Tanya Wen

Cognitive Scientist

I am a cognitive scientist dedicated to answering questions about human behavior. I use a variety of tools, including online studies, behavioral measures, neuroimaging, and statistical modeling. Moving forward, my dream career is one that bridges the gap between research and real-world application, particularly in User Experience Research.

WORK EXPERIENCE

Postdoctoral Associate   Oct 2019 – Present
Center for Cognitive Neuroscience, Duke University, U.S.A

- Developed a new paradigm that required humans to flexibly adapt their cognitive flexibility based on environmental feedback
- Demonstrated how volatility changes in the environment affected switch likelihood and learning rate parameters measured from hierarchical Bayesian reinforcement learning models
- Using innovative experimental designs, demonstrated for the first time that event boundaries can either impair or enhance temporal order memory and is dependent on whether the original encoding context is absent or present during retrieval.
- Investigated the allocation of attention towards always- and intermittently- irrelevant stimuli when people switch within and between task domains, to tease apart the open-gate and task-set inertia hypotheses.

PhD Research   October 2015 – September 2019
MRC Cognition and Brain Sciences Unit, University of Cambridge, United Kingdom

- Used support vector machine on combined MEG/EEG data to quantify the time-course and components of selective attention, including representation of stimulus identity, target position, target identity, behavioral status, and the template of the cue/target.
- Differentiated the roles of the MD and DMN networks during execution of task episodes, and identified differential time-courses between networks, as well as characterized regions that coded for the representation of full episodes, individual items, and current position within an episode.
- Characterized how the MD network responses to task difficulty when it can be offset by increased cognitive resource allocation, compared to when performance is limited by quality of data input.

Undergraduate Research Assistant   October 2011 – July 2015
National Cheng Kung University, Taiwan

- Led fMRI study investigating the neural correlates of the Flashed Face Distortion Effect illusion (supported with my undergraduate research grant).
- Used network-based statistics to characterize functional connections related to internet addiction

CONTACT

- +1-919-450-5465
- tanya.wen@duke.edu
- https://tanya-wen.github.io/
- linkedin.com/in/tanya-wen-551a691aa/
- github.com/tanya-wen
- twitter.com/tanya_wen

SKILLS

User Research Skills:
- Experimental design
- Hypothesis testing
- Online surveys/experiments
- Amazon Mechanical Turk
- Participant recruitment
- Ethics committee application

Programming Languages:
- JavaScript
- HTML
- CSS
- Python
- R
- MATLAB

Statistical analysis:
- Inferential statistics
- General linear modeling
- Multivariate analysis
- Machine learning
- Reinforcement learning
- Graph theory

Other tools:
- Microsoft Office
- Adobe Illustrator
- Adobe Photoshop
- Github

Languages:
- English
- Mandarin Chinese

FELLOWSHIPS & AWARDS

- Duke Interdisciplinary Behavioral Research Center Mini-Grant (2019-2020)
- Medical Research Council PhD Studentship (2018-2019)
- Taiwan Cambridge Scholarship (2015-2018)

EDUCATION

PhD in Medical Science   October 2015 – September 2019

MRC Cognition and Brain Sciences Unit, University of Cambridge, United Kingdom
- Link to thesis: https://www.repository.cam.ac.uk/handle/1810/300579
- Scholarship Award: Cambridge Commonwealth, European & International Trust

Bachelor of Science, Double Major   September 2011 – May 2015

Department of Psychology, National Cheng Kung University, Taiwan
- Rank: #1
- GPA: 4.00/4.00

Department of Life Sciences, National Cheng Kung University, Taiwan
- GPA: 3.90/4.00

PUBLICATIONS

Wen, T. & Egner, T. (2022). Retrieval context determines whether event boundaries impair or enhance temporal order memory. *Cognition,* https://doi.org/10.1016/j.cognition.2022.105145

Wen, T., Geddert R.M., Madlon-Kay S., & Egner, T. (submitted). Transfer of learned cognitive flexibility to novel stimuli and task sets. https://www.biorxiv.org/content/10.1101/2021.07.21.453253v1

Wen, T., Duncan, J., & Mitchell, D.J. (2020). Hierarchical representation of multistep tasks in multiple-demand and default mode networks. *Journal of Neuroscience*, *40*(40), 7724-7738

Wen, T., Mitchell, D.J. & Duncan, J. (2020). The functional convergence and heterogeneity of social, episodic, and self-referential thought in the default mode network. *Cerebral Cortex*, *30*(11), 5915-5929

Wen, T., Duncan, J., & Mitchell, D. J. (2019). The time-course of component processes of selective attention. *NeuroImage*, 199, 396-407.

Wen, T., Mitchell, D. J., & Duncan, J. (2018). Response of the multiple-demand network during simple stimulus discriminations. *NeuroImage*, 177, 79-87.

Wen, T., Liu, D. C., & Hsieh, S. (2018). Connectivity patterns in cognitive control networks predict naturalistic multitasking ability. *Neuropsychologia*, 114, 195-202.

Lee, K. J., Hsieh, S., & Wen, T. (2017). Spatial Bayesian hierarchical model with variable selection to fMRI data. *Spatial Statistics*. doi: 10.1016/j.spasta.2017.06.002

Wen, T. & Hsieh, S. (2016). Network-based analysis reveals functional connectivity related to internet addiction tendency. *Front. Hum. Neurosci.* 10:6. doi: 10.3389/fnhum.2016.00006

Wen, T. & Hsieh, S. (2015). Neuroimaging of the joint Simon effect with believed biological and non-biological co-actors. *Front. Hum. Neurosci.* 9:483. doi: 10.3389/fnhum.2015.00483

Wen, T. & Kung, C. C. (2014). Using functional magnetic resonance imaging to explore the flashed face distortion effect. *Journal of Vision*, *14*(12), 29. doi:10.1167/14.12.29

- Guarantors of Brain Travel Grant (2018 & 2019)
- Seton Cavendish Fund (2018)
- Percy Lander Studentship in Preventive Medicine (2017 & 2018)
- Phi Tau Phi Scholastic Honor Society (2015)
- Ministry of Science and Technology Undergraduate Research Grant (2014 – 2015)
- Foundation for the Advancement of Outstanding Scholarship (2014)
- National Science Council Undergraduate Research Grant (2013-2014)

WORKSHOPS

- CIFAR Winter School on the Neuroscience of Consciousness (2018)
- FSL course (2018)
- MEG UK workshop and annual conference (2017)
- York Centre for Vision Research (CVR) Vision Science Summer School (2014)

CONFERENCE PRESENTATIONS

- Cognitive Neuroscience Society Annual Meeting (2018, 2019, 2022)
- Society for Neuroscience Annual Meeting (2018)
- European Conference on Visual Perception (2017)
- Vision Science Society Annual Meeting (2014)

AD HOC REVIEWING

- NeuroImage
- Journal of Neuroscience
- Human Brain Mapping
- Neuroscience & Biobehavioral Reviews
- Scientific Reports
- European Psychiatry