

DALE ZHOU

Last update: June 15, 2023

CONTACT INFORMATION	Complex Systems Lab 244 S 33rd St Hayden Hall 311 Philadelphia, PA 19104	https://dalezhou.com dalezhou@penmedicine.upenn.edu dalejn@gmail.com
RESEARCH POSITIONS	Postdoctoral Scholar University of California, Irvine Department of Neurobiology and Behavior Advisors: Michael Yassa, Aaron Bornstein Postbaccalaureate Researcher National Institute of Mental Health Child Psychiatry Branch Advisor: Judith Rapoport	August 2023 June 2017
EDUCATION	University of Pennsylvania Ph.D in Neuroscience Advisors: Dani Bassett, Theodore Satterthwaite University of Maryland, College Park B.A. (honors) in Philosophy B.S. (honors) in Psychology Minor in Neuroscience Advisors: Peter Carruthers, Michael Dougherty, D.J. Bolger	June 2023 May 2015

PUBLICATIONS

SUBMITTED/
UNDER REVISION

* = mentee

- [3] **Zhou, D.**, Tseytlin, I.*, Satterthwaite, T.D., & Bassett, D.S. (2023). Predictive coding from compression, control, and recurrent connectivity in human brain networks (invited to special issue at *Open Mind*).
- [2] Stiso, J., Oudyk, K., Bertolero, M.A., **Zhou, D.**, Teich, E.G., Lydon-Staley, D.M., Zurn, P., & Bassett, D.S. (2022). Modeling observed gender imbalances in academic citation practices.
[arXiv: 10.48550/arXiv.2204.12555](https://arxiv.org/abs/10.48550/arXiv.2204.12555)
- [1] Bertolero, M.A., Dworkin, J.D., David, S.U., López Lloreda, C., Srivastava, P., Stiso, J., **Zhou, D.**, Dzirasa, K., Fair, D.A., Kaczkurkin, A.N., Marlin, B.J., Shohamy, D., Uddin, L.Q., Zurn, P., & Bassett, D.S. (2020). Racial imbalance in neuroscience reference lists and intersections with gender.
[bioRxiv: 2020.10.12.336230](https://arxiv.org/abs/2020.10.12.336230)

JOURNAL
ARTICLES

- [13] Patankar, S.P., **Zhou, D.**, Lynn, C.W., Kim, J., Ouellet, M., Ju, H., Zurn, P., Lydon-Staley, D.M., & Bassett, D.S. (2022). Curiosity as filling, compressing, and reconfiguring knowledge networks. *Collective Intelligence* (accepted in principle). [arXiv: 10.48550/arXiv.2204.01182](https://arxiv.org/abs/10.48550/arXiv.2204.01182)
- [12] Mahadevan, A., Cornblath, E., Lydon-Staley, D.M., **Zhou, D.**, Parkes, L., Larsen, B., Adebimpe, A., Kahn, A.E., Gur, R.C., Gur, R.E., Satterthwaite, T.D., Wolf, D.H., & Bassett, D.S. (2023). Alprazolam modulates persistence

energy during emotion processing in first-degree relatives of individuals with schizophrenia: a network control study. *Molecular Psychiatry* (accepted in principle).

- [11] **Zhou, D.**, Kang, Y., Cosme, D., Jovanova, M., He, X., Mahadevan, A., Ahn, J., Stanoi, O., Brynildsen, J.K., Cooper, N., Cornblath, E.J., Parkes, L., Mucha, P., Ochsner, K., Lydon-Staley, D., Falk, E., & Bassett, D.S. (2022). Mindful Attention Promotes Control of Brain Network Dynamics for Self-Regulation and Discontinues the Past from the Present. *PNAS*. DOI: 10.1073/pnas.220107411
- [10] Richie-Halford, A., Cieslak, M., Ai, L., Caffarra, S., Covitz, S., Franco, A.R., Karipidis, I.I., Kruper, J., Milham, M., Avelar-Pereira, B., Roy, E., Sydnor, V.J., Yeatman, J.D., [The Fibr Community Science Consortium, including **Zhou, D.**], Satterthwaite, T.D., and Rokem, A. (2022). An open, analysis-ready, and quality controlled resource for pediatric brain white-matter research. *Scientific Data*. DOI: 10.1038/s41597-022-01695-7
- [9] Ju, H., **Zhou, D.**, Blevins, A.S., Lydon-Staley, D.M., Kaplan, J., Tuma, J.R., Bassett, D.S. (2022). Historical growth of concept networks in Wikipedia. *Collective Intelligence*. DOI: 10.1177/26339137221109839
- [8] Weninger, L., Srivastava, P., **Zhou, D.**, Kim, J.Z., Cornblath, E.J., Bertolero, M.A., Habel, U., Merhof, D., and Bassett, D.S. (2022). The information content of brain states is explained by structural constraints on state energetics. *Physical Review E*. DOI: 10.1103/PhysRevE.106.014401
- [7] Adebimpe, A., Bertolero, M.A., [33 others, including **Zhou, D.**, and the ALLFTD Consortium], & Satterthwaite, T.D. (2022). ASLPrep: A Platform for Processing of Arterial Spin Labeled MRI and Quantification of Regional Brain Perfusion. *Nature Methods*. DOI: 10.1038/s41592-022-01458-7
- [6] **Zhou, D.**, Lynn, C.W., Cui, Z., Ciric, R., Baum, G.L., Moore, T.M., Roalf, D.R., Detre, J.A., Gur, R.C., Gur, R.E., Satterthwaite, T.D., & Bassett, D.S. (2021). Efficient Coding in the Economics of Human Brain Connectomics. *Network Neuroscience*. DOI: 10.1162/netn.a_00223
- [5] Wang, X., Dworkin, J.D., **Zhou, D.**, Stiso, J., Falk, E., Bassett, D.S., Zurn, P., Lydon-Staley, D.M. (2021). Gendered citation practices in the field of communication. *Annals of the International Communication Association*. DOI: 10.31234/osf.io/ywrcq
- [4] Lydon-Staley, D.M., **Zhou, D.**, Blevins, A.S., Zurn, P., & Bassett, D.S. (2020). Hunters, busybodies, and the knowledge network building associated with deprivation curiosity. *Nature Human Behavior*. DOI: 10.1038/s41562-020-00985-7
- [3] Chai, L.R., **Zhou, D.**, & Bassett, D.S. (2019). Evolution of semantic networks in biomedical texts. *Journal of Complex Networks*. DOI: 10.1093/com-net/cnz023
- [2] **Zhou, D.**, Liu, S., Zhou, X., Berman, R.A., Broadnax, D.D., Rapoport, J.L., & Thomas, A.G. (2018) 7 Tesla MRI reveals hippocampal structural abnormalities associated with memory intrusions in childhood-onset schizophrenia. *Schizophrenia Research*. DOI: 10.1016/j.schres.2018.07.023
- [1] **Zhou, D.**, Gochman, P., Broadnax, D.D., Rapoport, J.L., & Ahn, K. (2016). 15q13.3 duplication in two patients with childhood-onset schizophrenia. *American Journal of Medical Genetics Part B: Neuropsychiatric Genetics*. DOI: 10.1002/ajmg.b.32439

REVIEWS &
BOOK CHAPTERS

- [5] Zurn, P., **Zhou, D.**, Lydon-Staley, D.M., & Bassett, D.S. (2022). Edgework: Viewing curiosity as fundamentally relational. In Cogliati Dezza, I., Wu, C., & Schulz, E. (Eds.). *The Drive for Knowledge: The Science of Human Information Seeking*. Cambridge University Press. [pre-print]
- [4] **Zhou, D.**, Lydon-Staley, D.M., Zurn, P., & Bassett, D.S. (2020). The growth and form of knowledge networks by kinesthetic curiosity. *Current Opinion in Behavioral Sciences*. DOI:10.1016/j.cobeha.2020.09.007
- [3] Srivastava, P., Nozari, E., Kim, J.Z., Ju, H., **Zhou, D.**, Becker, C., Pasqualetti, F., & Bassett, D.S. (2020). Models of communication and control for brain networks: distinctions, convergence, and future outlook. *Network Neuroscience*. DOI: 10.1162/netn.a.00158
- [2] Rapoport, J. L., **Zhou, D.**, & Ahn, K. (2020). Intellectual disabilities. *New Oxford Textbook of Psychiatry, 3rd edition*. Oxford University Press, USA. ISBN: 9780198713005
- [1] **Zhou, D.**, Sequeira, S., Driver, D., & Thomas, S. (2018). Disruptive Mood Dysregulation Disorder. In S. Thomas and D. Driver (Eds.), *Complex Disorders in Pediatric Psychiatry: A Clinician's Guide*. Clinics Review Articles, Elsevier Inc. ISBN: 9780323511476

REFEREED
CONFERENCE
PAPERS

- [4] **Zhou, D.**, Tseytlin, I.*, Satterthwaite, T.D., & Bassett, D.S. (2023). Predictive coding from compression, control, and recurrent connectivity in human brain networks. *Conference on Cognitive Computational Neuroscience*.
- [3] Kang, Y., Ahn, J., Cosme, D., McGowan, A., Mwilambwe-tshilobo, L., **Zhou, D.**, Jovanova, M., Stanoi, O., Mucha, P.J., Ochsner, K.N., Bassett, D.S., Lydon-Staley, D. & Falk, E.B. Frontoparietal system functional connectivity moderates the within-day associations between increases in time spent on social media and subsequent negative affect. *73rd Annual International Communication Association Conference*. Toronto, CA. May 25-29, 2023.

Promising Paper Award

- [2] **Zhou, D.**, Kim, J.Z., Pines, A., Sydnor, V.J., Roalf, D.R., Detre, J.A., Gur, R.C., Gur, R.E., Satterthwaite, T.D., & Bassett, D.S. Compression supports low-dimensional representations of behavior across neural circuits. *NeurIPS 2022 Workshop on Information-Theoretic Principles in Cognitive Systems*. New Orleans, LA. December 3, 2022.

Selected for oral talk (< 10% submissions)

- [1] Wang, X., Lydon-Staley, D., Stiso, J., **Zhou, D.**, Falk, E., Bassett, D., Zurn, P. Gendered citation practices in the field of communication. *71st Annual International Communication Association Conference*. (virtual due to COVID-19). May 27-31, 2021.

Communication & Science Biology Top Paper Award

IN PREP

- [5] **Zhou, D.**, Patankar, S., Gerlach, M., Lydon-Staley, D.M., Zurn, P., & Bassett, D.S. Architectural styles of curiosity in Wikipedia readers.

- [4] Parkes, L., Kim, J.Z., Brynildsen, J.K., Cieslak, M., Covitz, S., Gur, R.E., Gur, R.C., Pasqualetti, F. Shinohara, R.T., Stiso, J., **Zhou, D.**, Satterthwaite, T.D., & Bassett, D.S. Using network control theory to study the dynamics of the structural connectome.
- [3] **Zhou, D.**, Kim, J.Z., Pines, A., Sydnor, V.J., Roalf, D.R., Gur, R.C., Gur, R.E., Satterthwaite, T.D., & Bassett, D.S. Integrating sensation to cognition in human brain networks.
- [2] **Zhou, D.**, Lydon-Staley, D.M., Mucha, P., Falk, E., Ochsner, K., & Bassett, D.S. Cognitive control & network control: Current tensions and future promise.
- [1] Simon, S.*, **Zhou, D.**, [23 others in the Spring 2019 class of BE566], Lydon-Staley, D.M., & Bassett, D.S. Diversity in neuroscience research.

FUNDING

2021-23	NIH F31 National Research Service Award Grant # F31MH126569 \$52,175 Brain Network Maturation and Executive Dysfunction Spanning Diagnostic Categories of Psychopathology
2015-17	NIH Intramural Research Training Award Child Psychiatry Branch \$57,400

HONORS

2015	Departmental Honors in Psychology	UMaryland
2015	Departmental Honors in Philosophy	UMaryland
2010-12	College Park Scholar in Global Public Health	UMaryland
2010-14	University of Maryland President's Scholarship	UMaryland

STIPENDS

2023	Biomedical Graduate Studies Course Funds	UPenn
2022	Biomedical Graduate Studies Travel Funds	UPenn
2019	National Academy of Sciences Travel Award	NAS
2018-20	Language and Communication Sciences Stipend	UPenn
2013	College Park Scholars Co-Curricular Scholarship	UMaryland
2011	Ling Ho Anita K'ung Tong Scholarship	UMaryland

PRESENTATIONS

TALKS

- [3] ***NeurIPS 2022*** Workshop on Information-Theoretic Principles in Cognitive Systems. New Orleans, LA. December 3, 2022. Compression supports low-dimensional representations of behavior across neural circuits. [link](#)
(< 10% submissions selected)
- [2] ***National Academy of Sciences*** Colloquium: The Brain Produces the Mind By Modeling. Irvine, California. May 1, 2019. Network Mechanisms of Curiosity and Information Seeking During Wikipedia Exploration.
- [1] ***9th Annual Julius Axelrod Symposium***. NIMH, Intramural Research Program. Bethesda, Maryland. April 13, 2017. Ultra-high field 7-Tesla MRI reveals hippocampal subfield volume and shape abnormalities in childhood-onset schizophrenia patients compared to healthy siblings and controls.

INVITED TALKS

2023	International Research Training Group	RWTH Aachen
2023	Yassa Lab; Bornstein Lab	UC Irvine
2023	Poldrack Lab	Stanford
2023	Astle Lab	Cambridge

ABSTRACTS

- [16] **Zhou, D.**, Tseytlin, I.*, Satterthwaite, T.D., & Bassett, D.S. (2023). Predictive coding from compression, control, and recurrent connectivity in human brain networks. [Conference on Cognitive Computational Neuroscience](#).
- [15] Gataviņš, M.*, Luo, A., Sydnor, V.J., Shafiei, G., **Zhou, D.**, Gur, R.E., Gur, R.C., Mackey, A.P., Satterthwaite, T.D., Keller, A.S. [Flux Society](#). Santa Rosa, California. September 6-9, 2023.
- [14] **Zhou, D.**, Patankar, S., Gerlach, M., Lydon-Staley, D.M., Zurn, P., & Bassett, D.S. Dynamics Of Curiosity And Complexity In Wikipedia Readers. [Curiosity, Creativity and Complexity conference](#) (unable to attend). Columbia University, New York City, New York. May 23-25 2023.
- [13] **Zhou, D.**, Kim, J.Z., Pines, A., Sydnor, V.J., Roalf, D.R., Detre, J.A., Gur, R.C., Gur, R.E., Satterthwaite, T.D., & Bassett, D.S. Compression supports low-dimensional representations of behavior across neural circuits. [NeurIPS 2022 Workshop on Information-Theoretic Principles in Cognitive Systems](#). New Orleans, LA. December 3, 2022.
- [12] Brynildsen, J. K., **Zhou, D.**, Cosme, D., Jovanova, M., He, X., Mucha, P.J., Ochsner, K.N., Lydon-Staley, D.M. , Falk, E. B., Bassett, D.S. Regulation of alcohol cue reactivity in a social context. [Society for Neuroscience](#). San Diego, CA. November 12, 2022.
- [11] **Zhou, D.**, Lynn, C.W., Cui, Z., Ciric, R., Baum, G.L., Moore, T.M., Roalf, D.R., Detre, J.A., Gur, R.C., Gur, R.E., Satterthwaite, T.D., & Bassett, D.S. Network Fidelity Improves with Brain Network Maturation and Executive Function. [Flux Society](#). Paris, France. September 6-9, 2022.
- [10] **Zhou, D.**, Kim, J.Z., Pines, A., Sydnor, V.J., Roalf, D.R., Detre, J.A., Gur, R.C., Gur, R.E., Satterthwaite, T.D., & Bassett, D.S. Communication and compression principles integrate sensation to cognition in human brain networks. [Organization for Human Brain Mapping](#). June 19-23, 2022.
- [9] **Zhou, D.**, Kang, Y., Cosme, D. Jovanova, M., He, X., Mahadevan, A., Stanoi, O., Brynildsen, J.K., Cooper, N., Cornblath, E.J., Parkes, L., Mucha, P., Ochsner, K., Lydon-Staley, D., Falk, E., and Bassett, D.S. Mindfulness Promotes Control of Network Dynamics for Self-Regulation and Updates the Past to Present. [Organization for Human Brain Mapping](#). June 19-23, 2022.
- [8] Ju, H., **Zhou, D.**, Blevins, A.S., Lydon-Staley, D.M., Kaplan, J., Tuma, J.R., Bassett, D.S. The network structure of scientific revolutions. [American Physical Society March Meeting](#) (virtual due to COVID-19). March 15-19, 2021.
- [7] **Zhou, D.**, Lynn, C.W., Cui, Z., Ciric, R., Baum, G.L., Moore, T.M., Roalf, D.R., Detre, J.A., Gur, R.C., Gur, R.E., Satterthwaite, T.D., & Bassett, D.S. Efficient Coding in the Economics of Human Brain Connectomics. [Organization for Human Brain Mapping](#). Montreal, CA (virtual due to COVID-19). June 23-July 3, 2020.
- [6] **Zhou, D.**, Lydon-Staley, D., Zurn, P., Bassett, & D.S. Network Mechanisms of Curiosity and Information Seeking During Wikipedia Exploration. [National Academy of Sciences Colloquium: The Brain Produces the Mind By Modeling](#), Beckman Center of the National Academy of Sciences & Engineering, Irvine, California. May 1-3, 2019.

2022	Teaching Assistant, Goals of Scientific Inquiry; or, On the Curiosity of Beasts (with Dani Bassett) Student evaluation of TA: 3.6/4.0
2020	Teaching Assistant, Curiosity: Ancient and Modern Thinking About Thinking (with Dani Bassett) Student evaluation of TA: not rated
2019	Teaching Assistant, Computational Neuroscience Lab (with Nicole Rust) Student evaluation of TA: 3.7/4.0

2022	Goals of Scientific Inquiry (BE 571)	(with Dani Bassett)
2019-20	Network Neuroscience (BE 566)	(with Dani Bassett)
2019	Computational Neuroscience Lab (BIBB 310)	(with Nicole Rust)

[3] Ivan Tseytlin	Haverford College, Physics; Computer Science 2023 Network control theory
[2] Samantha Simon	University of Pennsylvania, Physics 2023 Diversity in science; network science; semantic networks (Accenture AI)
[1] Mark Choi	University of Pennsylvania, Computer Science 2021 Network structure in mathematics (Meta)

SERVICE

MENTORSHIP

- 2020–21 MindCORE Step-Ahead Mentorship Program, [\[link\]](#)
 Mărtinș M. Gataviņš University of Pennsylvania, Neuroscience 2024
- 2019–21 Upward Bound: Research Fridays, [\[link\]](#)

JOURNAL
REVIEWER

Biological Psychiatry | Cerebral Cortex | IEEE: Transactions on Network Science and Engineering | Network Neuroscience

CONFERENCE
REVIEWER

Cognitive Computational Neuroscience | NeurIPS (Information-Theoretic Principles in Cognitive Systems workshop) | Web Conference (Wiki Workshop)

CO-ORGANIZER
& PROGRAM
COMMITTEE

Innovators in Cognitive Neuroscience Symposia | Web Conference (Wiki Workshop)

HACKATHONS

Stiso, J.* & **Zhou, D.*** (2020). *Tools for Combating Citation Bias*. Organization for Human Brain Mapping Hackathon, Montreal, Canada. June 16–18, 2020. [\[link\]](#)

INVITED TALKS

Panelist, Post-Baccalaureate Research Experiences, University of Maryland. March 30, 2017.

DEI

- 2019– Creator/Maintainer, Citation Diversity Statement Code Notebook, [\[link\]](#)
- Used and cited by > 100 articles across > 30 journals.
 - Contributions from researchers across 11 universities, including Penn, MIT, Columbia, and University of Michigan, Leiden University, and Technical University of Munich.
 - Highlighted by *Nature*.
- 2022 Kamen’s Lens. Rebecca Kamen, S.J. Fowler, Dale Zhou. *Dyslexic Dictionary*. Organized and curated by Gil Gershoni, Tasmin Smith, and Ted Gioia. Arion Press Gallery, 1802 Hays Street, The Presidio, San Francisco, CA. October 22–December 22, 2022. [\[link\]](#) [\[video 1\]](#) [\[video 2\]](#)
- 2020–22 Organizing Committee, Innovators in Cognitive Neuroscience Symposia. [\[link\]](#)
- 2020 Stiso, J.* & **Zhou, D.*** (2020). *Tools for Combating Citation Bias*. Organization for Human Brain Mapping Hackathon, Montreal, Canada. June 16–18, 2020. [\[link\]](#)
- 2020–21 Web Developer, Black in STEM in Academia

OUTREACH

ORGANIZATIONS

- 2020–22 Organizing Committee, Innovators in Cognitive Neuroscience Symposia, [\[link\]](#)

2020–21 Web Developer, Black in STEM in Academia
 2019–20 Organizer, Web Developer, Penn Network Visualization program
 2019–21 Apprentice Chief, Upward Bound: Research Fridays, [\[link\]](#)
 2019–20 Committee, APICAL Service Award
 2017–20 Section Chief, Brains in Brief science communication, [\[link\]](#)
 2017–18 Founder, Psychology Honors Alumni (University of Maryland)
 2014–15 Vice President, Philosophy Club (University of Maryland)

ART EXHIBITIONS

- [2] Kamen’s Lens. Rebecca Kamen, S.J. Fowler, Dale Zhou. *Dyslexic Dictionary*. Organized and curated by Gil Gershoni, Tasmin Smith, and Ted Gioia. Arion Press Gallery, 1802 Hays Street, The Presidio, San Francisco, CA. October 22–December 22, 2022. [\[link\]](#) [\[video 1\]](#) [\[video 2\]](#)
- [1] Sparking Curiosity. Dale Zhou, David Lydon-Staley, Perry Zurn, and Dani Bassett. *Reveal: The Art of Reimagining Scientific Discovery*. Organized and curated by Rebecca Kamen and Sarah Tanguy. Museum at the Katzen Arts Center, American University, Washington, D.C., August 29–December 12, 2021. [\[link\]](#)

ART CATALOGS

The Connected Brain. Human Brain Mapping Conference. ISBN 9798357985361

MEDIA

- [5] Natalia Gass. (February 17, 2023) *Neural states during mindful attention*. ***Nature Mental Health***.
- [4] Nathi Magubane (January 26, 2023) *Through the lens: A digital depiction of dyslexia*. ***Penn Today***.
- [3] Diana Kwon (March 22, 2022) *The rise of citational justice: how scholars are making references fairer*. ***Nature***.
- [2] Melissa Pappas (January 26, 2021) *Researchers measure different types of curiosity studying hunters and busybodies*. ***Penn Today***.
- [1] Melissa Pappas (January 12, 2021) *Studying Hunters and Busybodies, Penn and American University Researchers Measure Different Types of Curiosity*. ***Penn Engineering Today***.

CODE

- [4] **Zhou, D.** (2022). Sparking Curiosity, [\[link\]](#)
- [3] **Zhou, D.**, Stiso, J., Cornblath, E.J., Teich, E.G., Blevins, A.S., Oudyk, K., Cleanthis, M., Urai, A., Matelsky, J., Virtualmario, Camp, C., Alacantha Castillo, R., Saxe, R., Dworkin, J.D., & Bassett, D.S. (2022). *Citation Diversity Statement and Code Notebook v1.1.3*. Zenodo. DOI: [10.5281/zenodo.7375250](#)
- [2] **Zhou, D.** (2018). *Building word2vec and Co-Occurrence Networks*, [\[link\]](#)
- [1] Gorgolewski, K.J., Esteban, O., [110 others, including **Zhou, D.**], & Ghosh, S. (2016). *Nipype: a flexible, lightweight and extensible neuroimaging data processing framework in Python*. 0.13.0. DOI: [10.5281/zenodo.581704](#)

TRAINING

PROGRAMMING

R | Python | MATLAB | Bash

IMAGE

PROCESSING

Nipype | Freesurfer | ANTs | FSL | AFNI

MODELING

Dynamics on networks | Temporal networks | Multi-layer networks | Agent-based modeling | Evolutionary computation | Control theory | Natural language processing | Generalized additive models

WORKSHOPS

Collective Intelligence: Foundations + Radical Ideas symposium & short course. Santa Fe, NM. June 19, 2023

NeurIPS 2022 workshop Information-Theoretic Principles in Cognitive Systems workshop. New Orleans, LA. December 3, 2022

Summer Workshop in Cognitive Electrophysiology, Philadelphia, PA (virtual). August 4-13, 2020.

Computational Psychiatry Summer Course, New York, NY. July 29-30, 2019.