



## SM Hadi Hosseini

Assistant Professor (Research) of Psychiatry and Behavioral Sciences (Interdisciplinary Brain Science Research)

Psychiatry and Behavioral Sciences - Center for Interdisciplinary Brain Sciences Research

### Bio

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#### BIO

Hadi Hosseini is a computational/cognitive neuroscientist investigating large-scale structural and functional brain networks in various neuropsychiatric disorders using multimodal neuroimaging, graph theoretical and multivariate pattern analyses techniques. He is also developing novel NIRS-based neurofeedback interventions for enhancing executive functions. Dr. Hosseini has been co-teaching the Neuroimaging Research Methods (Psyc250) at Stanford since 2012.

#### ACADEMIC APPOINTMENTS

- Assistant Professor (Research), Psychiatry and Behavioral Sciences - Center for Interdisciplinary Brain Sciences Research
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Wu Tsai Neurosciences Institute

#### HONORS AND AWARDS

- Career Development Award (K25), NIA (2016-2021)
- NARSAD Young Investigator Award, Brain & Behavior Research Foundation (2016-2018)
- CHRI Pilot Early Career Award, Lucile Packard Foundation for Children's Health (2015-2016)
- ICGP Junior investigator Award, International College of Geriatric Psychoneuropharmacology (ICGP) (Aug 2015)
- Best Presentation Award, APRC-IBRO School of Neuroimaging (Nov 2010)
- SAND Travel award, SAND5 Conference (May 2010)
- MEXT Full Scholarship for PhD Program, Tohoku University (2005-2008)

### Research & Scholarship

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#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our lab's research portfolio crosses multiple disciplines including computational neuropsychiatry, cognitive neuroscience, multimodal neuroimaging and neurocognitive rehabilitation. Our computational neuropsychiatry research mainly involves investigating alterations in the organization of connectome in various neurodevelopmental and neurocognitive disorders using state of the art neuroimaging techniques (fMRI, sMRI, DWI, functional NIRS) combined with novel computational methods (graph theoretical and multivariate pattern analyses).

The ultimate goal of our research is to translate the findings from computational neuropsychiatry research toward developing personalized interventions. We have been developing personalized interventions that integrate computerized cognitive rehabilitation, real-time functional brain imaging and neurofeedback, as well as virtual reality (VR) tailored toward targeted rehabilitation of the affected brain networks in patients with neurocognitive disorders.

## CLINICAL TRIALS

- A Novel fNIRS Neurofeedback Intervention for Enhancement of Working Memory in Attention Deficit Hyperactivity Disorder (ADHD), Recruiting
- The Influence of Multi-domain Cognitive Training on Large-scale Structural and Functional Brain Networks in MCI, Recruiting

## Teaching

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### COURSES

#### 2019-20

- Methodology of Research in Behavioral Sciences: PSYC 250 (Win)

#### 2018-19

- Methodology of Research in Behavioral Sciences: PSYC 250 (Win)

#### 2017-18

- Methodology of Research in Behavioral Sciences: PSYC 250 (Win)

#### 2016-17

- Methodology of Research in Behavioral Sciences: PSYC 250 (Win)

### STANFORD ADVISEES

#### Postdoctoral Faculty Sponsor

Barbara Avelar Pereira, Elveda Gozdas

## Publications

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### PUBLICATIONS

- **Focal white matter disruptions along the cingulum tract explain cognitive decline in amnesic mild cognitive impairment (aMCI)** *SCIENTIFIC REPORTS*  
Gozdas, E., Fingerhut, H., Chromik, L. C., O'Hara, R., Reiss, A. L., Hosseini, H.  
2020; 10 (1)
- **X-chromosome insufficiency alters receptive fields across the human early visual cortex.** *The Journal of neuroscience : the official journal of the Society for Neuroscience*  
Green, T., Hosseini, H., Piccirilli, A., Ishak, A., Grill-Spector, K., Reiss, A. L.  
2019
- **Accelerated intermittent theta burst stimulation in major depression induces decreases in modularity: A connectome analysis.** *Network neuroscience (Cambridge, Mass.)*  
Caeyenberghs, K., Duprat, R., Leemans, A., Hosseini, H., Wilson, P. H., Klooster, D., Baeken, C.  
2019; 3 (1): 157–72
- **Brain circuitry, behavior, and cognition: A randomized placebo-controlled trial of donepezil in fragile X syndrome.** *Journal of psychopharmacology (Oxford, England)*  
Bruno, J. L., Hosseini, S. H., Lightbody, A. A., Manchanda, M. K., Reiss, A. L.  
2019: 269881119858304
- **Changes in Brain Structural Networks and Cognitive Functions in Testicular Cancer Patients Receiving Cisplatin-Based Chemotherapy** *JNCI-JOURNAL OF THE NATIONAL CANCER INSTITUTE*  
Amidi, A., Hosseini, S., Leemans, A., Kesler, S. R., Agerbaek, M., Wu, L. M., Zachariae, R.  
2017; 109 (12)

- **Altered Brain Network Segregation in Fragile X Syndrome Revealed by Structural Connectomics** *CEREBRAL CORTEX*  
Bruno, J. L., Hosseini, S. M., Saggar, M., Quintin, E., Raman, M. M., Reiss, A. L.  
2017; 27 (3): 2249-2259
- **Neural, physiological, and behavioral correlates of visuomotor cognitive load** *Scientific Reports*  
Hosseini, S., Bruno, J. L., Baker, J. M., Gundran, A., Harbott, L. K., Gerdes, J., Reiss, A. L.  
2017: 8866
- **Altered Integration of Structural Covariance Networks in Young Children With Type 1 Diabetes.** *Human brain mapping*  
Hosseini, S. M., Mazaika, P., Mauras, N., Buckingham, B., Weinzimer, S. A., Tsalikian, E., White, N. H., Reiss, A. L.  
2016; 37 (11): 4034-4046
- **Task-based neurofeedback training: A novel approach toward training executive functions** *NEUROIMAGE*  
Hosseini, S. M., Pritchard-Berman, M., Sosa, N., Ceja, A., Kesler, S. R.  
2016; 134: 153-159
- **Anomalous gray matter structural networks in major depressive disorder.** *Biological psychiatry*  
Singh, M. K., Kesler, S. R., Hadi Hosseini, S. M., Kelley, R. G., Amatya, D., Hamilton, J. P., Chen, M. C., Gotlib, I. H.  
2013; 74 (10): 777-785
- **Comparing connectivity pattern and small-world organization between structural correlation and resting-state networks in healthy adults.** *NeuroImage*  
Hosseini, S. M., Kesler, S. R.  
2013; 78: 402-414
- **Default mode network connectivity distinguishes chemotherapy-treated breast cancer survivors from controls** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Kesler, S. R., Wefel, J. S., Hosseini, S. M., Cheung, M., Watson, C. L., Hoefl, F.  
2013; 110 (28): 11600-11605
- **Topological properties of large-scale structural brain networks in children with familial risk for reading difficulties** *NEUROIMAGE*  
Hosseini, S. M., Black, J. M., Soriano, T., Bugescu, N., Martinez, R., Raman, M. M., Kesler, S. R., Hoefl, F.  
2013; 71: 260-274
- **GAT: A Graph-Theoretical Analysis Toolbox for Analyzing Between-Group Differences in Large-Scale Structural and Functional Brain Networks** *PLOS ONE*  
Hosseini, S. M., Hoefl, F., Kesler, S. R.  
2012; 7 (7)
- **Inter-Brain Synchrony in Mother-Child Dyads During Cooperation: An fNIRS Hyperscanning Study.** *Neuropsychologia*  
Miller, J. G., Vrticka, P., Cui, X., Shrestha, S., Hosseini, S. M., Baker, J. M., Reiss, A. L.  
2018
- **Mind over motor mapping: Driver response to changing vehicle dynamics.** *Human brain mapping*  
Bruno, J. L., Baker, J. M., Gundran, A., Harbott, L. K., Stuart, Z., Piccirilli, A. M., Hosseini, S. M., Gerdes, J. C., Reiss, A. L.  
2018
- **fNIRS measurement of cortical activation and functional connectivity during a visuospatial working memory task** *PLoS ONE*  
Baker, J. M., Bruno, J. L., Gundran, A., Hosseini, S., Reiss, A. L.  
2018; 13(8):e0201486
- **Multivariate Investigation of Brain and Behavioral Outcomes in Individuals with FMR1 Full Mutation**  
Bruno, J., Hosseini, H., Reiss, A.  
ELSEVIER SCIENCE INC.2017: S299–S300
- **A Novel fNIRS-Based Neurocognitive Intervention for Targeted Enhancement of Executive Function Network in ADHD**  
Hosseini, H., Tam, G., Gosse, L., Reiss, A.  
ELSEVIER SCIENCE INC.2017: S258–S259
- **Structural Brain Connectivity and the Sit-to-Stand-to-Sit Performance in Individuals with Nonspecific Low Back Pain: A Diffusion Magnetic Resonance Imaging-Based Network Analysis.** *Brain connectivity*

- Pijnenburg, M., Hosseini, S. M., Brumagne, S., Janssens, L., Goossens, N., Caeyenberghs, K.  
2016; 6 (10): 795-803
- **Neural signature of developmental coordination disorder in the structural connectome independent of comorbid autism** *DEVELOPMENTAL SCIENCE*  
Caeyenberghs, K., Taymans, T., Wilson, P. H., Vanderstraeten, G., Hosseini, H., Van Waelvelde, H.  
2016; 19 (4): 599-612
  - **Sex differences in neural and behavioral signatures of cooperation revealed by fNIRS hyperscanning** *SCIENTIFIC REPORTS*  
Baker, J. M., Liu, N., Cui, X., Vrticka, P., Saggar, M., Hosseini, S. M., Reiss, A. L.  
2016; 6
  - **Estimating individual contribution from group-based structural correlation networks.** *NeuroImage*  
Saggar, M., Hosseini, S. M., Bruno, J. L., Quintin, E., Raman, M. M., Kesler, S. R., Reiss, A. L.  
2015; 120: 274-284
  - **Dynamics of the connectome in Huntington's disease: A longitudinal diffusion MRI study** *NEUROIMAGE-CLINICAL*  
Odish, O. F., Caeyenberghs, K., Hosseini, H., van den Bogaard, S. J., Roos, R. A., Leemans, A.  
2015; 9: 32-43
  - **Neural correlates of cognitive intervention in persons at risk of developing Alzheimer's disease** *FRONTIERS IN AGING NEUROSCIENCE*  
Hosseini, S. M., Kramer, J. H., Kesler, S. R.  
2014; 6
  - **Altered resting state functional connectivity in young survivors of acute lymphoblastic leukemia.** *Pediatric blood & cancer*  
Kesler, S. R., Gugel, M., Pritchard-Berman, M., Lee, C., Kutner, E., Hosseini, S. M., Dahl, G., Lacayo, N.  
2014; 61 (7): 1295-1299
  - **Multivariate pattern analysis of fMRI in breast cancer survivors and healthy women.** *Journal of the International Neuropsychological Society*  
Hosseini, S. M., Kesler, S. R.  
2014; 20 (4): 391-401
  - **Cognitive Training for Improving Executive Function in Chemotherapy-Treated Breast Cancer Survivors** *CLINICAL BREAST CANCER*  
Kesler, S., Hosseini, S. M., Heckler, C., Janelins, M., Palesh, O., Mustian, K., Morrow, G.  
2013; 13 (4): 299-306
  - **Influence of Choice of Null Network on Small-World Parameters of Structural Correlation Networks** *PLOS ONE*  
Hosseini, S. M., Kesler, S. R.  
2013; 8 (6)
  - **Compensatory Effort Parallels Midbrain Deactivation during Mental Fatigue: An fMRI Study** *PLOS ONE*  
Nakagawa, S., Sugiura, M., Akitsuki, Y., Hosseini, S. M., Kotozaki, Y., Miyauchi, C. M., Yomogida, Y., Yokoyama, R., Takeuchi, H., Kawashima, R.  
2013; 8 (2)
  - **Altered resting state functional brain network topology in chemotherapy-treated breast cancer survivors** *NEUROBIOLOGY OF DISEASE*  
Bruno, J., Hosseini, S. M., Kesler, S.  
2012; 48 (3): 329-338
  - **Altered small-world properties of gray matter networks in breast cancer** *BMC NEUROLOGY*  
Hosseini, S. M., Koovakkattu, D., Kesler, S. R.  
2012; 12
  - **Altered Small-World Properties of Gray Matter Networks in Major Depression** *67th Annual Meeting of the Society-of-Biological-Psychiatry*  
Singh, M. K., Kesler, S. R., Hosseini, H., Kelley, R. G., Amatya, D., Hamilton, P., Chen, M. C., Gotlib, I. H.  
ELSEVIER SCIENCE INC.2012: 106S-106S
  - **Decoding what one likes or dislikes from single-trial fNIRS measurements** *NEUROREPORT*  
Hosseini, S. M., Mano, Y., Rostami, M., Takahashi, M., Sugiura, M., Kawashima, R.  
2011; 22 (6): 269-273
  - **Changes in neural correlates of outcome feedback processing during implicit learning** *Open Neuroscience Journal*  
Rostami M, Hosseini SMH, Takahashi M, Sugiura M, Kawashima R

2011; 5: 24-30

- **Aging and decision making under uncertainty: Behavioral and neural evidence for the preservation of decision making in the absence of learning in old age** *NEUROIMAGE*  
Hosseini, S. M., Rostami, M., Yomogida, Y., Takahashi, M., Tsukiura, T., Kawashima, R.  
2010; 52 (4): 1514-1520
- **Neural bases of goal-directed implicit learning** *NEUROIMAGE*  
Rostami, M., Hosseini, S. M., Takahashi, M., Sugiura, M., Kawashima, R.  
2009; 48 (1): 303-310
- **Analyzing control display movement compatibility: A neuroimaging study** *LNCS*  
Hosseini SMH, Rostami M, Takahashi M, Miura N, Sugiura M, Kawashima R  
2009; 5639: 187-196
- **Combining static/dynamic fault trees and event trees using Bayesian networks** *LNCS*  
Hosseini SMH, Takahashi M  
2007; 4680: 93-99
- **Event tree analysis with dependent branches using Bayesian networks** *Proceedings of PSAM'08*  
Hosseini SMH, Takahashi M  
2006
- **Dynamic Bayesian networks: Modeling problem** *Proceedings of PSAM'08*  
Hosseini SMH, Takahashi M  
2006