

## Xiaosi Gu, Ph.D.

Director, Computational Psychiatry Unit  
 Assistant Professor, Psychiatry & Neuroscience  
 Principal Investigator, Friedman Brain Institute & Addiction Institute  
 Icahn School of Medicine at Mount Sinai

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### CURRENT POSITION

**Icahn School of Medicine at Mount Sinai**, New York, NY  
 Tenure-Track Assistant Professor, Department of Psychiatry & Neuroscience (2018-)

### PREVIOUS POSITION

**The University of Texas at Dallas**, Dallas, TX  
 Tenure-Track Assistant Professor, School of Behavioral and Brain Sciences (2015-2018)

**The University of Texas Southwest Medical Center**, Dallas, TX  
 Adjunct Assistant Professor, Department of Psychiatry (2015-2018)

### EDUCATION

**Wellcome Trust Centre for Neuroimaging, University College London**, London, UK  
 Research Fellow (2015)

**Virginia Tech Carilion Research Institute**, Roanoke VA  
 Postdoctoral Fellow (2012)

**Icahn School of Medicine at Mount Sinai**, New York, NY  
 Ph.D. in Neuroscience (2011)

**Peking University**, Beijing, China  
 B.S. in Economics, China Center for Economic Research (2006)  
 B.S. in Psychology, Department of Psychology (2006)

### PUBLICATIONS

1. **Gu, X.** Incubation of Craving: a Bayesian Account. **Neuropsychopharmacology**. doi:10.1038/s41386-018-0108-7
2. Fiore, V.G., Ognibene, D., Adinoff, B. and **Gu, X.** A Multilevel Computational Characterization of Endophenotypes in Addiction. **eNeuro**. ENEURO.0151-18.2018; DOI: 10.1523/ENEURO.0151-18.2018
3. Ognibene, D., Fiore, V.G. and **Gu, X.** Addiction in a Bounded Rational Model: Role of Environment and its Exploration. bioRxiv 10.1101/179739.
4. Fiore, V.G., Nolte, T., Rigoli, F., Smittenaar, P., **Gu, X.** and Dolan, R.J. (2018) Value Encoding in the Globus Pallidus: fMRI reveals an interaction effect between reward and dopamine drive. **Neuroimage**. doi: 10.1016/j.neuroimage.2018.02.048.
5. Solway, A., **Gu, X.**, Montague PR. Forgetting to be addicted: reconsolidation and the disconnection of things past. **Biological Psychiatry** 82, 774-775 (2017).
6. Sui, J., **Gu, X.** Self As Object: Emerging Trends in Self Research. **Trends Neurosci**. https://doi.org/10.1016/j.tins.2017.09.002 (2017)
7. **Gu, X.**, Filbey FM. A Bayesian Observer Model of Drug Craving. **JAMA Psychiatry**. doi:10.1001/jamapsychiatry.2016.3823 (2017)
8. **Gu, X.**, Zhou, T. J., Anagnostou, E., Soorya, L., Kolevzon, A., Hof, P. R. & Fan, J. Heightened Brain Response to Pain Anticipation in High-Functioning Adults with Autism Spectrum Disorder. **European Journal of Neuroscience**, doi:10.1111/ejn.13598 (2017).
9. **Gu, X.**, Lohrenz, T., Salas, R., Baldwin, P.R., Soltani, A., Kirk, U., Cinciripini, P.M. & Montague, P.R. Belief about

- Nicotine Modulates Subjective Craving and Insula Activity in Deprived Smokers. **Frontiers in psychiatry** 7 (2016).
10. **Gu, X**, Lohrenz TM, Salas R, Baldwin P, Soltani A, Kirk U, Cinciripini P, Montague PR. Belief about nicotine selectively modulates computationally explicit value signals and reward prediction signals in smokers. **Proc Natl Acad Sci U S A** (2015). doi: 10.1073/pnas.1416639112.
  11. **Gu, X**, Wang X, Hula A, Wang S, Xu S, Lohrenz TM, Knight RT, Gao Z, Dayan P, Montague PR. Contributions of the insular and ventromedial prefrontal cortices to norm adaptation: computational and lesion evidence in humans. **J Neurosci** (2015). doi: 10.1523/JNEUROSCI.2906-14.2015.
  12. **Gu, X**, Eilam-Stock T, Zhou T, Anagnostou E, Kolevzon A, Soorya L, Hof PR, Friston KJ, Fan J. Autonomic and brain responses associated with empathy deficits in autism spectrum disorder. **Hum Brain Mapp** (2015). doi: 10.1002/hbm.22840.
  13. **Gu, X** and FitzGerald TH. Interoceptive inference: homeostasis and decision-making. **Trends in Cognitive Sciences** (2014). doi: 10.1016/j.tics.2014.02.001
  14. **Gu X**, Hof PR, Friston KJ, Fan. Anterior insular cortex and emotional awareness. **Journal of Comp. Neurology** (2013) doi: 10.1002/cne.23368
  15. **Gu X**, Lohrenz TM, Kirk U, Montague PR. (2013) Cognitive strategies regulate fictive, but not reward prediction error signals in a sequential investment task. **Hum Brain Mapp**. doi 10.1002/hbm.22433.
  16. **Gu X**, Liu X, Van Dam NT, Hof PR, Fan J (2013) Cognition emotion integration in anterior insular cortex. **Cereb Cortex** 23(1): 20-27.
  17. **Gu X**, Gao Z, Wang X, Liu X, Knight RT, Hof PR, Fan J (2012) Anterior insular cortex is necessary for empathetic pain perception. **Brain** 135 (9), 2726-2735.
  18. **Gu X**, Liu X, Guise KG, Naidich TP, Hof PR, Fan J (2010) Functional dissociation of the frontoinsula and anterior cingulate cortices in empathy for pain. **J Neurosci** 30:3739-3744.
  19. **Gu X**, Han S (2007) Neural substrates underlying evaluation of pain in actions depicted in words. **Behav Brain Res** 181:218-223.
  20. **Gu X**, Han S (2007) Attention and reality constraints on the neural processes of empathy for pain. **Neuroimage** 36:256-267.
  21. **Gu X**, Liu X, Guise KG, Fossella J, Wang K, Fan J (2008) Alexithymic trait and voluntary control in healthy adults. **PLoS ONE** 3:e3702
  22. Fiore, V. G., Kottler, B., **Gu, X.** & Hirth, F. In silico Interrogation of Insect Central Complex Suggests Computational Roles for the Ellipsoid Body in Spatial Navigation. **Frontiers in Behavioral Neuroscience** 11, doi:10.3389/fnbeh.2017.00142 (2017).
  23. Tian, Y., Du, J., Spagna, A., Mackie, M.A., **Gu, X**, Dong, Y., Fan, J. & Wang, K. Venlafaxine treatment reduces the deficit of executive control of attention in patients with major depressive disorder. **Scientific reports** 6, 28028 (2016).
  24. Krishnan, A., Woo, C.-W., Chang, L.J., Ruzic, L., **Gu, X.**, López-Solà, M., Jackson, P.L., Pujol, J., Fan, J. & Wager, T.D. Somatic and vicarious pain are represented by dissociable multivariate brain patterns. **eLife** 5, e15166 (2016).
  25. Kirk, U., **Gu, X.**, Sharp, C., Hula, A., Fonagy, P. & Montague, P.R. Mindfulness training increases cooperative decision making in economic exchanges: Evidence from fMRI. **NeuroImage** (2016).
  26. Ahn WY, Kishida KT, **Gu X**, Lohrenz TM, Harvey A, Alford JR, Smith KB, Yaffe G, Hibbing JR, Dayan P, Montague PR. (2014) Nonpolitical Images Evoke Neural Predictors of Political Ideology. **Current Biology** 10.1016/j.cub.2014.09.050
  27. Kirk U, **Gu X**, Harvey AH, Fonagy P, Montague PR. Mindfulness training modulates value signals in ventromedial prefrontal cortex through input from insular cortex (2014). **Neuroimage** DOI: 10.1016/j.neuroimage.2014.06.035
  28. Eilam-Stock T, Xu P, Cao M, **Gu X**, Van Dam NT, Anagnostou E, Kolevzon A, Soorya L, Park Y, Siller M, He Y, Luo Y, and Hof P, Fan J. (2014) Abnormal associations between autonomic and brain activity during rest in autism spectrum disorders. **Brain**, 137(1), 153-171. doi: 10.1093/brain/awt294
  29. Wang X, **Gu X**, Fan J, Wang S, Zhao F, Hof PR, Liu P, Gao Z (2014) Recovery of empathetic function following resection of insular gliomas. **Journal of neuro-oncology**. 10.1007/s11060-014-1380-y
  30. Fan, J, Van Dam, N T, **Gu, X**, Liu, X, Wang, H, Tang, CY, & Hof, PR. (2014). Quantitative Characterization of Functional Anatomical Contributions to Cognitive Control under Uncertainty. **J Cogn Neurosci**. doi: 10.1162/jocn\_a\_00554
  31. Butti C, Fordyce RE, Raghanti MA, **Gu X**, Bonar CJ, Wicinski BA, Wong EW, Roman J, Brake A, Eaves E, Spocter MA, Tang CY, Jacobs B, Sherwood CC, and Hof PR. (2014) The cerebral cortex of the pygmy hippopotamus,

- Hexaprotodon liberiensis* (Cetartiodactyla, Hippopotamidae): MRI, cytoarchitecture, and neuronal morphology. **The Anatomical Record**. doi:10.1002/ar.22875.
32. Lockwood PL, Sebastian CL, McCrory EJ, Hyde ZH, **Gu X**, De Brito SA, Viding E (2013). Callous traits are associated with reduced neural responses to others' pain in children with conduct problems. **Current Biology**, <http://dx.doi.org/10.1016/j.cub.2013.04.018>
  33. Fan J, Bernardi S, Van Dam NT, Anagnostou E, **Gu X**, Martin L, Park Y, Liu X, Kolevzon A, Soorya L, Grodberg D, Hollander E, Hof PR (2012) Functional deficits of the attentional networks in autism. **Brain Behav**. doi: 10.1002/brb3.90
  34. Fan J, Xu P, Van Dam NT, Eilam-Stock T, **Gu X**, Luo Y, and Hof PR (2012) Resting state, idle mind: Spontaneous brain activity relates to autonomic arousal. **J Neurosci** 32 (33), 11176-11186
  35. Van Dam NT, Sano M, Mitsis EM, Grossman HT, **Gu X**, Park Y, Hof PR, Fan J (2012) Functional Neural Correlates of Attentional Deficits in Amnesic Mild Cognitive Impairment. **PLoS ONE**, e54035, doi:10.1371/ journal.pone. 0054035.
  36. Fan J, **Gu X**, Liu X, Guise KG, Park Y, Martin L, de Marchena A, Tang CY, Minzenberg MJ, Hof PR (2010) Involvement of the anterior cingulate and fronto-insular cortices in rapid processing of salient facial emotional information. **Neuroimage** 54:2539-2546
  37. Liu X, Park Y, **Gu X**, Fan J (2010) Dimensional overlap accounts for independence and integration of stimulus-response compatibility effects. **Atten Percept Psychophys** 72:1710-1720.
  38. Fan J, **Gu X**, Guise KG, Liu X, Fossella J, Wang H, Posner MI (2009) Testing the behavioral interaction and integration of attentional networks. **Brain Cogn** 70:209-220.
  39. Ge J, **Gu X**, Ji M, Han S (2009) Neurocognitive processes of the religious leader in Christians. **Hum Brain Mapp** 30:4012-4024.
  40. Han S, **Gu X**, Mao L, Ge J, Wang G, Ma Y (2009) Neural substrates of self-referential processing in Chinese Buddhists. **Soc Cogn Affect Neurosci** 5:332-339.
  41. Han S, Mao L, **Gu X**, Zhu Y, Ge J, Ma Y (2008) Neural consequences of religious belief on self-referential processing. **Soc Neurosci** 3:1-15.

## TEACHING

### Introduction to Neuroscience

The University of Texas at Dallas, Dallas, TX (2015-2018)

### Computational Psychiatry Course ([www.cpcourse.org](http://www.cpcourse.org))

Wellcome Trust Centre for Neuroimaging, University College London, London, UK (2013-present)

## GRANTS

NIDA 1R01DA043695-01A1

Gu (PI)

09/01/2018-06/30/2023

Role: PI

Title: Computational and Neural Modeling of Cue Reactivity in Addiction (R01-A1)

This project aims to examine neural and computational substrates of cue-induced craving using Bayesian modeling of behavior and dynamic causal modeling of fMRI data.

## INVITED TALKS (selected)

EBPS Workshop: Computational Approaches on Animal & Human Behavior, Cambridge, UK (July 2018)

Kavli Summer Institute 2018, Lake Tahoe, CA (June 2018)

American Psychological Association (May 2018, Panel Chair)

TedxPlano, Plano TX (April 2018)

Division of the Humanities and Social Sciences, Caltech (March 2018)

American College of Neuropsychopharmacology, Palm Springs, CA (December 2017)

Society for Neuroscience Annual Meeting, Washington, DC (November 2017)

Laureate Institute for Brain Research, Tulsa, OK (October 2017)

Virginia Tech Carilion Research Institute, Roanoke, VA (September 2017)

Computational Psychiatry Course, ETH Zurich and University of Zurich, Zurich (August 2017)

Association for the Study of Consciousness, Beijing (June 2017)

School of Business, UC Berkeley, Berkeley, CA (February 2017)  
Department of Psychology, Peking University, Beijing (September 2015)  
Department of Psychology, UCL, London (September 2014)  
Department of Psychology, Queens College, City University of New York, NY (April 2014)  
Wellcome Trust Centre for Neuroimaging, UCL, London (February 2014)  
LabEx Cortex Conference, Universite de Lyon, Lyon, France (December 2013)  
Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany (December 2013)  
Institute of Psychology, Chinese Academy of Sciences, Beijing (November 2012)  
McDonnell Foundation Annual Conference, UCSF, San Francisco, CA (August 2012)  
Duke University, Durham, NC (May 2012)  
Organization of Human Brain Mapping annual meeting, San Francisco, CA (June 2009)

**Editorial Board:** Computational Psychiatry (MIT Press)

**AD HOC REVIEWER**

American Journal of Psychiatry  
Biological Psychiatry  
Biological Psychiatry: Cognitive Neuroscience and Neuroimaging  
British Journal of Psychiatry  
Cerebral Cortex  
Computational Psychiatry  
Frontiers in Human Neuroscience  
Human Brain Mapping  
JAMA Psychiatry  
Journal of Neuroscience  
NeuroImage  
Neuroscience & Biobehavioral Reviews  
Neuroscience Letters.  
Neuropsychologia  
Philosophical Transactions of the Royal Society B.  
PLoS ONE  
Proceedings of the National Academy of Sciences of the United States of America (PNAS)  
Social, Cognitive and Affective Neuroscience  
Translational Psychiatry