

# Stanford

---



## Hadi Hosseini

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

Psychiatry and Behavioral Sciences - Interdisciplinary Brain Sciences

---

### Bio

#### 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 - Interdisciplinary Brain Sciences
- Member, Bio-X
- Member, Wu Tsai Human Performance Alliance
- 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)

#### LINKS

- Lab Website: <http://cbrain.stanford.edu>

---

### Research & Scholarship

#### 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), Not Recruiting
- The Influence of Multi-domain Cognitive Training on Large-scale Structural and Functional Brain Networks in MCI, Not Recruiting

## Teaching

---

### COURSES

#### 2022-23

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

#### 2021-22

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

#### 2020-21

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

#### 2019-20

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

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Caleb Geniesse

#### Postdoctoral Faculty Sponsor

Elveda Gozdas, Ali Rahimpour Jounghani, Amirali Vahid, Jafar Zamani

## Publications

---

### PUBLICATIONS

- **Current opinions on the present and future use of functional near-infrared spectroscopy in psychiatry.** *Neurophotonics*  
Li, R., Hosseini, H., Saggar, M., Balters, S. C., Reiss, A. L.  
2023; 10 (1): 013505
- **Decoding the heterogeneity of Alzheimer's disease diagnosis and progression using multilayer networks.** *Molecular psychiatry*  
Avelar-Pereira, B., Belloy, M. E., O'Hara, R., Hosseini, S. M.  
2022
- **1H-MRS neurometabolites and associations with neurite microstructures and cognitive functions in amnesic mild cognitive impairment.** *NeuroImage. Clinical*  
Gozdas, E., Hinkley, L., Fingerhut, H., Dacorro, L., Gu, M., Sacchet, M., Hurd, R., Hosseini, S. M.  
2022; 36: 103159
- **Quantitative MRI Evidence for Cognitive Reserve in Healthy Elders and Prodromal Alzheimer's Disease.** *Journal of Alzheimer's disease : JAD*  
Fingerhut, H., Gozdas, E., Hosseini, S. M.  
2022

- **Cognitive impairment and associations with structural brain networks, endocrine status, and risk genotypes in newly orchiectomized testicular cancer patients.** *Brain imaging and behavior*  
Buskbjerg, C. R., Zachariae, R., Agerbæk, M., Gravholt, C. H., Haldbo-Classen, L., Hosseini, S. M., Amidi, A.  
2021
- **Cognitive changes and brain connectomes, endocrine status, and risk genotypes in testicular cancer patients-A prospective controlled study.** *Cancer medicine*  
Buskbjerg, C. R., Amidi, A., Agerbaek, M., Gravholt, C. H., Hosseini, S. H., Zachariae, R.  
2021
- **Neurite Imaging Reveals Widespread Alterations in Gray and White Matter Neurite Morphology in Healthy Aging and Amnesic Mild Cognitive Impairment.** *Cerebral cortex (New York, N.Y. : 1991)*  
Gozdas, E., Fingerhut, H., Dacorro, L., Bruno, J. L., Hosseini, S. M.  
2021
- **Functional near-infrared spectroscopy in developmental psychiatry: a review of attention deficit hyperactivity disorder** *EUROPEAN ARCHIVES OF PSYCHIATRY AND CLINICAL NEUROSCIENCE*  
Gosse, L. K., Bell, S. W., Hosseini, S.  
2021
- **The effect of body posture on resting-state functional connectivity.** *Brain connectivity*  
Avelar-Pereira, B., Tam, G. K., Hosseini, S. M.  
2021
- **Androgen deprivation therapy and cognitive decline-associations with brain connectomes, endocrine status, and risk genotypes** *PROSTATE CANCER AND PROSTATIC DISEASES*  
Buskbjerg, C. R., Amidi, A., Buus, S., Gravholt, C. H., Hadi Hosseini, S. M., Zachariae, R.  
2021
- **Quantitative Measurement of Macromolecular Tissue Properties in White and Gray Matter in Healthy Aging and Amnesic MCI.** *NeuroImage*  
Gozdas, E., Fingerhut, H., Wu, H., Bruno, J. L., Dacorro, L., Jo, B., O'Hara, R., Reiss, A. L., Hosseini, S. M.  
2021: 118161
- **Evaluation of smartphone interactions on drivers' brain function and vehicle control in an immersive simulated environment** *Scientific Reports*  
Baker, J. M., Bruno, J. K., Piccirilli, A., Gundran, A., Harbott, L. K., Sirkin, D. M., Marzelli, M., Hosseini, S., Reiss, A. L.  
2021; 11
- **A low-cost, wearable, do-it-yourself functional near-infrared spectroscopy (DIY-fNIRS) headband** *HardwareX*  
Tsow, F., Kumar, A., Hosseini, S., Bowden, A.  
2021; 10: e00204
- **The Effect of Baseline Performance and Age on Cognitive Training Improvements in Older Adults: A Qualitative Review** *JPAD-JOURNAL OF PREVENTION OF ALZHEIMERS DISEASE*  
Shaw, J. S., Hosseini, S. H.  
2020
- **Focal white matter disruptions along the cingulum tract explain cognitive decline in amnesic mild cognitive impairment (aMCI).** *Scientific reports*  
Gozdas, E. n., Fingerhut, H. n., Chromik, L. C., O'Hara, R. n., Reiss, A. L., Hosseini, S. M.  
2020; 10 (1): 10213
- **Glucocorticoid regulation and neuroanatomy in fragile x syndrome** *Journal of Psychiatric Research*  
Bruno, J. L., Hong, D. S., Lightbody, A. A., Hosseini, S., Hallmayer, J., Reiss, A. L.  
2020
- **Cognitive Impairment and Associations with Structural Brain Networks, Endocrine Status, and Risk Genotypes in Newly Diagnosed Prostate Cancer Patients Referred to Androgen Deprivation Therapy** *Cancer*  
Buskbjerg, C., Zachariae, R., Buus, S., Gravholt, C., Haldbo-Classen, L., Hosseini, S., Amidi, A.  
2020
- **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): 157-172
- **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
  - **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
  - **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. n., Harbott, L. K., Stuart, Z. n., 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
  - **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)
  - **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
  - **Altered Brain Network Segregation in Fragile X Syndrome Revealed by Structural Connectomics** *CEREBRAL CORTEX*  
Bruno, J. L., Hosseini, S. M., Saggat, 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
  - **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
  - **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
  - **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
  - **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

- **Sex differences in neural and behavioral signatures of cooperation revealed by fNIRS hyperscanning** *SCIENTIFIC REPORTS*  
Baker, J. M., Liu, N., Cui, X., Vrticka, P., Sagar, M., Hosseini, S. M., Reiss, A. L.  
2016; 6
- **Estimating individual contribution from group-based structural correlation networks.** *NeuroImage*  
Sagar, 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
- **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
- **Cognitive Training for Improving Executive Function in Chemotherapy-Treated Breast Cancer Survivors** *CLINICAL BREAST CANCER*  
Kesler, S., Hosseini, S. M., Heckler, C., Janelsins, M., Palesh, O., Mustian, K., Morrow, G.  
2013; 13 (4): 299-306
- **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
- **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)
- **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
- **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
- **GAT: A Graph-Theoretical Analysis Toolbox for Analyzing Between-Group Differences in Large-Scale Structural and Functional Brain Networks** *PLOS ONE*

Hosseini, S. M., Hoeft, F., Kesler, S. R.  
2012; 7 (7)

- **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