

## Simon W. Davis

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### Academic History

2016-present	Assistant Professor. Department of Neurology Director, Neuroimaging Core, Bryan Alzheimer's Disease Research Center Affiliate, Center for Cognitive Neuroscience
2013-2016	Research Associate. Center for Cognitive Neuroscience / Dept of Psychiatry and Behavioral Sciences. Duke University (Advisor: Roberto Cabeza, Ph.D.)
2011-2013	Research Associate. <i>Department of Experimental Psychology, University of Cambridge.</i> (Advisor: Lorraine K. Tyler, Ph.D.)
2005-2011	Ph.D, Cognitive Neuroscience. <i>Department of Psychological and Brain Sciences, Duke University.</i> (Advisor: Roberto Cabeza, Ph.D.)
2004-2005	M.Sc, Cognitive Neuropsychology. <i>Institute of Cognitive Neuroscience, University College London.</i> (Advisor: Jon Simons, Ph.D.)
1998-2002	B.A, Neurobiology. <i>New College of Florida.</i> (Advisor: Alfred Beulig, Ph.D.)

### Teaching Experience

2010-2006	Teaching Assistant, <i>Duke University</i> Courses: Cognitive Psychology, Functional Neuroimaging, Biological Bases of Behavior, Myths and Mysteries of Memory
2004-2005	Course Demonstrator, <i>University College London</i> Courses: <i>Psychology, Neuropsychology</i> Course Title: Experimental Methods in Psychology
2000-2002	Teaching Assistant, <i>New College of Florida</i> Courses: Neurobiology, Organismic Biology, Biological Psychology.
2000-2001	Research Intern. <i>Marine Mammal Research Center, Mote Marine Laboratory.</i> Faculty Mentor: Gordon Bauer, Ph.D.
2000	Research Intern. <i>Center for Complex Sciences, Florida Atlantic University.</i> Faculty Mentor: J.A.S. Kelso, Ph.D.

### Awards

Duke Institute of Brain Sciences Incubator Award, 2012-2014  
Bye-Fellow, Clare College, Cambridge University, 2011-2012  
Individual NRSA Pre-Doctoral Fellowship, 2007-2011  
Center for the Neural Basis of Cognition Summer REU, 2000  
Center for Complex Sciences, Summer Research Fellowship, 1999  
Leonard S. Florsheim Foundation Scholarship, New College of Florida, 1998-2002

### Professional Associations

Cognitive Neuroscience Society  
Experimental Psychology Society  
Organization for Human Brain Mapping  
Society for Neuroscience

### Ad Hoc Reviewer

Cerebral Cortex  
Cortex  
Human Brain Mapping

Journal of Neuroscience  
Journal of Cognitive Neuroscience  
Laterality  
Neurobiology of Aging  
NeuroImage  
Neuron  
Neuropsychologia

### Publications

Strommer J, Campbell KL, Tyler LK, Henson R, **Davis SW**. White matter health mediates the relationship between cognitive health and physical exercise. *in preparation*.

**Davis SW**, Szymanski AL, Fink TA, Boms H, Hayes SA, Cabeza R. Cooperative Contributions of Structural and Functional Connectivity to Successful Memory in Aging. *in preparation*.

**Davis SW**, Griffiths JD, Joshi K, Henriques R, Correia MM, Henson R, Tyler LK, CamCAN. Similarity between Magnetization and Diffusivity Measures predicts Structural and Functional Changes in Ageing. *in review*.

**Davis SW**, Murphy DM, Luber BL, Lisanby SH, Cabeza R. Cross-hemispheric Connectivity in Older Adults Evidenced by Combined fMRI and TMS. *in review*.

Neacsu A, Luber BM, **Davis SW**, Bernhardt E, Strauman TJ, Lisanby SH. Cognitive-Paired Associative Stimulation (C-PAS): On the use of concurrent fMRI-guided transcranial magnetic stimulation (TMS) and self-system therapy (SST) to treat depression. *in review*

Luber BM, **Davis SW**, Bernhardt E, Neacsu A, Kwapil L, Lisanby SH, Strauman T. 2017. Using neuroimaging to individualize TMS treatment for depression: Toward a new paradigm for imaging-guide intervention. *NeuroImage. in press*.

**Davis SW**, Stanley ML, Moscovitch M, Cabeza R. 2016. Resting-state networks do not determine cognitive function networks. *Language, Cognition and Neuroscience*. 1-5.

Henson RN, Campbell KL, **Davis SW**, Taylor JR, Emery T, Erzinclioglu S. Multiple determinants of lifespan memory differences. *Scientific reports*, 6.

Campbell KL, Samu D, **Davis SW**, Geerligs L, Mustafa A, Tyler LK. 2016. Robust Resilience of the Frontotemporal Syntax System to Aging. *Journal of Neuroscience*. 36: 5214-5227.

Tsvetanov KA, Henson RNA, Tyler LK, **Davis SW**, Shafto MA, Taylor JR, Rowe JB. 2015. The effect of ageing on fMRI: correction for the confounding effects of vascular reactivity evaluated by joint fMRI and MEG in 335 adults. *Human brain mapping*. 36: 2248-2269.

**Davis SW** & Cabeza R. Cross-Hemispheric Collaboration and Segregation Associated with Task Difficulty as Revealed by Structural and Functional Connectivity. *Journal of Neuroscience*. 35: 8191-8200.

Kievit RA, **Davis SW**, Mitchell DJ, Taylor JR, Duncan J, Henson RNA. Distinct aspects of frontal lobe structure mediate age-related differences in fluid intelligence and multitasking. *in press. Nature Communications*.

Madden DJ, Parks EL, **Davis SW**, Diaz MT, Potter GG, Chou YH, Chen NK, Cabeza R. 2014. Age mediation of frontoparietal activation during visual feature search. *NeuroImage*, doi: 10.1016/j.neuroimage.2014.07.053.

**Davis SW**, Zhuang J, Wright P, Tyler LK. Task-related modulation of neurocognitive networks in aging. 2014. *Neuropsychologia*. 63:107-15.

- Hall SA, Rubin DC, Miles A, **Davis SW**, Wing EA, Cabeza R, Berntsen D. 2014. The Neural Basis of Involuntary Episodic Memories. *J Cogn Neurosci*.
- Daselaar SM, **Davis SW**, Iyengar V, Eklund K, Hayes SM, Cabeza R. 2013. Less Wiring, More Firing: Low-Performing Older Adults Compensate for Impaired White Matter with Greater Neural Activity. *Cerebral Cortex*.
- Whalley MG, Kroes MC, Huntley Z, Rugg MD, **Davis SW**, Brewin CR. 2013. An fMRI investigation of posttraumatic flashbacks. *Brain Cogn*. 81:151-9.
- Cantlon JF, **Davis SW**, Libertus M, Brannon E.M, and Pelphrey KA. 2012. The integrity of white matter pathways and numerical cognition in adults and young children. *Learning and Individual Differences*. 21, 672-680.
- Davis SW**, Kragel JE, Madden DJ, Cabeza R. 2011. The architecture of cross-hemispheric communication in aging: Linking behavior to structural and functional connectivity. *Cerebral Cortex*, 21(4), 231-42.
- Madden DJ, Costello MC, Dennis NA, **Davis SW**, Shepler AM, Spaniol J, Bucur B, Cabeza R. 2010. Adult age differences in functional connectivity during executive control. *Neuroimage*, 15, 643-657.
- Davis SW**, Dennis, NA, Buchler, NEG, Madden DJ, White LE, Cabeza R. 2009. Assessing the effects of age on long association fibers using DTI tractography. *NeuroImage*. 46, 530-541.
- Madden, D.J, Spaniol, J, Costello, M, Bucur, B, White LE, Cabeza, R, **Davis, S.W**, Dennis, N.A, Provenzale, J.M, Huettel, S.A. 2009. Cerebral white matter integrity mediates adult age differences in cognitive performance. *Journal of Cognitive Neuroscience*. 21, 289-302.
- Davis SW**, Dennis NA, Daselaar, SM, Fleck, ME, Cabeza, R. 2008. Que PASA? The posterior-anterior shift in aging. *Cerebral Cortex*. 18(5), 1201-1209.
- \*Reviewed by Faculty of 1000, Medicine: Must Read**
- Leow AD, Yanovsky I, Chiang MC, Lee AD, Klunder AD, Lu A, Becker JT, **Davis SW**, Toga AW, Thompson PM. 2007. Statistical properties of Jacobian maps and the realization of unbiased large-deformation nonlinear image registration. *IEEE Trans Med Imaging*. 26(6), 822-832.
- Simons JS, **Davis SW**, Gilbert SJ, Frith CD, Burgess PW. 2006. Discriminating imagined from perceived information engages brain areas implicated in schizophrenia. *NeuroImage*. 32, 696-703.
- Becker JT, **Davis SW**, Hiyashi KM, Meltzer CC, Toga AW, Lopez OL, Thompson PM. 2006. Three-dimensional patterns of hippocampal atrophy in mild cognitive impairment. *Archives of Neurology*. 63, 90-101.
- Carmichael OT, Aizenstein HA, **Davis SW**, Becker JT, Thompson PM, Meltzer CC, Liu Y. 2005. Atlas-based hippocampus segmentation in Alzheimer's disease and mild cognitive impairment. *NeuroImage*. 27, 979-990.

## Presentations

### *Talks*

- Davis SW**, Geib B, Cichinelli R, Woldorff M, Cabeza R. The Psychology of Everyday Things: How perceptual and conceptual features influence memory for objects. *Cognitive Neuroscience Society*, March, 2016.
- Davis SW**, Fink T, Cabeza R. Structural and functional connectivity predicts individual differences in source and item memory. *Cognitive Neuroscience Society, San Francisco, USA, March, 2015*.
- Davis SW & Cabeza R**. The Conditions of Cross-hemispheric Communication. *Society for Neuroscience, 2014*.
- Davis SW**. Using Independent Components Analysis to identify task-related networks in the aging brain. *MRC-CBU ConIG Mtg, February, 2012*.

**Davis SW**, Cabeza R. Structural and functional evidence for frontotemporal shifts in the semantic memory system. *British Neuropsychological Society, April, 2010.*

Tyler LK, **Davis SW**, Shafto MA. The resilient brain: cognition and aging. *The Royal Society, London, 2011.*

**Davis, SW**, Madden DJ, Cabeza R. The architecture of cross-hemispheric communication in the aging brain. *Cognitive Neuroscience Society, 2010.*

**Davis SW**. Diffusion tensor imaging tractography: theory and applications. *Invited workshop, Penn State Department of Psychology, 2009.*

Simons JS, **Davis SW**, Gilbert SJ Frith CD, Burgess PW. Recollecting Imagined Events Engages Brain Areas Implicated in Schizophrenia. *Cognitive Neuroscience Society, 2006.*

#### *Posters*

Murphy DLK, **Davis SW**, Martella A, Cabeza R, Luber B, Lisanby SH. Distal effects of TMS stimulation are mediated by structural connectivity. *Human Brain Mapping, 2014.*

**Davis SW**, Murphy DLK, Lighthall NR, Lisanby SH, Luber B, Cabeza R. Dynamic Reorganization in the Adult Brain: A Combined TMS, fMRI and DTI Study. *Cognitive Neuroscience Society, 2013.*

**Davis SW**, Cabeza R. Functional and structural connectivity underlying the aged brain's response to difficult tasks. *Experimental Psychology Society, January, 2012.*

**Davis SW**, Madden DJ, Cabeza R. The functional significance of interhemispheric communication. *Cognitive Aging Conference, 2010.*

**Davis SW**, Dennis NA, Emery M, Thomas VA, Madden DJ, Cabeza R. Assessment of age-related changes in white matter using tensor-based tractography. *Cognitive Neuroscience Society, 2007.*

**Davis SW**, Dennis NA, Daselaar S, Fleck MS, Cabeza R. Que PASA? The Posterior-Anterior Shift in Aging. *Society for Neuroscience, 2006.*

**Davis SW**, Simons JS, Gilbert SJ, Frith CD, Burgess PW. Recollection of internally generated information subserved by a fronto-thalamic-cerebellar network. *Human Brain Mapping, 2006.*

**Davis SW**, Hayashi KM, Meltzer CC, Thompson PM, Toga AW, Becker JT. Mapping Hippocampal Volume Changes in Alzheimer's Dementia and Mild Cognitive Impairment. *Society for Neuroscience, 2004.*

Price JC, Ziolkowski SK, Klunk WE, Weissfeld LA, Hoge JA, Meltzer CC, **Davis SW**, Lu X, Lopresti BJ, Holt DP, DeKosky ST, Mathis CA. Parametric Analysis of Human Amyloid Imaging Studies in Controls and AD with Pittsburgh Compound-B. *Society for Neuroscience, 2004.*

Liu Y, Tevorovskiy L, Carmichael OT, Kikinis R, Shenton M, Carter C, Stenger VA, **Davis SW**, Aizenstien HA, Becker J.T, Lopez, O.L, Meltzer, C.C. Discriminative MR images feature analysis for automatic schizophrenia and Alzheimer's disease classification. *International Conference on Medical Image Computing and Computer Assisted Intervention, Rennes, France, September 26-30, 2004.*

Prasad KMR, **Davis SW**, Becker JT, Keshavan MS, Sweet RA. Neurobiological Substrates of Alzheimer's Disease With Psychosis: An Exploratory Study of Structural MRI Using a Voxel-Based Morphometric Approach. *Society for Neuroscience, 2003.*

## References

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