Joshua Satya Cetron | *Curriculum Vitae*

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Research interests: *computational and multivariate analysis of cognitive neuroimaging data (e.g., RSA, MVPA), neural basis of cognition and learning, applying neuroscience and psychology research to improve social, educational, and public health outcomes.*

Education

Harvard University, Cambridge, MA, *September 2018 - Present*
Doctoral Student, Department of Psychology
Advisor: Mina Cikara, Ph.D.

Dartmouth College, Hanover, NH, *September 2012 - June 2016*
B.A., Neuroscience, High Honors, Minors in Education and Spanish
Summa Cum Laude, Phi Beta Kappa, GPA: 3.92

Publications and Submitted Manuscripts

Cetron, J. S., Connolly, A. C., Diamond, S. G., May, V. V., Haxby, J. V., & Kraemer, D. J. M. (2019). Decoding individual differences in STEM learning from functional MRI data. *Nature Communications*, 10(1), 2027. https://doi.org/10.1038/s41467-019-10053-y

Alfred, K. L., Hayes, J. C., Pizzie, R. G., **Cetron, J. S.**, & Kraemer, D. J. M. (2020). Individual differences in encoded neural representations within cortical speech production network. *Brain Research*, 1726, 146483. https://doi.org/10.1016/j.brainres.2019.146483

Alfred, K. L., Connolly, A. C., **Cetron, J. S.**, & Kraemer, D. J. M. (2020). The neural representation of mental models across content type: a common spatial structure. *Nature Communications Biology*. https://doi.org/10.1038/s42003-019-0740-8

Cetron, J. S., Connolly, A. C., Diamond, S. G., May, V. V., Haxby, J. V.,& Kraemer, D. J. M. (2019). Using the force: STEM knowledge and experience construct shared neural representations of engineering concepts. *Under review*. Preprint available at https://psyarxiv.com/ue5fa. Preprint DOI: 10.17605/OSF.IO/UE5FA.

Hayes, J. C., Alfred, K. L., Pizzie, R. G., **Cetron, J. S.**, & Kraemer, D. J. M. (2019). Individual differences in white and grey matter structure associated with verbal habits of thought. *Submitted*. Preprint available at https://psyarxiv.com/ukgyr/. Preprint DOI: 10.31234/osf.io/ukgyr.

Current projects

Cetron, J. S., Mair, P., Haque, O., & Cikara, M. (2020). Is talk cheap? A willingness-to-pay investigation of social group attitude importance. *In progress*.

Cetron, J. S. & Cikara, M. (2020). Understanding how opinions become represented as knowledge (and how to intervene). *In progress*.

Borg, I., Mair, P., **Cetron, J. S.** (2020). Methods to identify partitions in MDS data space that correspond to facets in design space. *Manuscript in preparation*.

Cetron, J. S., Hayes, J.C., Connolly, A. C., Diamond, S. G., May, V. V., Haxby, J. V., & Kraemer, D. J. M. (2020). Comparing neural and behavioral representations of engineering concept learning for lab-based and computer-based instructional methods. *In progress*.

Peterson, E. M., Kolvoord, R. A., Kraemer, D. J. M., Weinberger, A. B., Uttal, D. H., Goldman, D., **Cetron, J. S.**, & Green, A. E. (2020). A neural test of concept mastery in geoscience through evaluation of neural representations. *In progress.*

Nastase, S. A., Hayes, J. H., **Cetron, J. S.**, Green, A. E., Cross, E. S., Haxby, J. V., & Kraemer, D. J. M. (2020). Decoding perceptual retrieval: the influence of retrieval modality and task difficulty. *Manuscript in preparation.*

Other Publications

Cetron, J. S., & Dartmouth College. (2016). *The role of motor regions in representing engineering concepts.* (Senior Honors Thesis). Retrieved from Dartmouth College Library. (Control No. ocn953695823).

Kean, L., Sen, S., Felder, M. A., Tangpricha, V., Adisa, O., JAMES-Herry, A., Buchanan, I., Ziegler, T., Alvarez, J., Beus, J., Worthington-White, D., Robertson, J., George, J., **Cetron, J.**, Ofori-Acquah, S. F., & Osunkwo, I. (2011). Evidence for Quantitative and Functional Immune Deviation in Pediatric Patients with Sickle Cell Disease. *Blood*, 118(21), 1054. Retrieved from http://www.bloodjournal.org/content/118/21/1054.

Selected Honors, Awards, Fellowships, & Research Funding

National Science Foundation Graduate Research Fellow
National Science Foundation, 2019 - Present
Award recipient for the NSF Graduate Research Fellowship Program (GRFP) beginning 2019.

Presidential Scholar, Graduate School of Arts and Sciences
Harvard University, Cambridge, MA, September 2018 - Present
Awarded by the Harvard Graduate School of Arts and Sciences in special recognition of a commitment to public service and intellectual excellence. Nominated by the Harvard Department of Psychology.

Fellow, Kavli Summer Institute in Cognitive Neuroscience
University of California, Santa Barbara, Summer 2019
Fellow at the 2019 Kavli Summer Institute in Cognitive Neuroscience (SICN).

High Honors Award, Neuroscience Honors Thesis
Dartmouth College, Hanover, NH, June 2016
For undergraduate Neuroscience Honors Thesis in the Department of Psychological and Brain Sciences.

Citations for Meritorious Performance
Dartmouth College, Hanover, NH, 2014 - 2016
Formal personal commendations from faculty (recorded on official transcript) for exceptional contributions to an academic course. Received on four occasions, each for a course in distinct department.

James O. Freeman Presidential Scholar
Dartmouth College, Hanover, NH, January 2015 - June 2015
Funded third-year undergraduate research assistantship for two academic terms.

Kaminsky Family Fund Award Grant Researcher
Dartmouth College, Hanover, NH, Fall 2014 & Summer 2015
Dartmouth College Dean of the Faculty Undergraduate Research Grant for full-time research work.

Rufus Choate Scholar
Dartmouth College, Hanover, NH, 2012 - 2013, 2013 - 2014
Annual award recognizing students in the top 5% of their class each academic year.

Sophomore Science Scholar
Dartmouth College, Hanover, NH, September 2013 - March 2014
Funded second-year undergraduate research assistantship for two academic terms.

Conference Presentations

Cetron, J. S., Hayes, J.C., Connolly, A. C., Diamond, S. G., May, V. V., Haxby, J. V., Kraemer, D. J. M. (2019, March). Comparing neural and behavioral representations of engineering concept learning for lab-based and computer-based instructional methods. Poster presented at the 2019 annual meeting of the Cognitive Neuroscience Society, San Francisco, CA.

Cetron, J. S., Connolly, A. C., Diamond, S. G., May, V. V., Haxby, J. V., Kraemer, D. J. M. (2018, March). A neural score for engineering concepts: predicting STEM learning with multivariate pattern analysis of functional neuroimaging data. Poster presented at the 2018 annual meeting of the Cognitive Neuroscience Society, Boston, MA.

Hayes, J. C., Alfred, K. L., **Cetron, J. S.**, Pizzie, R. G., Kraemer, D. J. M. (2018, March). Individual differences in information processing predict distinct structural connectivity patterns. Poster presented at the 2018 annual meeting of the Cognitive Neuroscience Society, Boston, MA.

Alfred, K. L., Connolly, A. C., **Cetron, J. S.**, Kraemer, D. J. M. (2017, March). Does the brain have a domain-general mechanism for representing mental models? Poster presented at the annual meeting of the Cognitive Neuroscience Society, San Francisco, CA.

Cetron, J. S., Connolly, A. C., Diamond, S. G., May, V. V., Kraemer, D. J. M. (2016, May). The role of motor regions in representing engineering concepts. Poster presented at the inaugural meeting of the Psychonomics Society International, Granada, Spain.

Cetron, J. S., Connolly, A. C., Diamond, S. G., May, V. V., Kraemer, D. J. M. (2016, April). The role of motor regions in representing engineering concepts. Poster presented at the annual meeting of the Cognitive Neuroscience Society, New York, NY.

Skills

Computational Skills

Programming Languages: R, Python (including SciPy and NumPy), Unix (bash), Markdown, Slurm cluster computing, some JavaScript (jsPsych).
Computational Tools & Software: RStudio, iPython, Jupyter, PsychoPy, Git, Atom, Slurm, Qualtrics, jsPsych.

Statistical Skills

Analyses: standard and generalized linear fixed-effects, mixed-effects, and additive modeling, multivariate cluster analysis (standard and bootstrapped hierarchical clustering, density-based clustering), dimensionality reduction (multidimensional scaling, principal components analysis), support vector machine classification.

Neuroimaging Skills

Functional MRI Scanning: Scanner operation and safety training (Philips 3.0 T Achieva Intera, Siemens PRISMA 3T).
Neuroimaging Analysis Tools: AFNI (AFNI bootcamp certified), SUMA, FSL, FreeSurfer, PyMVPA.
Neuroimaging Analysis Procedures: General linear modeling (subject- and group-level), whole-brain searchlight multivariate pattern analysis (MVPA), representational similarity analysis (RSA).

Other Skills

Media Processing: Audio editing, recording, and mastering (Logic Pro X), image manipulation (GIMP), video editing (DaVinci Resolve, Final Cut Express).
Engineering: Electronics soldering, basic circuit wiring, basic woodworking, amateur luthier.
Language Skills: Fluent in Spanish.
Musical Training: 15+ years of musical instrument, independent songwriting, and performance experience.

Research Experience

Doctoral Student, Harvard Intergroup Neuroscience Lab
Harvard University, Cambridge, MA, September 2018 - Present
Advisor: Mina Cikara, Ph.D.

Post-Baccalaureate Researcher and Lab Manager, Cognitive Neuroscience of Learning Lab
Dartmouth College, Hanover, NH, September 2016 - September 2018
Advisor: David J. M. Kraemer, Ph.D.

Undergraduate Research Assistant, Cognitive Neuroscience of Learning Lab
Dartmouth College, Hanover, NH, July 2013 - June 2016
Advisor: David J. M. Kraemer, Ph.D.

Laboratory Intern and Research Assistant, Emory University Transplant Centers
Emory University and Yerkes International Primate Research Center, Atlanta, GA, Summers 2010 - 2012
Advisor: Leslie Kean, M.D./Ph.D.

Additional Work & Leadership Experience

Inaugural Member, Harvard Psychology Departmental Climate Committee
Cambridge, MA, 2019 - Present
Graduate student representative on the first committee to evaluate, address, and support the Psychology Department on issues relating to the departmental climate.

Organizer, Harvard Psychology Methods Dinners
Cambridge, MA, Fall 2019 - Spring 2020
Organized visiting speakers, journal club discussions, and student-led workshops as part of a student-initiated weekly dinner discussion series about current methods in psychology, alongside another student co-organizer.

Departmental Representative, Graduate Student Mental Health Initiative
Cambridge, MA, Spring 2020
Contributed to the specification, administration, analysis, and presentation of a departmental mental health survey as part of a university-wide mental health initiative to evaluate and intervene on graduate student mental health issues at Harvard.

Director, Dartmouth Outing Club (DOC) First-Year Trips Program
Hanover, NH, November 2015 - November 2016
Directed the 2016 DOC First-Year Trips program, the largest College outdoor orientation program in the country. Designed and oversaw 139 five-day, student-led trips across New Hampshire for ~1000 incoming students. Interviewed and hired a 20-person Directorate; selected and managed a student volunteer staff of 350+ (278 trip leaders + 56 support crew members on 6 teams) from an applicant pool of 600+.

Program Facilitator, Pearson Seminar on Youth Leadership
Lester B. Pearson United World College of the Pacific, Victoria, B.C., Canada, Summers 2010 - 2011
Designed and implemented a month-long summer leadership program on social justice, global citizenship, environmental sustainability, and community-building for 100 high school students from 20+ countries, alongside 16 other facilitators and 8 program coordinators.

References

Mina Cikara, Ph.D. | (617) 495-3819 | mcikara@fas.harvard.edu
Assistant Professor, Department of Psychology, Harvard University, Cambridge, MA

David J. M. Kraemer, Ph.D. | (603) 667-0472 | david.j.m.kraemer@dartmouth.edu
Assistant Professor, Department of Education; Graduate Advisor, Department of Psychological and Brain Sciences, Dartmouth College, Hanover, NH

James V. Haxby, Ph.D. | (603) 646-0038 | james.v.haxby@dartmouth.edu
Evans Family Distinguished Professor, Department of Psychological and Brain Sciences Director, Center for Cognitive Neuroscience; Director, Dartmouth Brain Imaging Center, Dartmouth College, Hanover, NH