Manish Saggar, Ph.D.

Department of Psychiatry & Behavioral Sciences
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Education

2017	Bio-Design Faculty Fellow, Stanford Byers Center for Bio Design
2014	Postdoctoral Fellowship, Psychiatry & Behavioral Sciences, Stanford University
2011	PhD, Computer Science, University of Texas at Austin
2009	MS, Computer Science, University of Texas at Austin
2005	Bachelors, Information Technology, Indian Institute of Information Technology

Appointments

3/1/17- cur.	**Assistant Professor, Psychiatry & Behavioral Sciences, Stanford University**
2013-cur.	Faculty, Hasso-Plattner Institute of Design (a.k.a. d.school), Stanford University
5/1/15-12/16	Instructor, Psychiatry & Behavioral Sciences, Stanford University
2014-2015	Research Associate, Psychiatry & Behavioral Sciences, Stanford University
2011-2014	Postdoctoral Scholar, Psychiatry & Behavioral Sciences, Stanford University
2006-2011	Research Assistant, Imaging Research Center, University of Texas at Austin
2006 & 2008	Software Engineer Intern, Google Inc.
2005-2006	Teaching Assistant, Computer Science, University of Texas at Austin
2005	Software Engineer Intern, Microsoft R&D Center, India

Teaching

2015-2021	**Co-Instructor**, Psychiatry and Behavioral Sciences, Stanford University Course: Neuroimaging Research Methods (PSYC 250, Winter quarter)
2017	**Co-Instructor**, Hasso Plattner Institute of Design, Stanford University Course: Creative Gym (DESINST 366)
2013-2015	**Co-Instructor**, Hasso Plattner Institute of Design, Stanford University Course: Fail Faster (ME 379)
2005-2006	**Teaching Assistant**, Department of Computer Science, University of Texas at Austin Course: Software Engineering

Grants Active

Jul 2021 - Jun 2026	**National Institute for Mental Health (R01),** RFA-MH-19-242, Computational Approaches for Validating Dimensional Constructs of Relevance to Psychopathology *Role*: Principal Investigator
Sep 2018 - Jun 2023	**NIH Director's New Innovator Award (DP2; MH119735)**, National Institute of Health *Role*: Principal Investigator *Goal*: Developing a computational approach to model temporal transitions in brain activity as a lens towards developing better diagnostic nosology for psychiatric illness
Sep 2020 - Aug 2025	**MCHRI Faculty Scholar Program** *Role*: Principal Investigator *Goal*: A computational neuropsychiatry approach towards characterizing adolescent brain and cognitive development
Aug 2018 - May 2023	**NIMH R01 (MH115349, PI: Hong, David S.),** National Institute of Mental Health *Role:* Co-investigator

Goal: To examine how the brain's dynamical state-space is affected by different mental disorders and which neural processes should be targeted for either "normalizing" brain functioning or providing compensatory solutions.

Apr 2020 - Mar 2025 **NIMH R01 (MH122754, PI: Williams, Nolan),** National Institute of Mental Health
Role: Co-investigator
Goal: Utilizing changes in human brain connectivity to establish a dose-response relationship involved in the therapeutic actions of prefrontal brain stimulation on depression symptoms.

Sep 2020 - Aug 2024 **NIMH R01 (MH125160, PI: Williams, Nolan),** National Institute of Mental Health
Role: Co-investigator
Goal: To examine the effects of Stanford Accelerated Intelligent Neuromodulation Therapy on explicit and implicit suicidal cognition.

Philanthropic Funding

2021 Computational Mitochondrial PsychoBiology: Quantifying Energetic Communication Between Brain and Body
Role: Co-PI (with Martin Picard, Columbia University)

Grants Completed

2015-2020 **NIH Career Development Award (K99/R00)**, National Institute of Mental Health
Role: Principal Investigator
Goal: Developing computational methods to quantify fluctuations in intrinsic brain activity using resting state fMRI data from individuals with fragile X syndrome (FXS) and healthy controls.

2019-2020 **Hasso Plattner Design Thinking Research Program**, Hasso Plattner Institute of Design
Role: Principal Investigator
Goal: Examining the brain dynamics associated with creativity and innovation in entrepreneurs and managers

2016-2018 **NARSAD Young Investigator Award**, Brain & Behavior Foundation
Role: Principal Investigator
Goal: Developing computational methods to capture and quantify transitions in resting state functional connectivity.

2017-2018 **Hasso Plattner Design Thinking Research Program**, Hasso Plattner Institute of Design
Role: Principal Investigator
Goal: Examining the brain dynamics associated with rumination and reflection during creative thinking

2016-2017 **Innovator Grant**, Department of Psychiatry & Behavioral Sciences, Stanford University
Role: Principal Investigator
Goal: Deciphering "ongoing" cognition using continuous multitask experimental paradigm using multimodal neuroimaging (EEG and fMRI)

2013-2014 **Postdoctoral Fellowship,** Child Health & Research Institute (CHRI), Stanford University
Role: Principal Investigator
Goal: Using longitudinal cohort-sequential experimental design, examining neural correlates of creative capacity decline during middle childhood.

2006 **Francisco J. Varela Memorial Award,** Mind & Life Institute
Role: Principal Investigator
Goal: Developing computational methods to quantify changes in brain activity (EEG) associated

with intensive meditation training (3mo; ~6hr/day)

Awards

- International Fellow (2019-2022), Institute for Scientific Interchange (ISI) Foundation, Italy
- Annual Chairman's Award for Advancing Science (2019), Psychiatry & Behavioral Sciences, Stanford.
- Society of Biological Psychiatry (SOBP) Travel Fellowship Award (2020)
- Bio-design Faculty Fellow (2017), for health technology innovation.
- Merit scholarship for outstanding academic performance (2001-2005), IIIT Allahabad, India
- Ranked among ~0.1% in IIIT (India) engineering entrance examination

Articles in preparation

5 Zhang, M., Chowdhury, S., Saggar, M. (in-prep). The topology of time: transition networks in simulated and real neural dynamics.

4 Giovanni, P., Saggar, M. (in-prep). Quantified persistence homology: stability and good practices for topological data analysis.

3 Saggar, M., Gaillard, C., Claudino, L., Grillon, C., Ernst, M. (in-prep). Load-Related Divergence in Brain Activation is Associated with Cognitive Enhancement under methylphenidate: A Neuropharmacological Study.

1 Karipidis, I.I., Pizzagalli, F., Xie, H., Saggar, M., Reiss, A.L. Hong, D.S. (in-prep). Dose effect of sex chromosomes on functional brain connectivity in childhood: Evidence from sex chromosome aneuploidies.
Contribution: Mentored I.I.K. in developing machine learning based prediction method

Articles in pre-print/under-review

8 Saggar, M., Shine, J. M., Liégeois, Dosenbach, N.U.F., Fair, D. (under-review) Precision dynamical mapping using topological data analysis reveals a unique (hub-like) *transition state* at rest in highly sampled individuals.
Preprint: https://www.biorxiv.org/content/10.1101/2021.08.05.455149v2

7 Pasquini. L., Noohibezanjani, F., Veziris, C., Kosik, E., Lee, A., Brown, J., Holley, S., Miller, B., Saggar, M., Seeley, W., Sturm, V. (under-review). Dissociable signatures of dynamic autonomic activity are present during emotions and at rest.
Contribution: Mentored L.P. in developing computation analytics for data mining

6 Geniesse, C., Chowdhury, S., Saggar, M. (under-review). NeuMapper: a scalable computational framework for multiscale exploration of the brain's dynamical organization.

5 Bruno, J., Shrestha, S.B., Reiss, A.L., Saggar, M., Green, T. (under-review). Activation mutation in the Ras/MAPK pathway alters the functional resting state architecture underlining executive function and attention.
Contribution: Developed preprocessing and analysis pipeline for resting state fMRI data.

4 Rosenberg, A.*, Saggar, M.*, Rogu, P., Sandi, C., Dumitriu, D., Anacker, C., Picard, M. (under-review). Mitochondrial Health in Mouse Cortical and Sub-cortical Brain Region Networks is Linked to Behavior. **Authors contributed equally*
Preprint: https://www.biorxiv.org/content/10.1101/2021.06.02.446767v1

3 Jiang, J., Saggar, M., Narayan, M., Zhang, Y., Wu, W., Mills-Finnerty, C., Cole, M.W., Etkin, A. (under-review), TMS-induced activation spreads throughout the brain via intrinsic functional networks.
Contribution: Mentored J.J. in developing data analytics and interpretation pipeline

2 Xie, H., Beaty, R.E., Jahanikia, S., Geniesse, C., Sonalkar, N., Saggar, M. (in revision; *NeuroImage*) Spontaneous and deliberate modes of creativity: Multitask eigen-connectivity analysis captures latent cognitive modes during creative thinking.
Pre-print: https://www.biorxiv.org/content/biorxiv/early/2021/01/03/2020.12.31.425008.full.pdf

1 Zhang, M., Saggar, M. (under review). Complexity of resting brain dynamics shaped by multiscale structural constraints
Pre-print: https://www.biorxiv.org/content/10.1101/2020.05.14.097196v2

Articles published

28 Saggar, M., Volle, E., Uddin, L.Q., Chrysikou, E.G., Green, A.G. (2021). Creativity and the brain: An editorial introduction to the special issue on the neuroscience of creativity. **NeuroImage**

27 Ayub, R., Sun, K.L., Flores, R.E., Lam, V.T., Jo, B., Saggar, M.*, Fung, L.K.* (2021) Thalamocortical connectivity is associated with autism symptoms in high-functioning adults with autism and typically developing adults. **Translational Psychiatry**
*authors contributed equally

26 Billings, J., Saggar, M., Hlinka, J, Keilholz, S., Petri, G. (2021). Simplicial and Topological Descriptions of Human Brain Dynamics. **Network Neuroscience**
Contribution: Data analytics and help wrote the article

25 Fung, L., Flores, R., Gu, M., Schuck, R., Jo, B., Lee, B.C., Jung, J.H., Kim, S.E., Saggar, M., Sacchet, M.D., Warnock, G., Khalighi, M.M., Spielman, D., Chin, F., Hardan, Y. (2020). Thalamic and prefrontal GABA concentrations but not GABA A receptor densities are altered in high-functioning adults with autism spectrum disorder. **Molecular Psychiatry.**
https://doi.org/10.1038/s41380-020-0756-y
Contribution: Analyzed neuroimaging data and ran statistical analysis for the PET data

24 Xie, H., Howell, A., Scherier, M., Sheau, K.E., Manchanda, M.K., Jung, M., Reiss, A.L.*, Saggar, M.* (2020). Finding neural correlates of joint improvisation via three-person fMRI hyper-scanning. **Proceedings of the National Academy of Sciences (PNAS).**
https://doi.org/10.1073/pnas.1917407117
*authors contributed equally

23 Saggar, M. & Uddin, L. (2019). Pushing the boundaries of psychiatric neuroimaging to ground diagnosis in biology. **eNeuro.** http://dx.doi.org/10.1523/ENEURO.0384-19.2019

22 Geniesse, C., Sporns, O., Petri, G., Saggar, M. (2019). Generating dynamical neuroimaging spatiotemporal representations (DyNeuSR) using topological data analysis. **Network Neuroscience.** http://dx.doi.org/10.1162/netn_a_00093

21 Saggar, M., Xie, H., Beaty, R. E., Stankov, A.D., Schreier, M., Reiss, A.L. (2019) Creativity slumps and bumps: examining neurobehavioral basis of creativity development during middle childhood. **NeuroImage.** http://dx.doi.org/10.1016/j.neuroimage.2019.03.080

20 Saggar, M., Sporns, O., Gonzalez-Castillo, J., Bandettini, P.A., Carlsson, G., Glover, G., Reiss, A.L. (2018) Towards a new approach to visualize and quantify brain's dynamical organization

using topological data analysis. **Nature Communications.** http://dx.doi.org/10.1038/s41467-018-03664-4

19 Green, T.*, Saggar, M.*, Ishak A., Hong D.S., Reiss A.L. (2017) X-Chromosome Effects on Attention Networks: Insights from imaging Resting State Networks in Turner Syndrome. **Cerebral Cortex** http://dx.doi.org/10.1093/cercor/bhx188.
**Authors contributed equally*.

18 Leikauf, J.E., Griffiths, K.R., Saggar, M., Hong, D.S., Clarke, S., Efron, D., Tsang, T.W., Hermens, D.F., Kohn, M.R. & Williams, L.M. (2017). Identification of biotypes in Attention-Deficit/Hyperactivity Disorder, a report from a randomized, controlled trial. **Personalized Medicine in Psychiatry.** https://doi.org/10.1016/j.pmip.2017.02.001
Contribution: Designed the machine learning method to find sub-types in the data. Also mentored author J.E.L.

17 Saggar, M.*, Tsalikian, E.*, Mauras, N., Mazaika, P., White, N. H., Weinzimer, S., et al. (2017). Compensatory Hyper-Connectivity in Developing Brains of Young Children with Type 1 Diabetes. **Diabetes**. http://doi.org/10.2337/db16-0414 **Authors contributed equally*.

16 Saggar, M., Quintin, E.-M., Bott, N. T., Kienitz, E., Chien, Y.H., Hong, D.W.C., Lui, N., Royalty, A., Hawthrone, G., Reiss, A.L. (2017) Changes in brain activation associated with spontaneous improvisation and figural creativity after design thinking based training: a longitudinal fMRI study. **Cerebral Cortex**. http://doi.org/10.1093/cercor/bhw171

15 Bruno, J., Hosseini, S.M.H., Saggar, M., Reiss, A.L. (2017) Altered brain network segregation in fragile X syndrome revealed by structural connectomics. **Cerebral Cortex**. http://doi.org/10.1093/cercor/bhw055
Contribution: Designed the study and ran graph theoretical analysis

14 Baker, J.M.*, Liu, N.*, Cui, X., Vrticka P., Saggar, M., Hosseini, S.M.H., Reiss, A.L. (2016) Sex differences in neural and behavioral signatures of cooperation. **Scientific Reports**, 6, 26492. http://dx.doi.org/10.1038/srep26492 **Authors contributed equally*.
Contribution: Designed the study and developed initial prototypes for the experimental paradigm

13 Saggar, M., Vrticka, P., Reiss, A.L. (2016) Understanding the influence of personality on dynamic social gesture processing: an fMRI study. **Neuropsychologia**, 80, 1-8 http://dx.doi.org/10.1016/j.neuropsychologia.2015.10.039

12 Green T., Fierro K.C., Raman M., Saggar, M., Sheau K.S., Reiss A.L. (2016) Surface-based morphometry reveals distinct cortical thickness and surface area profiles in Williams syndrome. **Am. J. Med. Gene. Part B: Neuropsychiatric Genetics**, 171 (3), 402-13. http://dx.doi.org/10.1002/ajmg.b.32422
Contribution: Developed computational methods for data processing

11 Saggar, M., Hosseini, S. M. H., Bruno, J. L., Quintin, E.-M., Raman, M. M., Kesler, S. R., Reiss, A. L. (2015). Estimating individual contribution from group-based structural correlation networks. **NeuroImage**, 120, 274–284 http://dx.doi.org/10.1016/j.neuroimage.2015.07.006

10 Saggar, M., Quintin, E.-M., Kienitz, E., Bott, N. T., Sun, Z., Hong, D.W.C., Chien, Y.H., Liu, N., Dougherty, R.F., Royalty, A., Hawthorne, G., Reiss, A.L. (2015) Pictionary-based fMRI paradigm to study the neural correlates of spontaneous improvisation and figural creativity. **Scientific Reports**, 5, 10894 http://dx.doi.org/10.1038/srep10894

9 Saggar, M., Zanesco, A. P., King, B. G., Bridwell, D. A., MacLean, K. A., Aichele, S. R., Jacobs, T.L., Wallace, B.A., Saron, C.D., Miikkulainen, R. (2015) Mean-field thalamocortical modeling of longitudinal EEG acquired during intensive meditation training. **NeuroImage**, 114, 88–104 http://dx.doi.org/10.1016/j.neuroimage.2015.03.073

8 Klabunde, M., Saggar, M., Hustyi, K. M., Hammond, J. L., Reiss, A. L., Hall, S. S. (2015) Neural correlates of self-injurious behavior in Prader-Willi syndrome. **Human Brain Mapping**, 36(10), 4135–4143 http://dx.doi.org/10.1002/hbm.22903
Contribution: Developed methods to reduce artifacts related to head movement and to analyze data. Also mentored author MK

7 Klabunde, M., Saggar, M., Hustyi, K. M., Kelley, R. G., Reiss, A. L., Hall, S. S. (2015) Examining the neural correlates of emergent equivalence relations in fragile X syndrome. **Psychiatry Research: Neuroimaging**, 233(3), 373–379 http://dx.doi.org/10.1016/j.pscychresns.2015.06.009
Contribution: Developed methods for data analyses and mentored author MK

6 Saggar, M., Shelly, E. W., Lepage, J.-F., Hoeft, F., Reiss, A. L. (2014) Revealing the neural networks associated with processing of natural social interaction and the related effects of actor-orientation and face-visibility. **NeuroImage**, 84, 648–656 http://dx.doi.org/10.1016/j.neuroimage.2013.09.046

5 Singh, M., Chang, K. D., Kelley, R. G., Saggar, M., Reiss, A., Gotlib, I. H. (2014) Early signs of anomalous neural functional connectivity in healthy offspring of parents with bipolar disorder. **Bipolar Disorders**, 16, 77–77 http://dx.doi.org/10.1111/bdi.12221
Contribution: Developed methods for analyzing resting state functional connectivity and mentored author RGK

4 Bott, N., Quintin, E.-M., Saggar, M., Kienitz, E., Royalty, A., Hong, D. W.C., Liu, N., Chien, Y.H., Hawthorne, G., Reiss, A.L. (2014) Creativity training enhances goal-directed attention and information processing. **Thinking Skills and Creativity** 13, 120–128 http://dx.doi.org/10.1016/j.tsc.2014.03.005
Contribution: Designed the study, collected data and helped with data analysis. Also mentored author NB

3 Kienitz, E., Quintin, E.-M., Saggar, M., Bott, N. T., Royalty, A., Hong, D. W.-C., Liu, N., Chien, Y.H., Hawthorne, G., Reiss, A.L. (2014) Targeted intervention to increase creative capacity and performance: A randomized controlled pilot study. **Thinking Skills and Creativity**, 13(0), 57–66 http://dx.doi.org/10.1016/j.tsc.2014.03.002
Contribution: Designed the study, collected data and helped with data analysis. Also mentored author EK

2 Saggar, M., King, B. G., Zanesco, A. P., MacLean, K. A., Aichele, S. R., Jacobs, T. L., Bridwell, D.A., Shaver, P.R., Rosenberg, E.L., Sahdra, B.K., Ferrer, E., Tang, A.C., Mangun, G.R., Wallace, B.A., Miikkulainen, R., Saron, C.D. (2012) Intensive training induces longitudinal changes in meditation state-related EEG oscillatory activity. **Frontiers in Human Neuroscience**, 6, 256 http://dx.doi.org/10.3389/fnhum.2012.00256

1 Saggar, M., Miikkulainen, R., Schnyer, D. M. (2010) Behavioral, neuroimaging, and computational evidence for perceptual caching in repetition priming. **Brain Research**, 1315, 75–91 http://dx.doi.org/10.1016/j.brainres.2009.11.074

Peer-Reviewed Full-Length Conference Articles

6 Maile, K., Saggar, M., R Miikkulainen. (2019) Implementing evolutionary optimization to model neural functional connectivity. **Proceedings of the Genetic and Evolutionary Computation Conference Companion**. ACM. 1731-33. https://dl.acm.org/doi/abs/10.1145/3319619.3326826
Contribution: Designed the study and co-mentored graduate student K.M.

5 Saggar, M., Miikkulainen, R., Schnyer, D. M. (2008) Memory Processes in Perceptual Decision Making. Proceedings of the 30th Annual Conference of the **Cognitive Science Society** https://web.stanford.edu/group/bdl/pdfs/papers/saggar-modeling-memory-cogsci.pdf

4 Saggar, M., Mericcli, T., Andoni, S., Miikkulainen, R. (2007) System identification for the Hodgkin-Huxleymodel using artificial neural networks. Proceedings of the **IEEE International Joint Conference on Neural Networks** (IJCNN), 2239–2244 http://dx.doi.org/10.1109/IJCNN.2007.4371306

3 Saggar, M., D'Silva, T., Kohl, N., Stone, P. (2007) Autonomous learning of stable quadruped locomotion. **Lecture Notes in Computer Science**, 4434, pp 98-109 http://dx.doi.org/10.1007/978-3-540-74024-7_9

2 Saggar, M., Markman, A. B., Maddox, W. T., Miikkulainen, R. (2007) A computational model of the motivation-learning interface. Proceedings of the 29th Annual Conference of the **Cognitive Science Society**, Nashville, TN https://web.stanford.edu/group/bdl/pdfs/papers/saggar-modeling-motivation-cogsci.pdf

1 Saggar, M., Agrawal, A. K., Lad, A. Optimization of Association Rule Mining using Improved Genetic Algorithms. Proceedings of the **IEEE Systems, Man and Cybernetics** conference, 4, 3725–29 http://dx.doi.org/10.1109/ICSMC.2004.1400923

Book Chapters

7 Auernhammer, J., Sonalkar, N., Saggar, M. (2020). NeuroDesign: From Neuroscience Research to Design Thinking Practice. **Design Thinking Research Understanding Innovation**. Springer Verlag Publishers.

6 Sonalkar, N., Jahanikia, S., Xie, H., Geniesse, C., Ayub, R., Beaty, R., Saggar, M. (2019). Mining the Role of Design Reflection and Associated Brain Dynamics in Creativity. **Design Thinking Research Understanding Innovation**. Springer Verlag Publishers. Pp 155-167 https://doi.org/10.1007/978-3-030-28960-7_10

5 Mayseless, N., Saggar, M., Hawthorne, G., Reiss, A.L. (2018). Creativity in the 21st Century: the added benefit of training and cooperation. **Design Thinking Research Understanding Innovation**. Springer Verlag Publishers https://doi.org/10.1007/978-3-319-60967-6_12
Contribution: Designed the study and lead the project

4 Saggar, M., Chromik LC, Royalty, A., Hawthorne, G., Reiss, AL. (2016) Developing novel neuroimaging paradigm to assess neural correlates of improvisation and creative thinking using fMRI. **Design Thinking Research Understanding Innovation**. Springer Verlag Publishers https://doi.org/10.1007/978-3-319-40382-3_17

3 Hawthorne G, Quintin EM, Saggar, M., Bott, N, Kienitz, E, Royalty, A, Hong, D, Liu, N, Chien, YH,Reiss, AL (2015) Designing a Creativity Assessment Tool for the Twenty-First Century: Preliminary Results and Insights from Developing a Design-Thinking Based Assessment of Creative Capacity. **Design Thinking Research Understanding Innovation**. Springer Verlag Publishers https://doi.org/10.1007/978-3-319-19641-1_8
Contribution: Designed the study and lead the project

2 Saggar, M., Hawthorne, G., Quintin E.M., Kienitz, E., Bott, N.T., Hong, D., Chien, Y.H., Liu, N., Royalty, A., Reiss, A.L. (2014). Developing novel methods to assess long-term sustainability of creative capacity building and applied creativity. **Design Thinking Research Understanding Innovation**. Springer Verlag Publishers https://doi.org/10.1007/978-3-319-06823-7_3

1 Hawthorne G, Quintin EM, Saggar, M., Bott, N, Kienitz, E, Royalty, A, Hong, D, Liu, N, Chien, YH, Reiss, AL (2013). Impact and Sustainability of Creative Capacity Building: The Cognitive, Behavioral, and Neural Correlates of Increasing Creative Capacity. **Design Thinking Research Understanding Innovation**, Springer Verlag Publishers https://doi.org/10.1007/978-3-319-01303-9_5
Contribution: Designed the study and lead the project

Conference Presentations (Talks)

9 Saggar, M., Reiss, L., Hall, S. (2019). Using TDA to capture and quantify transitions in intrinsic brain activity in individuals with fragile X syndrome. *Organization of Human Brain Mapping* (HBM) Annual Meeting, 2019, Rome, Italy Talk

8 Saggar, M., Stankov, A., Schreier, M., Reiss, A.L. (2017). Finding the behavioral and neural correlates of middle childhood "slump" in creativity. *Society for Neuroscience of Creativity (SFNC) annual meeting*, San Francisco. Talk

7 Saggar, M., Sporns, O., Carlsson, G., Glover, G., Reiss, A.L. (2017) Revealing the Shape of Brain Dynamics during "Ongoing" Cognition. *Keystone Symposium on Connectomics (X2)*, Santa Fe, New Mexico Talk

6 Saggar, M., Sporns, O., Carlsson, G., Glover, G., Reiss, AL. (2016) Revealing the shape of brain dynamics during ongoing cognition. *Neural Information Processing Systems (NIPS) workshop on Connectomics*, Barcelona, Spain.

5 Saggar, M., Glover, G., Carlsson, G., Reiss, AL. (2016) Quantifying fluctuations in intrinsic brain activity without spatial or temporal averaging using topology. *3rd Biennial Whistler Scientific Workshop on Brain Functional Organization, Connectivity and Behavior*, Whistler, Canada

4 Saggar, M., Schreier, M., Reiss, AL. (2014) Using functional Near-infrared Spectroscopy (fNIRS) to examine the neural correlates of spontaneous improvisation and creativity in a word-guessing game of Pictionary. *The functional Near-infrared Spectroscopy Conference (fNIRS),* Montreal, Canada Talk

3 Saggar, M., Schreier M, Baker JM, Reiss, AL (2014). Creativity and brain development: using functional near-infrared spectroscopy to investigate the neural correlates of middle childhood slump in creativity. *Society for Neuroscience (SFN) meeting*, Washington, DC Talk

2 Saggar, M., Aichele, S.R., Jacobs, T.L., Zanesco, A.P., Bridwell, D.A., Maclean, K.A., King, B.A., Sahdra, B.K., Rosenberg, E.L., Shaver, P.R., Ferrer, E., Wallace, B., Mangun, G.R., Saron, C.D., Miikkulainen, R. (2010) A computational approach to understanding the longitudinal changes in cortical activity associated with intensive meditation training. *Computational Neuroscience Society (CNS) meeting*, San Antonio, TX.

1 Saggar, M, Satish Kumar, M., Schnyer, D. (2007) Repetition priming in a response learning task using novel objects. *Society for Neuroscience (SFN) meeting,* San Diego. Talk

Conference Presentations (Poster)

37 Pasquini. L., Noohibezanjani, F., Veziris, C., Kosik, E., Lee, A., Brown, J., Holley, S., Miller, B., Saggar, M., Seeley, W., Sturm, V. (2021). Dissociable signatures of dynamic autonomic activity are present during emotions and at rest. *The 13th Annual Meeting of the Social & Affective Neuroscience Society, April 28 – May 1, 2021.*
Contribution: Mentored L.P. and helped develop computation analytics

36 Saggar, M., Shine, J. M., Liégeois, R., Raut, R.V., Laumann, T.O., Snyder, A.Z., Dosenbach, N.U.F., Fair, D. (2021) Topological data analysis reveals a unique hub-like transition state at rest. *Organization of Human Brain Mapping* (HBM), 2021, Virtual Meeting.

35 Saggar, M., Shine, J. M., Liégeois, R., Raut, R.V., Laumann, T.O., Snyder, A.Z., Dosenbach, N.U.F., Fair, D. (2021) Precision dynamical mapping using topological data analysis reveals a unique (hub-like) *transition state* at rest in highly sampled individuals. *SfN Global Connectome Virtual Meeting (2021).*

34 Rosenberg, A.*, Saggar, M.*, Rogu, P., Sandi, C., Dumitriu, D., Anacker, C., Picard, M. (2021). Mitochondrial Health in Mouse Cortical and Sub-cortical Brain Region Networks is Linked to Behavior. *Society for Biological Psychiatry Meeting in May 2021 (Virtual)*
**Authors contributed equally*

33 Saggar, M., Gaillard, C., Claudino, L., Grillon, C., Ernst, M. (2021) Load-Related Divergence in Brain Activation is Associated with Cognitive Enhancement under methylphenidate: A Neuropharmacological Study. *Society for Biological Psychiatry Meeting in May 2021 (Virtual)*

32 Bruno, J., Shrestha, S.B., Reiss, A.L., Saggar, M., Green, T. (2020) Activation mutation in the Ras/MAPK pathway alters the functional resting state architecture underlining executive function and attention. *American College of Neuropsychopharmacology (ACNP),* 2020, Virtual Meeting.
Contribution: Developing preprocessing and analysis pipeline for resting state fMRI data.

31 Saggar, M., Green, T. (2020). Uni- And Cross-Modal Analysis to Better Understand the Effects of Ras/MAPK Mutations on the brain, cognition, and Behavior Using Topological Data Analysis. *Society of Biological Psychiatry (SOBP)* annual meeting 2020, NY, USA

30 Xie, H.*., Jahanikia, S.*, Saggar, M. (2020). Systemic physiological noise might falsely boost NIRS RSFC test-retest reliability. *Organization of Human Brain Mapping* (HBM), 2020, Montreal, Canada. *Authors contributed equally.

29 Ezaki, T., Saggar, M. (2020). Three-valued energy landscape analysis on a continuous-multitask fMRI-paradigm. *Organization of Human Brain Mapping* (HBM), 2020, Montreal, Canada.

28 Maile, K., Miikkulainen, R., Saggar, M. (2020). Evolutionary Parameter Optimization for Resting-state Functional Connectivity Models. *Organization of Human Brain Mapping* (HBM), 2020, Montreal, Canada.

27 Geniesse, C., Chowdhury, S., Saggar, M. (2020). Entropy-based interactive exploration of brain dynamics at multiple scales during ongoing cognition. *Organization of Human Brain Mapping* (HBM), 2020, Montreal, Canada.

26 Maile, K., Miikkulainen, R., Saggar, M. (2019). Implementing evolutionary optimization to model resting state functional connectivity. *Society for Neuroscience (SfN) 2019, Chicago, USA*

25 Zhang, M., Saggar, M. (2019). The topology of time: Characterizing transitions in simulated neural dynamics using topological data analysis. *Society for Neuroscience (SfN) 2019, Chicago, USA*

24 Saggar, M., Faber, S.E.M., Shakil, S., McIntosh, R.A. (2019). Revealing the evolution of brain dynamics in response to emotional music using topological data analysis. *Society for Neuroscience (SfN) 2019, Chicago, USA*

23 Xie, H., Jahanikia, S., Geniesse, C., Beaty, R., Sonalkar N., Saggar, M. (2019). Higher flexibility in functional connectivity dynamics is associated with higher creativity and lower inhibition. *Society for Neuroscience (SfN) 2019, Chicago, USA*

22 Ayub, R., Flores, R., Fung, L., Saggar, M. (2019). Graph theory analysis of multimodal neuroimaging data in high-functioning adults with autism spectrum disorder. *Society for Neuroscience (SfN) 2019, Chicago, USA*

21 Saggar, M. (2019). Using brain dynamics as a lens to anchor psychiatric nosology into biological features. *High Risk High Reward Symposium,* National Institute of Health, Bethesda MD.

20 Xie, H., Howell, A., Scherier, M., Sheau, K.E., Manchanda, M.K., Jung, M., Reiss, A.L., Saggar, M. (2019). Finding the neural correlates of collaborative improvisation using 3-person fMRI hyperscanning. *Organization of Human Brain Mapping* (HBM) Annual Meeting, 2019, Rome, Italy

19 Saggar, M., Jiang, J, Mills-Finnerty, C., Wright, R., Cornelssen, C., Etkin, A. (2019). Studying stimulation-site-based changes in brain activity using TMS/fMRI & topological data analysis. *Organization of Human Brain Mapping* (HBM) Annual Meeting, 2019, Rome, Italy.

18 Saggar, M., Sporns, O., Carlsson, G., Glover, G., Reiss, A.L., Hall S., (2018) Using Topological Data Analysis to Reveal the Intrinsic Dynamical Organization of the Brain in Individuals with Fragile X Syndrome. *Society for Biological Psychiatry Meeting in May 2018, NY.*

17 Saggar, M., Sporns, O., Carlsson, G., Glover, G., Reiss, A.L. (2017). (Only) time will tell: Revealing the Shape of Brain Dynamics during Ongoing Cognition. *Stanford Bio-X IIP Symposium*, Stanford.

16 Saggar, M., Sporns, O., Carlsson, G., Glover, G., Reiss, A.L. (2016). (Only) time will tell: Revealing the Shape of Brain Dynamics during ongoing Cognition. *Stanford Neurosciences Institute (SNI) Annual symposium*, Stanford.

15 Saggar, M., Stankov, A., Schreier, M., Reiss, AL. (2016) Finding the neural correlates of middle childhood “slump” in creativity using functional near-infrared spectroscopy. *Society for Neuroscience (SFN) meeting, San Diego, CA*

14 Saggar, M., Quintin, E.-M., Kienitz, E., Bott, N. T., Chien, Y.H., Hong, D.W.C., Lui, N., Royalty, A., Hawthrone, G., Reiss, A.L. (2015) Finding the neural correlates of creativity and its enhancement. *Organization of Human Brain Mapping (HBM)*, Honolulu, Hawaii

13 Saggar, M., Hosseini, H., Bruno, JL, Quintin EM, Kesler, S, Reiss, AL. (2013) Estimating individual contribution from group-based structural covariance networks in patients with fragile x syndrome and typically developing controls. *Computational Psychiatry conference,* Miami, Florida.

12 Rezazadeh, IM, Viera, FG, Takarae, Y, Schneider, A, Saggar, M, Huynh, NH, Colby, AE, Huffman, SG, O'Neill, A, Isayeva, A, Rivera, SM, Saron, CD (2013). Single trial event-related potential analyses in relation to behavioral measures of uni-sensory processing and multisensory integration in autism spectrum disorders. *Society for Neuroscience (SFN) meeting*, San Diego, CA
Contribution: Designed and developed motion correction tool for EEG data

11 Bruno, J, Hosseini, SMH, Saggar, M, Quintin, EM, Raman, MM, Reiss, AL (2013). Structural brain network topology in fragile X syndrome. *Organization of Human Brain Mapping*, Seattle, WA
Contribution: Designed the study and ran graph theoretical analysis

10 Bott, NT, Quintin, EM, Saggar, M, Kienitz, E, Royalty, A, Hong, D, Liu, N, Chien, YH, Hawthorne, G, Reiss, AL (2013). Creativity training enhances goal-directed attention and information processing. *Cognitive Neuroscience Society meeting*, San Francisco, CA
Contribution: Designed the study, collected & analyzed data. Also mentored graduate student author NB

9 Kienitz, E, Quintin, EM, Saggar, M, Bott, NT, Royalty, A, Hong, D, Liu, N, Chien, YH, Hawthorne, G, Reiss, AL (2013). Targeted Intervention to Increase Creative Capacity and Performance: A Randomized Controlled Pilot Study. *Cognitive Neuroscience Society meeting*, San Francisco, CA
Contribution: Designed the study, collected data and helped with data analysis. Also mentored graduate student author EK

8 Saggar, M. Lepage, J-F, Shelly, E. W., Quintin, E. M., Reiss, A. L. (2012) Effect of sociability, body orientation and face visibility on brain activation in individuals with fragile X syndrome, developmental disability and healthy adults: a novel paradigm. *Society for Neuroscience (SFN) meeting*, New Orleans LA.

7 Saggar, M., Maclean, K.A., Sahdra, B.K., Aichele, S.R., Jacobs, T.L., Zanesco, A.P., Bridwell, D.A., King, B.A., Rosenberg, E.L., Mangun, G.R., Shaver, P.R., Ferrer, E., Wallace, B., Saron, C.D., Miikkulainen, R. (2011) A computational model to understand longitudinal changes in EEG associated with intensive meditation training. *Society for Neuroscience (SFN) meeting,* Washington D.C.

6 Saggar, M., MacLean, K.A., Aichele, S.R., Jacobs, T.L., Zanesco, A.P., Bridwell, D.A., King, B.G., Sahdra, B.K., Rosenberg, E.L., Shaver, P.R., Ferrer, E., Wallace, B.A., Mangun, G.R., Miikkulainen, R., Saron, C.D. (2011) Cortical activation changes associated with intensive meditation training are related to vigilance performance. *Cognitive Neuroscience Society meeting,* San Francisco, CA

5 Saggar, M., Aichele, S.R., Jacobs, T.L., Zanesco, A.P., Bridwell, D.A., Maclean, K.A., King, B.A., Sahdra, B.K., Rosenberg, E.L., Shaver, P.R., Ferrer, E., Tang, A.C., Wallace, B., Mangun, G.R., Miikkulainen, R., Saron, C.D. (2009*)* Longitudinal changes in cortical activity associated with intensive meditation training. *Society for Neuroscience (SFN) meeting,* Chicago.

4 Maclean, K.A., Aichele, S.R., Bridwell, D.A., Jacobs, T.L., Zanesco, A.P., King, B.A., Saggar, M, Mazaheri, A., Ferrer, E., Rosenberg, E.L., Sahdra, B.K., Shaver, P.R., Wallace, B., Mangun, G.R., Saron, C.D. (2009) Effects of intensive meditation training on sustained attention: Changes in visual event-related potentials, ongoing EEG and behavioral performance. *Society for Neuroscience (SFN) meeting*, Chicago.
Contribution: Designed and developed motion correction tool for EEG data

3 Schnyer, D., Zeithamova, D., Saggar, M, Williams, V., Trujillo, L., Kornguth, S. (2007) *The neural basis of compromised executive control:* An fMRI examination of vigilance, assessment, and decision making under conditions of sleep deprivation. *Sustaining Performance Under Stress Symposium,* Austin
Contribution: Designed the study and developed the experimental paradigm

2 Andoni, S., Saggar, M, Mericli, T., Miikkulainen, R. (2007). Extracting the Dynamics of the Hodgkin-Huxley Model using Recurrent Neural Networks. *Computational Neuroscience Society (CNS) meeting*, Toronto.
Contribution: Designed the study and implemented Artificial Neural Network code

1 Saggar, M, Miikkulainen, R. (2006) A computational approach to meditation. Cognitive Science Society, Vancouver.

Invited Talks

33. Saggar, M. (2021) From Robotics to the Brain and back (hopefully). Indian Institute of Information Technology (IIIT) Allahabad, India (Virtual).

32. Saggar, M. (2021) *Using Mapper to reveal a unique hub-like brain state at rest in highly sampled individuals*. Hot Topics: Topological Insights in Neuroscience (Virtual), Mathematical Sciences Research Institute (MSRI), Berkeley.

31. Saggar, M. (2021) *Characterizing brain dynamics at rest and while interacting with others using topological data analysis*. Dartmouth University, NH.

30. Saggar, M. (2020) *Neuroscience of Creativity: individual difference and brain dynamics*. The 43rd Annual meeting of the Japan Neuroscience Society (JNSS), Virtual Meeting.

29. Saggar, M. (2019). *Why & how to ground psychiatric diagnosis into biology*. Science Crossroads meeting at the CRT Foundation in Torino, Italy.

28. Saggar, M. (2019). *Personalized computational neuropsychiatry: treating one brain at a time.* BrainMind Summit, MIT.

27. Sonalkar, N., Saggar, M. (2019). *Examining the role of design reflection and associated brain dynamics in creativity*. Hasso-Plattner Design Thinking Research Program (HPDTRP) meeting at Stanford University.

26. Saggar, M. (2018). *Computational Neuropsychiatry: new approaches to psychiatric diagnosis.* BrainMind Summit, Stanford.

25 Sonalkar, N., Saggar, M. (2018). *Examining the role of design reflection and associated brain dynamics in creativity*. HPDTRP Semi-annual meeting, Stanford University.

24. Saggar, M. (2018). *Capturing & quantifying transitions in whole-brain activation maps using TDA*. Topological Neuroscience Meeting, Princeton University.

23. Saggar, M. (2018). *Computational Neuropsychiatry: new approaches to psychiatric diagnosis.* Ritter Lab, Berlin Institute of Health, Charité.

22. Saggar, M. (2018). *Creativity & the Brain.* Café Scientifique, Stanford Blood Center.

21. Saggar, M. (2018). *Contemplative Neuroscience: existing evidence and remaining questions.* Contemplation By Design, Stanford University.

20. Saggar, M. (2018). *Neuroscience in Practice.* Kauffman Fellows Lecture, Palace Hotel, San Francisco.

19. Saggar, M. (2017). *(Only) time will tell: modeling temporal transitions in brain activation patterns as a "lens" towards developing better diagnostic nosology for psychiatric illness.* Mini-symposium -

Computational Psychiatry: Multiscale Models of Mental Illnesses, Society for Neuroscience Annual Meeting, Washington, D.C.

18. Saggar, M. (2017). *Creative capacity enhancement & associated changes in the brain*. Experiential Technology Conference & Expo (X-Tech), San Francisco.
17. Saggar, M. (2017). *Revealing the brain's dynamical organization.* Selective Vulnerability Research Lab, UCSF Memory & Aging Center (MAC).
16. Saggar, M. (2017). *Understanding Brain Dynamics*. The brainLENS Lab, UCSF.
15. Saggar, M. (2016). *The Resting Brain and its dynamics.* Clinical Neuroscience Course for the Child and Adolescent Psychiatry Fellows at the UCSF.
14. Saggar, M. (2016). *Extracting computational insights from brain dynamics*. Feinberg School of Medicine, Northwestern University, IL.
13. Saggar, M. (2016). *Extracting insights from brain dynamics*. Department of Bio-engineering, University of California, Riverside CA.
12. Saggar, M. (2016). *Quantifying brain dynamics in healthy and clinical populations*. Department of Psychology, Utah State University, UT.
11. Saggar, M. (2015). *A Zen Priest and a Neuroscientist - On the Future of Awakening.* Consciousness Hacking Meet-up, San Francisco, CA.
10. Saggar, M. (2014). *Finding the neural correlates of creativity and its enhancement across lifespan.* Center for Childhood Creativity, Bay Area Discovery Museum, Sausalito, CA.
9. Saggar, M. (2014). *Finding the neural correlates of creativity and its enhancement.* Conference on Well-being and Productivity, mediaX, Stanford CA.
8. Saggar, M., Hawthorne, G., Reiss, A.L. (2014). *Impact and sustainability of creative capacity building.* HPI & Stanford Design Thinking Research Program Workshop, Stanford CA.
7. Saggar, M. (2014). *Collective Creativity.* Intellectual Disability and Development Center, Stanford University, Stanford CA.
6. Saggar, M. (2014). *Oh, Creativity whence art thou & how can thou be enhanced?* Roundtable on Well-Being and Productivity, mediaX, Stanford CA.
5. Saggar, M. (2013). *Unleashing Creativity: Longitudinal changes in neural activity and behavioral measures associated with creativity training*. Department of Psychiatry Grand Rounds, Stanford University, Stanford, CA (2013)
4. Saggar, M. (2011). *A computational analysis of meditation.* International Computer Science Institute, University of California at Berkeley, Berkeley, CA.
3. Saggar, M. (2011). *A computational analysis of meditation.* Department of Neurology, University of California at Irvine, Irvine, CA.
2. Saggar, M. (2011). *Longitudinal analysis of cortical activity associated with intensive meditation training.* Texas Interdisciplinary Plan (TIP) Fellows, University of Texas at Austin, Austin, TX.
1. Saggar, M. (2011). *Meditation and the brain.* Turing Scholars Student Association, University of Texas at Austin, Austin, TX.

Service

- Editorial service
    - Editorial Board Member for the journal Scientific Reports (Nature Publishing Journal)
    - Editorial Board Member for the journal NeuroImage (Elsevier)
    - Guest Editor, Special Issue on the Neuroscience of Creativity (NeuroImage, Elsevier)

- Workshop organization

- *[Co-organizer]* Topological insights on brain structure and function, Workshop in the Organization of Computational Neuroscience Virtual Meeting (OCNS; July 2021)
- *[Co-organizer]* NIMH Dynamic Data Visualizations for Deep-phenotyping Longitudinal and Multidimensional Neuro-Behavioral Data Workshop, (June 2021)
- *[Program committee]* Topological Data Analysis and its Applications for Medical Data, Workshop in the Medical Image Computing & Computer Assisted Intervention (MICCAI; 2021)

- Professional organizations
  - Executive Board Member for the Society of Neuroscience of Creativity
  - Mentor in the Organization of Human Brain Mapping Online Mentoring Program
  - Reviewer for the annual meetings of the Organization of Human Brain Mapping
  - Reviewer for the annual meetings of the Cognitive Science Society

- Reviewer for journals
  - Nature Computational Science
  - Nature Communications
  - Science Advances
  - Proceedings of the National Academy of Sciences
  - PLoS Computational Biology
  - Neuroimage
  - Network Neuroscience
  - Cerebral Cortex
  - Scientific Data
  - Scientific Reports
  - Neuroscience Letters
  - Clinical EEG and Neuroscience
  - Neuropsychologia
  - Frontiers in Human Neuroscience
  - IEEE Transaction on Education
  - Journal of Neuroscience Methods

- Professional memberships
  - Society of Biological Psychiatry
  - Society for Neuroscience
  - Society for Neuroscience of Creativity
  - Cognitive Science Society
  - Computational Neuroscience Society

- Institutional Service
  - Reviewed Seed Proposals for the Stanford's Precision Health and Integrated Diagnostics (PHIND) Center (2018)
  - Served as a member of the departmental committee on Reimagining Mental Health Care (2017)
  - Served as a member of the annual departmental Faculty Retreat Planning Committee (2015)
  - Taught at the Clinical Neuroscience Internship/Virtual Experience (CNI/V-X) for high-school students (2015-2021)

Patents/Applications

Saggar, M. (2019). Systems and Methods for Mapping Neuronal Circuitry and Clinical Applications Thereof. US Patent App. 16/171,255, 2019. https://patents.google.com/patent/US20190120919A1/en