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Professor of Cognitive Neuroscience

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Research Interests

Neuroimaging data-mining methodologies

Brain development and child/adolescent psychiatry

Education

- 2003–2008 **Ph.D., Cognitive Neuroscience**, *Institute of Psychology, Chinese Academy of Sciences*, Beijing, China, *Cognitive Neuroscience*.
Thesis: Reproducibility-based Independent Component Analysis for fMRI data
- 2005–2007 **Visiting Student**, *Emory University*, Atlanta, GA, USA, *Department of Biomedical Engineering*.
Advisor: Dr. Xiaoping P. Hu
- 1999–2003 **B.S., Biomedical Engineering**, *Tsinghua University*, Beijing, China, *Department of Electrical Engineering*.

Professional History

- 2018–Present **Professor**, *Institute of Psychological and Behavioral Sciences, Shanghai Jiao Tong University*, Shanghai, China.
- 2018–Present **Executive Director**, *Neuroimaging Data Center, Shanghai Mental Health Center*, Shanghai, China.
- 2017–Present **P.I. of Laboratory of Psychological Health and Imaging**, *Shanghai Mental Health Center*, Shanghai, China.
- 2015–2018 **Professor**, *University of Chinese Academy of Sciences*, Beijing, China.
- 2012–2017 **Associate Professor**, *Institute of Psychology, Chinese Academy of Sciences*, Beijing, China, *Laboratory of Cognition and Development*.
- 2012–2014 **Senior Research Fellow**, *National Institutes of Health*, Bethesda, MD, USA, *Section on Functional Imaging Methods*.

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2008-2012 **Assistant Professor**, *Institute of Psychology, Chinese Academy of Sciences, Beijing, China, Laboratory of Cognition and Development.*

Research Funds

- 2020-2023 **Regular Project (81971682), National Natural Science Foundation of China**, *Individualized diagnosis of mental disorders based on cross-disease neuroimaging database*, Role: PI, CNY 660,000.
- 2016-2019 **Regular Project (81571756), National Natural Science Foundation of China**, *Detecting subtypes of schizophrenia using neuroimaging under natural stimulus*, Role: PI, CNY 672,000.
- 2013-2016 **Renewed Regular Project (81270023), National Natural Science Foundation of China**, *The specificity of the neuroimaging biomarkers for mental disorders*, Role: PI, CNY 700,000.
- 2010-2012 **Young Investigator Project(30900366), National Natural Science Foundation of China**, *Data-driven neuroimaging marker research on classification of mental disorders*, Role: PI, CNY 210,000.
- 2020-2023 **Natural Science Foundation of Shanghai (20ZR1472800)**, *Relationships of taste perception and anxiety in adolescents*, Role: PI, CNY 500,000.
- 2015-2017 **Beijing Nova Program (2015079B), Beijing Municipal Commission of Science and Technology**, *Neuroimaging biomarkers for mental disorders: methodologies for the big data era*, Role: PI, CNY 350,000.
- 2017-2020 **Gaofeng Clinical Medicine Grant Support (20171929), Shanghai Municipal Education Commission**, *Neuroimaging markers for schizophrenia*, Role: PI, CNY 1,000,000.
- 2018-2021 **Hundred-talent Fund (2018BR17), Shanghai Municipal Commission of Health**, *Brain development abnormality in social anxiety disorder*, Role: PI, CNY 900,000.
- 2015-2019 **Youth Innovation Foundation, Chinese Academy of Sciences**, Role: PI, CNY 400,000.
- 2014-2019 **Outstanding Young Investigator Award, Institute of Psychology, Chinese Academy of Sciences**, *Data-ming framework for brain network informed subject community detection*, Role: PI, CNY 400,000.
- 2007-2011 **The National Basic Research Program of China (The 973 Program)(2007CB512300)**, *Mechanism of genetic-environment interactions in depression and schizophrenia*, Role: Participant, Undercontract: CNY 100,000.

Peer-Reviewed Publications

Zhang H, Li J, Su X, Hu Y, Liu T, Ni S, Li H, Zuo X-N, Fu J*, Yuan T-F*, **Yang Z*** (2022): Growth charts of brain morphometry for preschool children. *NeuroImage* 255: 119178. DOI: 10.1016/j.neuroimage.2022.119178

Zhang Q, Li B, Jin S, Liu W, Liu J, Xie S, Zhang L, Kang Y, Ding Y, Zhang X, Cheng W*, **Yang Z*** (2022): Comparing the Effectiveness of Brain Structural Imaging, Resting-state fMRI, and Naturalistic fMRI in Recognizing Social Anxiety Disorder in Children and Adolescents. *Psychiatry Research: Neuroimaging* 111485. DOI: 10.1016/j.pscychresns.2022.111485

Ding Y, Liu J, Zhang X, **Yang Z*** (2022): Dynamic Tracking of State Anxiety via Multi-Modal Data and Machine Learning. *Frontiers in Psychiatry* 13: 757961. DOI: 10.3389/fpsyt.2022.757961

Hu Y, **Yang Z*** (2021). Impact of inter-individual variability on the estimation of default mode network in temporal concatenation group ICA. *Neuroimage*. 234: 118114. DOI: 10.1016/j.neuroimage.2021.118114

Xie S, Zhang X*, Cheng W, **Yang Z** (2021): Adolescent anxiety disorders and the developing brain: comparing neuroimaging findings in adolescents and adults. *General Psychiatry* 34: e100411. DOI: 10.1136/gpsych-2020-100411

Li Q, Jiang L, Qiao K, Hu Y, Chen B, Zhang X, Ding Y, **Yang Z***, Li C. (2021): INCloud: integrated neuroimaging cloud for data collection, management, analysis and clinical translations. *General Psychiatry* 34: e100651. DOI: 10.1136/gpsych-2021-100651

Jiang L, Cui H, Zhang C, Cao X, Gu N, Zhu Y, Wang J, **Yang Z**, Li C. (2021): Repetitive Transcranial Magnetic Stimulation for Improving Cognitive Function in Patients With Mild Cognitive Impairment: A Systematic Review. *Frontiers in Aging Neuroscience* 12: 593000. DOI: 10.3389/fnagi.2020.593000. eCollection 2020

Zeng Y, Tao F, Cui Z, Wu L, Xu J, Dong W, Liu C, **Yang Z**, Qin S*. (2021): Dynamic integration and segregation of amygdala subregional functional circuits linking to physiological arousal. *NeuroImage* 238: 118224. DOI: 10.1016/j.neuroimage.2021.118224

Xu Z, Zhang X, Chang H, Kong Y, Ni Y, Liu R, Zhang X, Hu Y, **Yang Z**, Hou M, Mao R, Liu W-T, Du Y, Yu S, Wang Z, Ji M*, Zhou Z*. (2021): Rescue of maternal immune activation-induced behavioral abnormalities in adult mouse offspring by pathogen-activated maternal Treg cells. *Nature Neuroscience* 24(6): 818-830. DOI: 10.1038/s41593-021-00837-1

Gao J, Chen G, Wu J, Wang Y, Hu Y, Xu T, Zuo X-N*, **Yang Z*** (2020). Reliability map of individual differences reflected in inter-subject correlation in naturalistic imaging. *Neuroimage* 223: 117277. DOI: 10.1016/j.neuroimage.2020.117277

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- Liu Z, Hu Y, Zhang Y, Liu W, Zhang L, Wang Y, Yang H, Wu J, Cheng W*, **Yang Z*** (2020). Altered gray matter volume and structural co-variance in adolescents with social anxiety disorder: evidence for a delayed and unsynchronized development of the fronto-limbic system. *Psychological Medicine* 51(10): 1742-1751. DOI: 10.1017/S0033291720000495
- Guo Q, Hu Y, Zeng B, Tang Y, Li G, Zhang T, Wang J, Northoff G, Li C, Goff D, Wang J*, **Yang Z*** (2020). Parietal memory network and default mode network in first-episode drug-naïve schizophrenia: Associations with auditory hallucination. *Human Brain Mapping* 41(8): 1973-1984. DOI: 10.1002/hbm.24923
- Zhang Y, Liu W, Lebowitz ER, Zhang F, Hu Y, Liu Z, Yang H, Wu J, Wang Y, Silverman WK, **Yang Z***, Cheng W* (2020). Abnormal asymmetry of thalamic volume moderates stress from parents and anxiety symptoms in children and adolescents with social anxiety disorder. *Neuropharmacology* 180: 108301. DOI: 10.1016/j.neuropharm.2020.108301
- Yang Z***, Wu J, Xu L, Deng Z, Tang Y, Gao J, Hu Y, Zhang Y, Qin S*, Li C, Wang J* (2020). Individualized psychiatric imaging based on inter-subject neural synchronization in movie watching. *Neuroimage*: 116227. DOI:10.1016/j.neuroimage.2019.116227
- Cui H, Zhang B, Li W, Li H, Pang J, Hu Q, Zhang L, Tang Y, **Yang Z**, Wang J, Li C*. (2020): Insula shows abnormal task-evoked and resting-state activity in first-episode drug-naïve generalized anxiety disorder. *Depression and Anxiety* 37: 632-644. DOI: 10.1002/da.23009
- Deng Z, Wu J, Gao J, Hu Y, Zhang Y, Wang Y, Dong H, **Yang Z***, Zuo, X-N (2019). Segregated precuneus network and default mode network in naturalistic imaging. *Brain Structure and Function* 224(9): 3133-3144. DOI: 10.1007/s00429-019-01953-2.
- Zhang Y, Xu Li, Hu Y, Wu J, Li C, Wang J*, **Yang Z*** (2019). Functional connectivity between sensory-motor sub-networks reflects the duration of untreated psychosis and predicts treatment outcome of first-episode drug-naïve schizophrenia. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*. 4(8): 697-705
- Jiang L, Cao X, Jiang J, Li T, Wang J, **Yang Z***, Li C* (2019). Atrophy of hippocampal subfield CA2/3 in healthy elderly men is related to educational attainment. *Neurobiology of Aging* 80: 21-28
- Hu Y, Du W, Zhang Y, Li N, Han Y*, **Yang Z*** (2019). Loss of parietal memory network integrity in Alzheimer's disease. *Frontiers in Aging Neuroscience* 11: 67

Zhao Q, Xu T, Wang Y, Chen D, Liu Q, **Yang Z***, Wang Z*. (2019). Limbic cortico-striato-thalamo-cortical functional connectivity in drug-naïve patients of obsessive-compulsive disorder. *Psychological Medicine* 49: 1156-1165. DOI: 10.1017/S0033291719002988

Wang J, Hu Y, Li H, Ge L, Li J, Cheng L, **Yang Z***, Zuo XN, Xu Y* (2018). Connecting openness and the resting-state brain network: A discover-validate approach. *Frontiers in Neuroscience* 12: 762.

Yang Z, Zuo XN*, McMahon KL, Craddock RC, Kelly C, de Zubicaray GI, Hickie I, Bandettini PA, Castellanos FX, Milham MP*, Wright MJ (2016). Genetic and environmental contributions to functional connectivity architecture of the human brain. *Cerebral Cortex* 26: 2341-2352

Yang Z*, Qiu J, Wang P, Liu R, Zuo X* (2016). Brain structure-function associations identified in large-scale neuroimaging data. *Brain Structure & Function* 221: 4459-4474

Hu Y, Wang J, Li C, Wang Y-S, **Yang Z***, Zuo X-N (2016). Segregation between the parietal memory network and the default mode network: effects of spatial smoothing and model order in ICA. *Science Bulletin*. 61 (24): 1844-1854

Yang Z*, Huang Z, Gonzalez-Castillo J, Dai R, Northoff G, Bandettini P (2014). Using fMRI to decode true thoughts independent of intention to conceal. *NeuroImage* 99: 80-92

Yang Z*, Chang C, Xu T, Jiang L, Handwerker D, Castellanos F, Milham M, Bandettini P, Zuo X* (2014). Connectivity trajectory across lifespan differentiates the precuneus from the default network. *NeuroImage* 89: 45-56

Yang Z*, Zuo X, Wang P, Li Z, Laconte S, Bandettini PA, Hu X (2012). Generalized RAICAR: Discover homogeneous subject (sub)groups by reproducibility of their intrinsic connectivity networks. *NeuroImage* 63: 403-414

Yang Z, Xu Y*, Xu T, Hoy C, Handwerker D, Chen G, Northoff G, Zuo X*, Bandettini P (2014). Brain network informed subject community detection in early-onset schizophrenia. *Scientific Reports* 4: 5549

Yang Z, LaConte S, Weng X, Hu X* (2008). Ranking and averaging independent component analysis by reproducibility (RAICAR). *Human Brain Mapping* 29: 711-725

Xu T, **Yang Z (co-first author)**, Jiang L, Xing XX, Zuo XN* (2015). A connectome computation system for discovery science of brain. *Science Bulletin* 60: 86-95

Yang Z*, Fang F, Weng X (2012). Recent developments in multivariate pattern analysis for functional MRI. *Neuroscience Bulletin* 28: 399-408

Yang Z*, Wu P, Weng X, Bandettini P (2014). Cerebellum engages in automation of verb-generation skill. *Journal of Integrative Neuroscience* 13: 1-17

Liu C, Li F, Li S, Wang Y, Tie C, Wu H, Zhou Z, Zhang D, Dong J, **Yang Z***, Wang C* (2012). Abnormal baseline brain activity in bipolar depression: A resting-state functional magnetic resonance imaging study. *Psychiatry Research: Neuroimaging* 203: 175-179

Tang L, Liu C, Jing B, Ma X, Li H, Zhang Y, Li F, Wang Y, **Yang Z***, Wang C* (2014). Voxel-based morphometry study of the insular cortex in bipolar depression. *Psychiatry Research: Neuroimaging* 224: 89-95

Liu C, Ma X*, Wu X, Zhang Y, Zhou F, Li F, Tie C, Dong J, Wang Y, **Yang Z***, Wang C (2013). Regional homogeneity of resting-state brain abnormalities in bipolar and unipolar depression. *Progress in Neuro-Psychopharmacology & Biological Psychiatry* 41: 52-59

Yang Z, Zhao J, Jiang Y*, Li C, Wang J, Weng X*, Northoff G (2011). Altered negative Unconscious processing in major depressive disorder: An exploratory neuropsychological study. *PLoS One* 6: e21881

Li W, Cui H, Zhu Z, Kong L, Guo Q, Zhu Y, Hu Q, Zhang L, Li H, Li Q, Jiang J, Meyers J, Li J, Wang J*, **Yang Z***, Li C* (2016). Aberrant functional connectivity between the amygdala and the temporal pole in drug-free generalized anxiety disorder. *Frontiers in Human Neuroscience* 10: 549

Sun L, Xu H, Zhang J, Li W, Nie J, Qiu Q, Liu Y, Fang Y, **Yang Z***, Li X* and Xiao S* (2018). Alcohol consumption and subclinical findings on cognitive function, biochemical indexes, and cortical anatomy in cognitively normal aging Han Chinese population. *Frontiers in Aging Neuroscience* 10: 182

Xu G, Jiang Y, Ma L, **Yang Z***, Weng X* (2012). Similar spatial patterns of neural coding of category selectivity in FFA and VWFA under different attention conditions. *Neuropsychologia* 50: 862-868

Huang Z, Zhang X, **Yang Z***, Dong G, Wu J, Chan A, Weng X (2010). Verbal memory retrieval engages visual cortex in musicians. *Neuroscience* 168: 179-189

Teaching Experience

2018-2020 **Introduction to Psychology**, Undergraduate course, 30 hours, Shanghai Jiao Tong University.

2008-2018 **Statistics for Psychology Research**, Graduate course, 60 hours, Institute of Psychology, Chinese Academy of Sciences.

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- 2012-2018 **Advanced Statistics and Machine Learning**, *Graduate course*, 60 hours, Institute of Psychology, Chinese Academy of Sciences.
- 2008-2010 **Cognitive Neuroscience**, *Graduate course*, 60 hours, Institute of Psychology, Chinese Academy of Sciences.
- 2008-2018 **Brain Development and Learning**, *Graduate course*, 40 hours, Institute of Psychology, Chinese Academy of Sciences.
- 2015-2016 **Cognitive Neuroscience**, *Graduate course*, 48 hours, University of Chinese Academy of Sciences.

Awards and Honors

- 2018 **Hundred-talent Award**, Shanghai Municipal Commission of Health
- 2017 **Second Prize in Science and Technology Progress Award**, Beijing Municipal Commission of Science and Technology
- 2017 **Chenguang Prize for Academic Excellency**, Shanghai Jiao Tong University
- 2016 **Elected Member of Youth Innovation Program**, Chinese Academy of Sciences
- 2015 **First Prize in Science and Technology Progress Award**, The Ministry of Education of China
- 2015 **Beijing Nova Program**, Beijing Municipal Commission of Science and Technology
- 2014 **Outstanding Young Investigator Award**, Institute of Psychology, Chinese Academy of Sciences
- 2009–2011 **Excellent Assistant Professor Award**, Institute of Psychology, Chinese Academy of Sciences