

Timothy B. Weng, Ph.D.

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🔗 [tbweng](#)

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Curriculum Vitae

Education

Postdoctoral Fellow, Department of Diagnostic Medicine, Dell Medical School, The University of Texas at Austin, Austin, TX <u>Advisor:</u> Cameron Craddock	10/2018 – present
PhD, Psychology (Cognitive Neuroscience), The University of Iowa, Iowa City, IA <u>Dissertation:</u> Brain network predictors of exercise behavior change in sedentary older adults: an emotion and decision-making perspective <u>Advisor:</u> Michelle W. Voss <u>Committee:</u> Daniel Tranel, Natalie Denburg, Jatin Vaidya, and Ryan LaLumiere	08/2012 – 09/2018
BS, Psychology (Brain & Cognition), University of Illinois at Urbana-Champaign, Urbana, IL	08/2007 – 05/2011

Technical Expertise

Data science, multivariate statistics, structural/functional magnetic resonance imaging, resting state functional connectivity, software development for fMRI analysis, experimental design, cognitive testing, analysis of saliva biomarkers, psychophysiology

Technologies

Scientific software: FSL, AFNI, FreeSurfer, ANTS, Nipype, Jupyter, Docker & Singularity containers, E-prime, BIOPAC AcqKnowledge

High Performance Computing: SGE, Slurm, AWS cloud computing

Version control: git (GitHub)

Programming Languages

BASH, R, LaTeX, MATLAB, Python, Pandas

Software

Contributions to Open Source Scientific Software (C-PAC)

Configurable Pipeline for the Analysis of Connectomes

Automated processing pipeline for resting state fMRI data

Address: <https://github.com/FCP-INDI/C-PAC>

Role: Contributor, Educator

HBC Lab Resting State Repository

Repository of scripts for processing resting-state fMRI data

Address: <https://github.com/HBClab/RestingState>

Role: Developer, Contributor

GE DICOM Converter

Converts DICOMs from GE MR750w scanner into BIDS-compatible NIfTIs

Publications

Peer-Reviewed

- [1] Chaddock-Heyman L, Loui P, **Weng TB**, Weisshappel R, McAuley E, and Kramer AF (jan 2021). Musical Training and Brain Volume in Older Adults. *Brain Sciences*, 11(1):50. doi:10.3390/brainsci11010050.
- [2] Chaddock-Heyman L, **Weng TB**, Loui P, Kienzler C, Weisshappel R, Drollette ES, Raine LB, Westfall D, Kao S, Pindus DM, Baniqued P, Castelli DM, Hillman CH, and Kramer AF (jul 2021). Brain network modularity predicts changes in cortical thickness in children involved in a physical activity intervention. *Psychophysiology*. doi:10.1111/psyp.13890.
- [3] Chaddock-Heyman L, **Weng TB**, Kienzler C, Weisshappel R, Drollette ES, Raine LB, Westfall DR, Kao SC, Baniqued P, Castelli DM, Hillman CH, and Kramer AF (sep 2020). Brain Network Modularity Predicts Improvements in Cognitive and Scholastic Performance in Children Involved in a Physical Activity Intervention. *Frontiers in Human Neuroscience*, 14. doi:10.3389/fnhum.2020.00346.
- [4] Cole RC, Hazeltine E, **Weng TB**, Wharff C, DuBose LE, Schmid P, Sigurdsson G, Magnotta VA, Pierce GL, and Voss MW (feb 2020). Cardiorespiratory fitness and hippocampal volume predict faster episodic associative learning in older adults. *Hippocampus*, 30(2):143–155. doi:10.1002/hipo.23151.
- [5] Voss MW, **Weng TB**, Narayana-Kumanan K, Cole RC, Wharff C, Reist L, Dubose L, Sigurdsson G, Mills JA, Long JD, Magnotta VA, and Pierce GL (2020). Acute Exercise Effects Predict Training Change in Cognition and Connectivity. *Medicine and science in sports and exercise*, 52(1):131–140. doi:10.1249/MSS.0000000000002115.
- [6] Voss MW, Sutterer M, **Weng TB**, Burzynska AZ, Fanning J, Salerno E, Gothe NP, Ehlers DK, McAuley E, and Kramer AF (jan 2019). Nutritional supplementation boosts aerobic exercise effects on functional brain systems. *Journal of Applied Physiology*, 126(1):77–87. doi:10.1152/jappphysiol.00917.2017.
- [7] Chaddock-Heyman L, **Weng TB**, Kienzler C, Erickson KI, Voss MW, Drollette ES, Raine LB, Kao SC, Hillman CH, and Kramer AF (jan 2018). Scholastic performance and functional connectivity of brain networks in children. *PLOS ONE*, 13(1):e0190,073. doi:10.1371/journal.pone.0190073.
- [8] Pontifex MB, Gwizdala KL, **Weng TB**, Zhu DC, and Voss MW (dec 2018). Cerebral blood flow is not modulated following acute aerobic exercise in preadolescent children. *International Journal of Psychophysiology*, 134:44–51. doi:10.1016/j.ijpsycho.2018.10.007.
- [9] Voss MW, Clark R, Freedberg M, **Weng T**, and Hazeltine E (mar 2018). Striking a chord with healthy aging: memory system cooperation is related to preserved configural response learning in older adults. *Neurobiology of Aging*, 63:44–53. doi:10.1016/j.neurobiolaging.2017.11.001.
- [10] DuBose LE, Voss MW, **Weng TB**, Kent JD, Dubishar KM, Lane-Cordova A, Sigurdsson G, Schmid P, Barlow PB, and Pierce GL (apr 2017). Carotid β -stiffness index is associated with slower processing speed but not working memory or white matter integrity in healthy middle-aged/older adults. *Journal of Applied Physiology*, 122(4):868–876. doi:10.1152/jappphysiol.00769.2016.

- [11] **Weng TB**, Pierce GL, Darling WG, Falk D, Magnotta VA, and Voss MW (mar 2017). The Acute Effects of Aerobic Exercise on the Functional Connectivity of Human Brain Networks. *Brain Plasticity*, 2(2):171–190. doi:10.3233/BPL-160039.
- [12] Voss MW, **Weng TB**, Burzynska AZ, Wong CN, Cooke GE, Clark R, Fanning J, Awick E, Gothe NP, Olson EA, McAuley E, and Kramer AF (may 2016). Fitness, but not physical activity, is related to functional integrity of brain networks associated with aging. *NeuroImage*, 131:113–125. doi:10.1016/j.neuroimage.2015.10.044.
- [13] **Weng TB**, Pierce GL, Darling WG, and Voss MW (jul 2015). Differential effects of acute exercise on distinct aspects of executive function. *Medicine and Science in Sports and Exercise*, 47(7):1460–1469. doi:10.1249/MSS.0000000000000542.
- [14] Voss MW, Carr LJ, Clark R, and **Weng T** (mar 2014). Revenge of the “sit” II: Does lifestyle impact neuronal and cognitive health through distinct mechanisms associated with sedentary behavior and physical activity? *Mental Health and Physical Activity*, 7(1):9–24. doi:10.1016/j.mhpa.2014.01.001.

Other Published Work

- [1] **Weng TB** and Voss MW (2016). Active Voice: Aerobic Exercise Targets Specific Higher-order Brain Functions. *Invited highlighted commentary for the American College of Sports Medicine Bulletin*.

Submitted or In Preparation

- [1] Dubose LE, **Weng TB**, Wharff C, Reist L, Hamilton C, O'Deen A, Dubishar K, Lane-Cordova A, Muellerleile M, Sigurdsson G, Pierce GL, and Voss MW (2021). Association Between Cardiorespiratory Fitness and Cerebrovascular Reactivity to a Breath Hold Stimulus in Older Adults: Influence of Chronic Aerobic Exercise Training.
- [2] **Weng TB**, Vela R, Weber W, Dodla M, Heinsfeld AS, Parker SD, Simon B, Demeter DV, Nugiel T, Whitmore L, Mills K, Church JA, Haberman MR, and Craddock RC (2021). The impact of customized head molds on motion and motion-related artifacts from structural and functional MRI scans in children. doi:https://doi.org/10.1101/2021.03.24.21253213.

Presentations

Selected Conference Posters

- [1] **Weng TB**, Clark R, Wharff C, Reist L, Sigurdsson G, Schmid P, Kirschbaum C, Magnotta VA, Pierce GL, and Voss MW (2018). Psychophysiological markers underlying the affective response to acute exercise in older adults. In *Cognitive Aging Conference*. Atlanta, GA.
- [2] Clark R, **Weng TB**, Wharff C, Reist L, DuBose LE, Darling WG, Schmid P, Sigurdsson G, Magnotta VA, Pierce GL, and Voss MW (2017). Physical Activity and Aerobic Fitness Related to Episodic Associative Learning and Hippocampal Volume in Healthy Older Adults. In *Symposium on Physical Exercise and Brain Health*. Irvine, CA.
- [3] Gwizdala KL, **Weng TB**, Voss MW, and Pontifex MB (2017). The Effect Of Single Bouts Of Exercise On Cerebral Blood Flow In Preadolescent Children. In *North American Society for the Psychology of Sport and Physical Activity*. San Diego, CA.
- [4] DuBose LE, Voss MW, **Weng TB**, Dubishar KM, Lane-Cordova A, Sigurdsson G, Schmid P, and Pierce GL (2016). Higher Aerobic Fitness Is Associated with Lower Cerebrovascular Reactivity in Older Adults Independent of Age and Aortic Stiffness. In *Experimental Biology*. San Diego, CA.

- [5] **Weng TB**, Pierce GL, Darling WG, Falk D, Magnotta VA, and Voss MW (2016). Toward a Hedonic Theory of Exercise Behaviors: Acute Exercise Selectively Increases the Functional Connectivity of Reward and Affective Brain Systems in Older Adults. In *Cognitive Neuroscience Society Annual Meeting*. New York, NY.
- [6] DuBose LE, Voss MW, **Weng TB**, Dubishar KM, Lane-Cordova A, Swift M, Sigurdsson G, Schmid P, and Pierce GL (2015). Lower carotid compliance and greater carotid β -stiffness index is associated with slower processing speed and reduced working memory performance in middle-aged/older healthy adults. In *North American Artery Conference*. Chicago, IL.
- [7] **Weng TB**, Guzman-Velez E, Cooke GE, Herrel S, Burzynska AZ, Wong CN, McAuley E, Kramer AF, Tranel D, and Voss MW (2015). Greater Distribution of Executive Control Networks Supports Cognitive Reserve in Bilingual Older Adults. In *Society for Neuroscience*. Chicago, IL.
- [8] **Weng TB**, Wong CN, Burzynska AZ, Chaddock-Heyman L, Monti JM, McAuley E, Kramer AF, and Voss MW (2015). Age-related de-differentiation of functional brain networks at rest is associated with stability of executive functions. In *Cognitive Neuroscience Society Annual Meeting*. San Francisco, CA.
- [9] Dubose LE, **Weng TB**, Dubishar K, Mani M, Voss MW, and Pierce GL (dec 2014). Higher aortic stiffness and carotid systolic and pulse pressure are selectively associated with lower white matter integrity in the genu and frontal cortex in older healthy adults. In *Artery Research*, volume 8, page 174. doi:10.1016/j.artres.2014.09.028.
- [10] **Weng TB**, Pierce GL, Darling WG, Falk D, Magnotta VA, and Voss MW (2014). Acute increases in functional connectivity following physical exercise are associated with cerebrovascular reactivity. In *Fourth Biennial Conference on Resting State/Brain Connectivity*. Boston, MA.
- [11] **Weng TB**, Pierce GL, Darling WG, Magnotta V, and Voss MW (2014). The acute effects of exercise on large-scale networks of the human aging brain: insights into the protective role of exercise on the brain. In *Cognitive Neuroscience Society Annual Meeting*. Boston, MA.
- [12] **Weng TB**, Wong CN, Burzynska AZ, Chaddock-Heyman L, Monti J, McAuley E, Kramer AF, and Voss MW (2014). Age-related differences in executive function are associated with the differentiation of functional brain networks at rest. In *Cognitive Aging Conference*. Atlanta, GA.
- [13] Sutterer M, Voss MW, Mani M, Wong CN, Cooke GE, Belfi A, **Weng TB**, Tranel D, McAuley E, and Kramer AF (2013). Age-related differences in anterior cingulate-insula connectivity are associated with the fronto-executive but not emotional saliency network. In *Cognitive Neuroscience Society Annual Meeting*. San Francisco, CA.

Oral Presentations

- [1] **Weng TB** (2015). Cognitive affective neuroscience of physical activity and exercise behaviors in older adults. In *Department of Psychology Annual Data Blitz*. Iowa City, IA.
- [2] **Weng TB** (2014). Differential effects of acute exercise on cognitive processes. In *16th Annual James F. Jakobsen Graduate Conference*. Iowa City, IA.
- [3] **Weng TB** (2014). The acute effects of aerobic exercise on functional networks of the aging human brain. In *Department of Psychology Annual Data Blitz*. Iowa City, IA.
- [4] **Weng TB** (2014). The acute effects of exercise on functional networks of the aging human brain. In *Benton Neuropsychology Laboratory Meeting*. Iowa City, IA.
- [5] **Weng TB** (2014). The acute effects of exercise on the brain and cognition. In *Department of Psychology Graduate Research Seminar*. Iowa City, IA.

- [6] **Weng TB** (2013). Examining the acute neurovascular effects of exercise with the arterial spin labeling MRI technique. In *Translational Vascular Physiology Laboratory Meeting*. Iowa City, IA.
- [7] **Weng TB** (2013). The acute effects of exercise as a method of investigating the effects of exercise on the brain and cognition. In *Behavioral & Cognitive Neuroscience Seminar Series*. Iowa City, IA.
- [8] **Weng TB** (2013). The glass half full: plasticity and cognitive aging. In *15th Annual James F. Jakobsen Graduate Conference*. Iowa City, IA.
- [9] **Weng TB** (2011). Teaching an old dog new tricks: The role of practice and inhibitory control on working memory in older adult. In *Division of Brain & Cognition Seminar Series*. Urbana, IL.

Additional Research Experience

Laboratory Manager and Research Assistant , <i>Cognitive Neuroimaging Laboratory</i> , University of Illinois at Urbana-Champaign, Urbana, IL Advisors: Monica Fabiani and Gabriele Gratton	01/2010 – 07/2012
Research Assistant , <i>Cross-Modal Plasticity Laboratory</i> , University of Illinois at Urbana-Champaign, Urbana, IL Advisor: Matthew Dye	08/2011 – 07/2012
Assistant Technical Manager , <i>Diffusive Optical Imaging Laboratory</i> , Beckman Institute, Urbana, IL Advisor: Ed Maclin	06/2011 – 07/2012
Research Assistant , <i>University of Illinois at Urbana-Champaign</i> , Urbana, IL, Korol-Gold Laboratory for Learning & Memory Advisors: Donna Korol	09/2010 – 05/2011
Laboratory Technician , <i>College of Veterinary Medicine</i> , Urbana, IL Supervisors: Lois Hoyer, Dominique Griffon, and Page Fredericks	08/2010 – 05/2011
Laboratory Technician , <i>Human Immunologic Monitoring Facility</i> , University of Chicago, Chicago, IL Supervisor: Yuanyuan Zha	05/2008 – 08/2008

Grants

Graduate & Professional Student Government Research Grant, \$1000, The University of Iowa	2017
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Awards and Fellowships

Elected Trainee for Institutional T32-GM108540-02 (NIH-NIGMS) "Mechanisms of Health and Disease at the Behavioral-Biomedical Interface," The University of Iowa	2014 – 2018
Graduate College Summer Research Fellowship, The University of Iowa	Summer 2017
Post-Comprehensive Research Award, The University of Iowa	Spring 2017
Travel Awards (4)	2014 – 2015
Best Data Blitz Presentation	2014
Graduate College Scholarly Excellence Fellowship, The University of Iowa	2014
Honorable Mention, NSF Graduate Research Fellowship	2014
Interdisciplinary Research Fellowship, The University of Iowa	2014

Dr. Jordan L. Cohen Prize for Excellence in Aging Research, The University of Iowa	2012
Dr. Michael G.H. Coles Award for Excellence in Cognitive Neuroscience Research, University of Illinois	2011
Departmental Distinction, Dept of Psychology, University of Illinois	2011
First Place Poster Award, Annual Biology Research Poster Competition, University of Illinois	2011

Teaching Experience

Teaching Fellow , <i>The University of Iowa</i> , Iowa City, IA PSY 6280 Structural & Functional MRI Methods and Applications (graduate course)	Fall 2014
Teaching Assistant , <i>The University of Iowa</i> , Iowa City, IA PSY 1001 Elementary Psychology	Fall 2013

Service

Assistance with Peer Review , <i>Cerebral Cortex</i> (2015), <i>Brain Connectivity</i> (2014), <i>Medicine & Science in Sports & Exercise</i> (2014, 2017)	
Executive Committee Student Representative , <i>Behavioral-Biomedical Interface Training Program</i> , The University of Iowa	2015 – 2016
Graduate Student Advisory Committee Member , <i>Department of Psychological & Brain Sciences</i> , The University of Iowa	2014 – 2015
Conference Co-Organizer , <i>Modern Brains: Literary Studies and the Cognitive Sciences</i> , University of Illinois	2012
Mentor , <i>Project NEURON: Outreach for Underrepresented Students</i> , University of Illinois	2011
Organizer , <i>Cognitive Neuroimaging Laboratory Undergraduate Journal Club</i> , University of Illinois	2011

Professional Memberships

Society for Neuroscience
Organization for Human Brain Mapping
Cognitive Neuroscience Society

References

Cameron Craddock Department of Diagnostic Medicine The University of Texas at Austin Austin, TX 78712 ✉ cameron.craddock@austin.utexas.edu ☎ +1 (512) 495-5428	Michelle W. Voss Department of Psychological and Brain Sciences The University of Iowa Iowa City, IA 52242 ✉ michelle-voss@uiowa.edu ☎ +1 (319) 335-2057
Daniel Tranel Department of Psychological and Brain Sciences Department of Neurology The University of Iowa Iowa City, IA 52242 ✉ daniel-tranel@uiowa.edu ☎ +1 (319) 384-6050	Laura Chaddock-Heyman 4221 Beckman Institute University of Illinois at Urbana-Champaign Urbana, IL ✉ lchaddo2@illinois.edu ☎ +1 (217) 300-0746