

## **Xinyuan Yan, Ph.D.**

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**Google Scholar:** <https://scholar.google.com/citations?user=rdGDTMsAAAAJ&hl=en>

### **Education Background**

April 2025– now.	Post-doc, Neurosurgery, Neuroscience Baylor College of Medicine advisor: Benjamin Hayden & Sameer Sheth
March 2022 – March 2025.	Post-doc, Psychiatry, Neuroscience University of Minnesota advisor: Alexander Herman & David Darrow
September 2016 - January 2022.	Ph.D, Cognitive Neuroscience  IDG/McGovern Institute for Brain Research and the State Key Laboratory of Cognitive Neuroscience and Learning Beijing Normal University advisor: Yina Ma
September 2012 - June 2016.	B.Sc., Psychology Northeast Normal University

### **Fellowship and Awards**

2023	Travel award (Computational and Systems Neuroscience, Montreal, Canada)
2022	Trainee professional development award (Society for Neuroscience, USA)
2022	MnDrive Neuromodulation Research Fellowship (Medical school, University of Minnesota)
2021	Fellowship to Computational and Cognitive Neuroscience (CCN) summer school, Cold Spring Harbor Laboratory Asia (Suzhou, China)
2019	Fellowship to Kavli summer institute in cognitive neuroscience (University of California, Santa Barbara)
2018	Distinguished graduate research fellowship in State Key Laboratory of Cognitive Neuroscience and Learning
2018	National Graduate Research Fellowship, China

## **Publications**

### **Topic: beliefs about uncertainty (explore-exploit) and implications for affective disorder**

#### **Skillset: computational modeling, intracranial EEG**

1. **Yan, X.**, Ebitz, B. R., Darrow, D. P., & Herman, A. B. (2025). Nonlinear modulation of human exploration by distinct sources of uncertainty. *bioRxiv*, 2025-04. (under reviewed by PNAS)
2. **Yan, X.**, König, S. D., Ebitz, R. B., Hayden, B. Y., Darrow, D. P., & Herman, A. B. (2025). Dynamic prefrontal coupling coordinates adaptive decision-making. *Research Square*, rs-3. (under reviewed by nature communications)
1. **Yan, X.**, Ebitz, R. B., Grissom, N., Darrow, D. P., & Herman, A. B. (2025). Distinct computational mechanisms of uncertainty processing explain opposing exploratory behaviors in anxiety and apathy. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*.
2. Knap, E., **Yan, X.**, Chen, C. S., Jacob, S., Darrow, D. P., Ebitz, R. B., ... & Herman, A. B. (2025). Social aloofness is associated with non-social explore-exploit decisions. *Communications Psychology*, 3(1), 106.

### **Topic: Social decision-making and its modulation**

#### **Skillset: computational modeling, fMRI**

1. Kappes A, **Yan X**, Crockett MJ & Ma Y (2025). Cultural Differences in Vicarious Optimism. *Personality and Social Psychology Bulletin*, 01461672251319566.
2. **Yan X.** (2024) Too smart for one's good? Evolution favors individuals with a low-level theory of mind in a complex network. *Psyarxiv*.
3. **Yan X**, Yong X, Huang W, Ma Y. Placebo treatment facilitates social trust and approach behavior (2018). *PNAS* 115(22):5732-37.
4. Kappes A, **Yan X**, Ma Y, Crockett M. (2023). Cultural Differences in Forming Beliefs about Others. *Psyarxiv*.
5. Zheng S†, **Yan X†**, Siegel J, Chituc V, Li S, Crockett, M & Ma Y. (2020). Self-serving karmic beliefs: prosociality influences vicarious optimism. *Psyarxiv*. († **co-first-author**)
6. Liu Y, Li S<sup>#</sup>, Lin W<sup>#</sup>, Li W<sup>#</sup>, **Yan X**, Wang X, Pan X, RB Rutledge, Ma Y. Amygdala activity tracks deviations from social preferences (2019). *Nat Neurosci* 22 (4): 633-641 (# co-second author)
7. Wang D, **Yan X**, Li M, Ma Y (2017). Neural substrates underlying oxytocin effect: A quantitative meta-analysis of pharmaco-imaging studies. *Soc Cogn Affect Neurosci* 12(10): 1565-1573.

### **Topic: beliefs about self and implications for major depressive disorder**

#### **Skillset: fMRI**

1. Feng C†, **Yan X†**, Huang W, Han S, Ma Y. Neural representations of the multidimensional self in the cortical midline structures (2018). *Neuroimage* 183:291-299. († **co-first-author**)

2. Ma Y, Li S, Wang C, Liu Y, Li W, **Yan X**, Chen Q, Han S (2016). Distinct oxytocin effects on belief updating in response to desirable and undesirable feedback. *PNAS* 113(33):9256-61.
3. **Yan X** (2024). Neural dynamics of self-referential processing and the insight for decoding self-concepts. *Journal of Neuroscience* 44(30). (commentary)

### **Topic: cortisol and stress model**

### **Skillset: resting-state fMRI**

1. Feng Z, Zhang H, Zhou T, Yu X, Zhang Y, & **Yan X\***. (2023). Dynamic functional connectivity changes associated with psychiatric traits and cognitive deficits in Cushing's disease. *Translational Psychiatry*, 13(1), 308. (\*corresponding author)
2. Liu B, Mao Z, **Yan X**, Yang H, Xu J, Feng Z, Zhang Y, Yu X (2024) Structural network topologies are associated with deep brain stimulation outcomes in Meige syndrome. *Neurotherapeutics*, e00367
3. Shang G, Zhou T, Yu X, **Yan X**, He K, Liu B, Feng Z, Zhang Y, Yu X (2024) Chronic hypercortisolism disrupts the principal functional gradient in Cushing's disease: A multi-scale connectomics and transcriptomics study. *NeuroImage: Clinical* 43, 103652
4. Shang G, Zhou T, **Yan X**, He K, Liu B, Feng Z, ... & Zhang Y (2025). Multi-scale Analysis Reveals Hippocampal Subfield Vulnerabilities to Chronic Cortisol Overexposure: Evidence from Cushing's Disease. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*.

### **Editorial Board Service**

2023.10-2023.12 Guest Associate Editor, Frontiers in Human Neuroscience (Research Topic: *Methods in Cognitive Neuroscience: 2023*)

### **Ad-Hoc Reviews**

PNAS

Nature communications

Translational Psychiatry

Frontiers in Psychology

Frontiers in Psychiatry

Frontiers in Human Neuroscience

Brain and Behavior

Psychoradiology (Oxford academic)

Self and identity

### **Other Membership and Participation**

Sigma Xi

Society for Neuroscience

Society of Biological Psychiatry (regular member)

### **Conference Presentations**

#### ***Oral presentation***

**Yan X**, Koneig S, Ebitz B, Hayden, B, Darrow D, Herman A. "Deciphering Neural Mechanisms of Explore-Exploit Decision-Making in the Prefrontal Cortex", 2024, *Computational Psychiatry Conference*, Minneapolis, USA

**Yan X**, Ebitz B...Darrow D, Herman A. “The behavioral profile of the Exploration-Exploitation dilemma and its implications for anhedonia and anxiety”, 2022, Computational Psychiatry, New York.

**Yan X** “Neural representations of social placebo effect”, 2020, Neuromatch 3.0  
<https://www.youtube.com/watch?v=AWtjfNvVsrk>

### ***Poster presentation***

**Yan X**, Koneig S, Ebitz B, Darrow D, Herman A. “Intracranial electrophysiological evidence for a novel neuro-computational mechanism of exploration-exploitation decision- making in humans”, 2023, Computational and Systems Neuroscience, Montreal, Canada.

**Yan X**, Koneig S, Ebitz B, Darrow D, Herman A. “Intracranial electrophysiological evidence for a novel neuro-computational mechanism of exploration-exploitation decision- making in humans”, 2022, the annual meeting of Society for Neuroscience, San Diego, CA.

**Yan X**, Ma Y. “Neural pattern change of memory control of personal strengths and weaknesses”, 2018, 11<sup>th</sup> Annual Meeting of The Social & Affective Neuroscience Society. New York

### **Miscellaneous**

#### ***Additional Training (finished):***

The Computational and Cognitive Neuroscience (CCN) summer school, *Cold Spring Harbor Laboratory*, 2021

Online summer school for Computational Neuroscience, *Neuromatch Academy*, 2020

Computer Simulations, *Coursera*, 2020

Social Network Analysis, *Coursera*, 2020

Network Dynamics of Social Behavior, *Coursera*, 2020

Introduction to HTML5, *Coursera*, 2020

Julia Scientific Programming, *Coursera*, 2020

Facial Expression Recognition with Keras, *Coursera*, 2020

Kavli summer school in cognitive neuroscience, *California USA*, 2019

### **Programming knowledge**

MATLAB, R, HTML5 + CSS3 (limited and rarely used)

### **Teaching**

*(aim to teach junior graduate students to acquire necessary skills for scientific research)*

1. How to create your personal website (Html5 + CSS3)
2. Representational similarity analysis
3. Resting-state fMRI analysis
4. Diffusion Decision model & value-based DDM
5. Reinforcement learning & Markov decision processes
6. Attractor model & decision making
7. Neural Networks-basic concepts

All materials (slides, tutorials, code) for these courses can be found at my personal website:

<https://psywalkeryanxy.github.io/>