carnegie Mellon University: Data Driven Diversity Lab (D3)

Active Projects

Media Consumption and Identity based Concept Geometries Predict Engagement and Beliefs Towards Societal Institutions.

Project Link: <https://osf.io/vj7e5/>

Status: Study launched & data collected for n=600

Architecture of Partisan News Bias.

Project Link: <https://osf.io/rj6n3/>

Using fMRI-measured Attitudes and Actions to Predict Biased Decisions to Punish across Racial Identities.

Status: Actively recruiting target n=40; White and Chinese American sample collected n = 20

Peer-reviewed Publications

Indicates current or former *Undergraduate Advisee

Vargas, R. & Jarbo, K. (in prep). Attitudes and Actions to Predict Biased Decisions to Punish among White, Black, and Chinese Americans

Vargas, R. *Gelber, A., *Fang, R. (in prep). Racial/Ethnic and Gender Categorization of Names: Toolkit for Evoking Implicit Bias

Eng, C. M., **Vargas, R.** (under review). Longitudinal Investigation of Executive Function Neural Underpinnings and Resting-State Methodological Validation Using Functional Near Infrared Spectroscopy (fNIRS). <https://doi.org/10.17605/OSF.IO/CMTYQ>

Vargas, R. & Verstynen, T. (under review). Identity and Informational Differences in Concept Relations for Social-Societal Institutions. <https://doi.org/10.31234/osf.io/mybua>

- Vargas, R.** & Just, M. (2022) Similarities and Differences in the Neural representations of Abstract Concepts across English and Mandarin: Comparison of Underlying Dimensions of Meaning. *Human Brain Mapping*. <https://doi.org/10.1002/hbm.25844>
- Vargas, R.** & Just, M.A. (2021). The Neural Representation of Concrete and Abstract Concepts. In Barbey, A.K., Karama, S. & Heier, R.J. (Eds.) *The Cambridge Handbook of Intelligence and Cognitive Neuroscience*.
- Vargas, R.** & Just, M.A. (2019). Neural representations of Abstract Concepts: Identifying Underlying Neurosemantic Dimensions. *Cerebral Cortex*. doi.org/10.1093/cercor/bhz229
- Wang, J., Cherkassky, V. L., Yang, Y., Chang, K. K., **Vargas, R.**, Diana, N., Just, M.A. (2016) Identifying thematic roles from neural representations measured by functional magnetic resonance imaging. *Cognitive Neuropsychology*, 1-8. (Special Issue on Conceptual Knowledge Representation)
- Price, L.R., **Vargas, R.**, Behroosmand, R., Parkinson, A.L., Larson C.R., Greenlee, J.D.W., & Robin, D.A. (2016) Dynamic Connectivity Mapping of Electrographic Data using Bayesian Differential Structural Equation Modeling. *Biometrics and Biostatistics International Journal*, 4.
- Flagmeier, S.J., Ray, K.L., Parkinson, A.L., Li, K., **Vargas, R.**, Laird, A., Larson, C.R. & Robin, D.A. (2014). The Neural Changes in Connectivity of the Voice Network During Error Detection and Correction. *Brain and language*, 132, 7-13.
- Fernandez, E., Arevalo, I., Torralba, A., & **Vargas, R.** (2014). Norms for five parameters of anger: How do incarcerated adults differ from the community? *International Journal of Forensic Mental Health*, 13, 18-24
- Fernandez, E., **Vargas, R.**, Mahometa, M., Ramamurthy, S. & Boyle, G.J. (2012). Descriptors of Pain Sensation: A Dual Hierarchical Model of Latent Structure. *The Journal of Pain*, 13, 532-536.

Invited Presentations

- Vargas, R.** (April, 2022) Overcoming difficulties in Graduate School. Presented as part of a Psychology Department Professional Development Seminar series.
- Vargas, R.** (August, 2020) MVPA approaches for understanding the neurosemantics structure of concepts. Presented at Northwestern lecture series on fMRI methodologies.
- Vargas, R.** (February, 2020) Examination of the Neural and Semantic Structure of Abstract Concepts. CNBC Brain Bag series, Center for the Neural Basis of Cognition, Pittsburgh, Feb 2019.

Conference Presentations

- +Gelber, A., +Labovitz, M., +Fang, R., **Vargas, R.** (2023) Predicting Decisions to Reward and Punish Among Black and White Females and Males through an Intersectional Lens. Presented at Meeting of the Minds. Carnegie Mellon University.
- +Mendez-Fernandez, A., **Vargas, R.** (2021) Using a modified version of the Affect Misattribution Procedure to measure semantic similarity between concepts. Presented at Annual Biomedical Research Conference for Minority Students. Virtual Conference
- Vargas, R.** Just, M.A. (2020) Neural representations of Abstract Concepts across English and Mandarin: Similar Neural Infrastructure with Differing Utilization. Poster presentation at the annual convention of the Cognitive Neuroscience Society. Virtual Conference.
- Vargas, R.** Just, M. (2019). Combining fMRI activation patterns and semantic vector representations to predict activation patterns for new concepts. Poster presentation at the annual convention of the Society for Neuroscience. Chicago, IL.

Vargas, R. Just, M. (2019). How abstract concepts are neurally represented between English and Mandarin Chinese. Poster presentation at the annual convention of the Cognitive Neuroscience Society. San Francisco, CA.

Vargas, R. & Just, M. A. (2018) How abstract concepts neutrally represented? Poster presented at the Cognitive Neuroscience Society Meeting, Boston, MA.

Coyle, T. R., Purcell, J., Snyder, A., **Vargas, R.** & Richmond, M. (2013, May). Predictive validity of ability tilt on the SAT and ACT. Poster presented at the annual convention of the Association for Psychological Science, Washington, DC.

Snyder, A., Purcell, J., **Vargas, R.**, Konur, A. & Coyle, T. (2012, May). Relations among general intelligence, the general factor of personality, and college GPA. Poster presented at the annual convention of the Association for Psychological Science, Chicago, IL.

Garza, C., Fernandez, E. & **Vargas, R.** (2011, May). The Five Parameters of Anger: A Configural Analysis. Poster presentation at the annual convention of the Association for Psychological Science, Washington, DC.

Fernandez, E., **Vargas, R.** & Garza, C. (2010, May). Five parameters for mapping the angry person: Results from a community sample. Poster presentation at the annual convention of the Association for Psychological Science, Boston, MA.

Garcia, A.M., **Vargas, R.** & Fernandez, E. (2009). Anger: Community Norms and Gender Differences. Paper presented at the MKN McNair Heartland Research Conference, Kansas City, MO.

Mentorship

Adrianna Mendez-Fernandez	Summer Program for Undergraduate Research Mentee (2021)
Jayln Williams	Summer Program for Undergraduate Research Mentee (2022)
Ash Gelber	Research Assistant since Fall 2022 (Research for credit)
Ran Fang	Research Assistant since Fall 2022 (Research for credit)
Max Labovitz	Research Assistant Fall 2022 – Summer 2023 (Research for credit)
Marya Naqvi	Research Assistant since Fall 2023 (Research for credit)
Shinjini Chakrabarti	Research Assistant since Fall 2023 (Research for credit)
Nahom Mossazghi	PhD mentee since Spring 2023 (B ² rotation)