

## **R. Nathan Spreng**

### *Curriculum Vitae*

Director, Laboratory of Brain and Cognition  
Human Neuroscience Institute  
Assistant Professor, Rebecca Q. and James C. Morgan Sesquicentennial Faculty Fellow  
Cornell University • Department of Human Development  
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#### **ACADEMIC POSITIONS**

2012 – **Assistant Professor**, Department of Human Development, Cornell University, Ithaca, NY  
2015 – **Adjunct Member**, Graduate Program, Department of Psychology, York University, Toronto, ON

#### **POSTDOCTORAL TRAINING AND EDUCATION**

2008 – 2012 **Postdoctoral Fellow**, Harvard University, Cambridge, MA  
2008 **Postdoctoral Fellow**, Rotman Research Institute at Baycrest, Toronto, ON  
2008 **Ph.D.** (Psychology, Cognitive Neuroscience), University of Toronto, ON  
2003 **M.A.** (Psychology, Brain & Behavior), University of Toronto, ON  
2000 **B.A.** (Psychology), Sarah Lawrence College, Bronxville, NY

#### **RESEARCH GRANTS**

##### Current

2016 – 2017 **Elder Justice Foundation**  
**Principal Investigator**  
Predicting financial exploitation risk in older adults. \$37,760 total.

2012 – 2017 **National Institute of Aging**  
**Co-Investigator** R01 AGO8441 renewal (P.I.: Daniel L. Schacter)  
Studies of Aging Memory. \$100,000 annual.

##### Completed

2014 – 2016 **Alzheimer's Association**  
**Principal Investigator** New Investigator Research Grant (NIRG-14-320049)  
Dynamic brain network changes in healthy aging and Alzheimer's disease. \$100,000 total.

2014 – 2015 **Bronfenbrenner Center for Translational Research, Cornell University**  
**Principal Investigator**, Pilot Study Program for Innovation in Translational Research  
Determinants of financial vulnerability in community-dwelling older adults. \$12,000 total.

2010 – 2015 **National Institute of Mental Health**  
**Co-Investigator** R01 MH060941 renewal (P.I.: Daniel L. Schacter)

Event-Related Neuroimaging of Human Memory Formation. \$250,000 annual

2013 – 2014 **Institute for the Social Sciences, Cornell University**  
**Principal Investigator**, Small Grant Program  
Brain Network Dynamics of Goal-Directed Cognition and Behavior Across the Adult Lifespan.  
\$6,400 total.

2013 – 2015 **Canadian Institute of Health Research**  
**Co-Investigator** CIHR/IRSC Catalyst Grant (P.I.: Gary R. Turner)  
Aging and large-scale brain networks: Using functional connectivity and structural covariance modeling to predict conversion from normal to pathological aging. C\$85,000 total.

## HONORS

2016 *NeuroImage* Best Paper Award for 2015  
2015 – 2016 Institute for the Social Sciences Faculty Fellow  
2013 Named a “Rising Star” by the Association for Psychological Science  
2012 – 2017 Rebecca Q. and James C. Morgan Sesquicentennial Faculty Fellow  
2008 Research Award, Jack and Rita Cathrall Fund, Rotman Research Institute  
2007 – 2008 University of Toronto Doctoral Completion Fellowship  
2002 – 2008 Travel Award, Jack and Rita Cathrall Fund, Rotman Research Institute  
2004 Vivian Smith Advanced Studies Institute of the International Neuropsychological Society Fellow

## PUBLICATIONS

**Journal Articles Published or In Press** († mentee author; \* 100+ citations; \*\* 1000+ citations; total citations: 4574; h-index: 24; i10-index: 35; citation metrics from Google Scholar)

- [48] Dixon, M.L., Andrews-Hanna, J.R., **Spreng, R.N.**, Irving, Z.C. & Christoff, K. (*in press*). Anticorrelations between default and dorsal attention networks vary by default subsystem and across cognitive states. *NeuroImage*. doi: 10.1016/j.neuroimage.2016.12.073.
- [47] †DuPre, E., Luh, W.-M. & **Spreng, R.N.** (2016). Multi-echo fMRI replication sample of autobiographical memory, prospection and theory of mind reasoning tasks. *Scientific Data*, 3, 160116.
- [46] **Spreng, R.N.**, Karlawish, J. & Marson, D.C. (2016). Cognitive, social and neural determinants of diminished decision-making and financial exploitation-risk in aging and dementia: A review and new model. *Journal of Elder Abuse & Neglect*, 28, 320-344.
- [45] Risk, B.B., Matteson, D.S., **Spreng, R.N.** & Ruppert, D. (2016). Spatiotemporal mixed modeling of multi-subject task fMRI via method of moments. *NeuroImage*, 142, 280–292.
- [44] Schmitz, T.W., & **Spreng, R.N.** (2016). Basal forebrain degeneration precedes and predicts the cortical spread of Alzheimer’s pathology. *Nature Communications*, 7, 13249.
- [43] Christoff, K., Irving, Z.C., Fox, K.C.R., **Spreng, R.N.** & Andrews-Hanna, J.R. (2016). Mind-wandering as spontaneous thought: A dynamic framework. *Nature Reviews Neuroscience*, 17, 718–731.
- [42] De Brigard, F., Giovanello, K.S., Stewart, G.W., †Lockrow, A., O’Brien, M.M. & **Spreng, R.N.** (2016). Characterizing the subjective experience of episodic past, future and counterfactual thinking in healthy young and older adults. *Quarterly Journal of Experimental Psychology*, 12, 2358–2375.

- [41] **Spreng, R.N.**, Stevens, W.D., Viviano, J. & Schacter, D.L. (2016). Attenuated anticorrelation between the default and dorsal attention networks with aging: Evidence from task and rest. *Neurobiology of Aging*, 45, 149–160.
- [40] Burrow, A.L., & **Spreng, R.N.** (2016). Waiting with purpose: A reliable but small association between purpose in life and impulsivity. *Personality and Individual Differences*, 90, 187–189.
- [39] Turner, G.R. & **Spreng, R.N.** (2015). Prefrontal engagement and reduced default network suppression co-occur and are dynamically coupled in older adults: The default – executive coupling hypothesis of aging. *Journal of Cognitive Neuroscience*, 27, 2462–2476. *Turner and Spreng are co-first authors.*
- [38] **Spreng, R.N.**, Gerlach, K.D., Turner, G.R. & Schacter, D.L. (2015). Autobiographical planning and the brain: Activation and its modulation by qualitative features. *Journal of Cognitive Neuroscience*, 27, 2147–2157.
- [37] Pillemer, K., Connolly, M.T., Breckman, R., **Spreng, R.N.** & Lachs, M.S. (2015). Elder mistreatment: Priorities for consideration by the White House conference on aging. *Gerontologist*, 55, 320–327.
- [36] Fox, K.C.R., **Spreng, R.N.**, Ellamil, M., Andrews-Hanna, J.R., & Christoff, K. (2015). The wandering brain: Meta-analysis of functional neuroimaging studies of mind-wandering and related spontaneous thought processes. *NeuroImage*, 111, 611–621.
- NeuroImage Best Paper Award for 2015*
- [35] Payne, J.D., Kensinger, E.A., Wamsley, E., **Spreng, R.N.**, Alger, S., Gibler K., Schacter, D.L. & Stickgold, R. (2015). Napping and the selective consolidation of negative aspects of scenes. *Emotion*, 15, 176–186.
- [34] De Brigard, F., **Spreng, R.N.**, Mitchell, J.P. & Schacter, D.L. (2015). Neural activity associated with self, other, and object-based counterfactual thinking. *NeuroImage*, 109, 12–26.
- [33] Szpunar, K.K., **Spreng, R.N.** & Schacter, D.L. (2014). A taxonomy of prospection: Introducing an organizational framework for future-oriented cognition. *Proceedings of the National Academy of Sciences USA*, 111, 18414–18421.
- [32] Gerlach, K.D., **Spreng, R.N.**, Madore, K.P., & Schacter, D.L. (2014). Future planning: Default network activity couples with frontoparietal control network and reward-processing regions during process and outcome simulations. *Social Cognitive & Affective Neuroscience*, 9, 1942–1951.
- [31] †Xu, N., R. **Spreng, R.N.**, & Doerschuk, P.C. (2014). Directed interactivity of large-scale brain networks: Introducing a new method for estimating resting-state effective connectivity MRI. *IEEE ICIP*, 978-1-4799-5751-4, 3508–3512.
- [30] **Spreng, R.N.**, †DuPre, E., Selarka, D., †Garcia, J., Gojkovic, S., †Mildner, J., Luh, W.-M. & Turner, G.R. (2014). Goal-congruent default network activity facilitates cognitive control. *Journal of Neuroscience*, 34, 14108–14114.
- [29] Persson, J., **Spreng, R.N.**, Turner, G.R., Herlitz, A., Morell, A., Stening, E., Wahlund, L.-O. Wikström, J., Söderlund, H. (2014). Sex differences in volume and structural covariance of the anterior and posterior hippocampus. *NeuroImage*, 99, 215–225.
- [28] Hassabis, D., **Spreng, R.N.**, Rusu, A.A., Robbins, C.A., Mar, R.A. & Schacter, D.L. (2014). Imagine all the people: How the brain creates and uses personality models to predict behavior. *Cerebral Cortex*, 24, 1979–1987. *Hassabis and Spreng are co-first authors.*

Featured in Freeman, J.B. & Stolier, R.M. (2014). *The medial prefrontal cortex in constructing personality models. Trends in Cognitive Sciences, 18, 571–572.*

- \*[27] Andrews-Hanna, J.R., Smallwood, J. & **Spreng, R.N.** (2014). The default network and self-generated thought: Component processes, dynamic control, and clinical relevance. *The Year in Cognitive Neuroscience, Annals of the New York Academy of Sciences, 1316, 29–52.*
- [26] Stevens, W.D. & **Spreng, R.N.** (2014). Resting-state functional connectivity MRI reveals active processes central to cognition. *Wiley International Reviews (WIREs) Cognitive Science, 5, 233–245.*
- [25] †Sevinc, G. & **Spreng, R.N.** (2014). Contextual and perceptual brain processes underlying moral cognition: A quantitative meta-analysis of moral reasoning and moral emotions. *Public Library of Science (PLoS) ONE, 9: e87427.*
- [24] Brainerd, C.J., Reyna, V.F., Gomes, C.F.A., Kenney, A.E., Gross, C.J., Taub, E.S. & **Spreng, R.N.** (2014). Dual-retrieval models and neurocognitive impairment. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 40, 41–65.*
- [23] Gaesser, B., **Spreng, R.N.**, McLelland, V.C., Addis, D.R. & Schacter, D.L. (2013). Imagining the future: Evidence for a hippocampal contribution to constructive processing. *Hippocampus, 23, 1150–1161.*
- [22] Mar, R.A., **Spreng, R.N.** & DeYoung, C.G. (2013). How to produce personality neuroscience research with high statistical power and low additional cost. *Cognitive, Affective, & Behavioral Neuroscience, 13, 674–685.*
- [21] **Spreng, R.N.** & Turner, G.R. (2013). Structural covariance of the default network in healthy and pathological aging. *Journal of Neuroscience, 33, 15226–15234.*
- [20] **Spreng, R.N.** (2013). Examining the role of memory in social cognition. *Frontiers in Psychology, 4, 437. Introduction to the Research Topic (special issue), edited by R.N. Spreng*
- [19] **Spreng, R.N.** & Levine, B. (2013). Doing what we imagine: Completion rates and frequency attributes of imagined future events one year after prospection. *Memory, 21, 458–466.*
- [18] Patel, R., **Spreng, R.N.** & Turner, G.R. (2013). Functional brain changes following cognitive and motor skills training: A quantitative meta-analysis. *Neurorehabilitation and Neural Repair, 27, 187–199.*
- \*[17] **Spreng, R.N.**, Sepulcre, J., Turner, G.R., Stevens, W.D. & Schacter, D.L. (2013). Intrinsic architecture underlying the relations among the default, dorsal attention, and frontoparietal control networks of the human brain. *Journal of Cognitive Neuroscience, 25, 74–86.*
- \*[16] Schacter, D.L., Addis, D.R., Hassabis, D., Martin, V.C., **Spreng, R.N.** & Szpunar, K.K. (2012). The future of memory: Remembering, imagining, and the brain. *Neuron, 76, 677–694.*
- [15] **Spreng, R.N.** & Schacter, D.L. (2012). Default network modulation and large-scale network interactivity in healthy young and old adults. *Cerebral Cortex, 22, 2610–2621.*
- \*[14] Patel, R., **Spreng, R.N.**, Shin, L.M. & Girard, T.A. (2012). Neurocircuitry models of post-traumatic stress disorder and beyond: A meta-analysis of functional neuroimaging studies. *Neuroscience & Biobehavioral Reviews, 36, 2130–2142.*
- \*[13] **Spreng, R.N.** (2012). The fallacy of a “task-negative” network. *Frontiers in Psychology, 3, 145.*

- \*[12] Turner, G.R. & **Spreng, R.N.** (2012). Executive functions and neurocognitive aging: Dissociable patterns of brain activity. *Neurobiology of Aging*, 33, 826.e1–826.e13.
- [11] **Spreng, R.N.** & Mar, R.A. (2012). I remember you: A role for memory in social cognition and the functional neuroanatomy of their interaction. *Brain Research*, 1428, 43–50.
- [10] **Spreng, R.N.**, Drzezga, A., Diehl-Schmid, J., Kurz, A., Levine, B. & Pernecky, R. (2011). Relationship between occupation attributes and brain metabolism in frontotemporal dementia. *Neuropsychologia*, 49, 3699–3703.
- [9] Cusi, A., MacQueen, G., **Spreng, R.N.** & McKinnon, M.C. (2011). Altered empathic responding in major depressive disorder: Relation to symptom severity, illness burden, and psychosocial outcome. *Psychiatry Research*, 188, 231–236.
- \*[8] Gerlach, K.D., **Spreng, R.N.**, Gilmore, A.W. & Schacter, D.L. (2011). Solving future problems: Default network and executive activity associated with goal-directed mental simulations. *NeuroImage*, 55, 1816–1824.
- \*[7] **Spreng, R.N.**, Stevens, W.D., Chamberlain, J., Gilmore, A.W. & Schacter, D.L. (2010). Default network activity, coupled with the frontoparietal control network, supports goal-directed cognition. *NeuroImage*, 53, 303–317.
- [6] **Spreng, R.N.**, Rosen, H., Strother, S., Black, S., Chow, T., Diehl-Schmid, J., Freedman, M., Graff-Radford, N., Hodges, J., Lipton, A., Mendez, M., Morelli, S., Miller, B. & Levine, B. (2010). Occupation attributes relate to location of atrophy in frontotemporal lobar degeneration. *Neuropsychologia*, 48, 3634–3641.
- \*[5] **Spreng, R.N.**, Wojtowicz, M. & Grady, C. (2010). Reliable differences in brain activity between young and old adults: A quantitative meta-analysis across multiple cognitive domains. *Neuroscience & Biobehavioral Reviews*, 34, 1178–1194.
- \*[4] **Spreng, R.N.** & Grady, C. (2010). Patterns of brain activity supporting autobiographical memory, prospection and theory-of-mind and their relationship to the default mode network. *Journal of Cognitive Neuroscience*, 22, 1112–1123.
- \*\*[3] **Spreng, R.N.**, Mar, R.A. & Kim, A.S.N. (2009). The common neural basis of autobiographical memory, prospection, navigation, theory of mind and the default mode: A quantitative meta-analysis. *Journal of Cognitive Neuroscience*, 21, 489–510.
- \*[2] **Spreng, R.N.**, McKinnon, M.C., Mar, R.A. & Levine, B. (2009). The Toronto Empathy Questionnaire: Scale development and initial validation of a factor-analytic solution to multiple empathy measures. *Journal of Personality Assessment*, 91, 62–71.
- \*[1] **Spreng, R.N.** & Levine, B. (2006). The temporal distribution of past and future autobiographical events across the lifespan. *Memory & Cognition*, 34, 1644–1651.

### **Published Chapters and Books**

- [7] **Spreng, R.N.**, Shoemaker, L. & Turner, G.R. (forthcoming). Executive functions and neurocognitive aging. In Goldberg, E, ed. *Executive functions in health and disease*. Academic Press: Elsevier
- [6] Andrews-Hanna, J.R., Fox, K.C.R., Irving, Z.C., **Spreng, R.N.** & Christoff, K. (forthcoming). The neuroscience of spontaneous thought: An evolving, interdisciplinary field. In Fox, K. C. R. and Christoff, K., eds.

*The Oxford Handbook of Spontaneous Thought: Mind-wandering, Creativity, Dreaming, and Clinical Conditions*.  
New York: Oxford University Press.

- [5] †DuPre, E. & **Spreng, R.N.** (forthcoming). Spontaneous thought gets stuck with rumination. In Fox, K. C. R. and Christoff, K., eds. *The Oxford Handbook of Spontaneous Thought: Mind-wandering, Creativity, Dreaming, and Clinical Conditions*: New York: Oxford University Press.
- [4] †Laurita, A.C. & **Spreng, R.N.** (forthcoming). The hippocampus and social cognition. In D.E. Hannula & M.C. Duff (Eds). *Hippocampus from Cells to Systems: Structure, Connectivity, and Functional Contributions to Memory and Flexible Cognition*. New York, NY: Springer.
- [3] Szpunar, K.K., **Spreng, R.N.**, & Schacter, D.L. (2016). Toward a taxonomy of future thinking. In Michaelian, K., Klein, S.B., & Szpunar, K.K. (Eds). *Seeing the future: Theoretical perspectives on future-oriented mental time travel*. Oxford: Oxford University Press, pp. 21-35.
- [2] **Spreng, R.N.** & Andrews-Hanna, J.R. (2015). The default network and social cognition. In A.W. Toga (Ed), *Brain Mapping: An Encyclopedic Reference*. Academic Press: Elsevier, pp. 165-169.
- [1] **Spreng, R.N.**, ed. (2014). *Examining the role of memory in social cognition*. Lausanne, Switzerland: Frontiers Media. ISBN 978-2-88919-189-5.

### Essays

**Spreng, R.N.** & Mele, N. The Time Is Now to Bring the Fight to Dementia. *Huffington Post*, January 29, 2014.

### Published Abstracts

- Spreng, R.N.** & Schacter, D.L. (2011). Autobiographical and visuospatial planning in younger and older adults: An fMRI study. *Gerontologist*, 51, 538.
- Mar, R.A. & **Spreng R.N.** (2011). Neural overlap between memory and social cognition during the resting state. *Frontiers in Human Neuroscience*, doi: 10.3389/conf.fnhum.2011.207.00162
- Spreng, R.N.**, Rosen, H., Strother, S., Black, S., Chow, T., Diehl-Schmid, J., Freedman, M., Graff-Radford, N., Hodges, J., Lipton, A., Mendez, M., Morelli, S., Miller, B., & Levine, B. (2008). Occupation attributes relate to origin of atrophy in frontotemporal lobar degeneration. *Dementia and Geriatric Cognitive Disorders*, 26, 1-94.
- Spreng, R.N.**, Rosen, H., Chow, T., Morelli, S., Freedman, M., Black, S.E., Miller, B. & Levine, B (2005). Career selection in frontotemporal lobar degeneration: Relationship to localization of atrophy. *Journal of the International Neuropsychological Society*, 11(Suppl.S1), 106.
- Spreng, R.N.**, Sengdy, P. & Levine, B. (2005). The distribution of autobiographical memories and plans across the lifespan. *Journal of the International Neuropsychological Society*, 11(Suppl.S1), 2-3.
- Spreng, R.N.** & Levine, B. (2003). Temporal distribution of autobiographical thought over past and future. *The Clinical Neuropsychologist*, 17(1), 119.

## TEACHING EXPERIENCE

### Cornell University, Ithaca NY

Spring 2016	<i>Resting-State Functional MRI: Methodological innovation &amp; challenges</i>
Spring 2015, 2016	<i>Network Neuroscience: Selected Topics</i>
Spring 2013 – 2015	<i>Introduction to functional MRI analysis for human neuroimaging</i>
Fall 2013, 2014, 2016	<i>Human Brain and Mind: Introduction to cognitive neuroscience &amp; neurology</i>

### University of Toronto, St. George Campus

Summer 2006	<i>Introduction to Physiological Psychology</i>
Summer 2005	<i>Cognitive Neuroscience</i>

## REVIEWING & EDITING

### Consulting Editor

*Perspectives in Psychological Sciences* (interim Associate Editor, 2015 – 2016)

### Guest Editor

*Frontiers in Cognition* Research Topic: Examining the role of memory in social cognition.

### Review Editor

*Frontiers in Brain Imaging Methods* (2012 – present)

### *Ad hoc* Reviewer

*Alzheimer's & Dementia* • *American Journal of Psychiatry* • *Assessment* • *Biological Psychiatry* • *Biology of Mood & Anxiety Disorders* • *Brain and Behavior* • *Brain and Cognition* • *Brain Connectivity* • *Brain Imaging and Behavior* • *Brain Research* • *Cerebral Cortex* • *Cognitive, Affective, & Behavioral Neuroscience* • *Consciousness and Cognition* • *Emotion Review* • *European Journal of Neuroscience* • *Frontiers in Cognition* • *Frontiers in Human Neuroscience* • *Human Brain Mapping* • *International Journal of Neuropsychopharmacology* • *JAMA Psychiatry* • *Journal of Autism and Developmental Disorders* • *Journal of Cognitive Neuroscience* • *Journal of Experimental Psychology: General* • *Journal of Experimental Psychology: Learning, Memory, and Cognition* • *Journal of Gerontology: Psychological Sciences* • *Journal of Neuroscience* • *Journal of Personality and Social Psychology* • *Journal of Psychopharmacology* • *Journal of Research in Personality* • *Journal of the International Neuropsychological Society* • *Memory* • *Motivation and Emotion* • *Nature Neuroscience* • *Nature Human Behavior* • *Neurobiology of Aging* • *Neurobiology of Learning and Memory* • *NeuroImage* • *Neuron* • *Neuropsychologia* • *Proceedings of the National Academy of Sciences* • *Psychiatry Research: Neuroimaging* • *Psychological Science* • *Psychopathology* • *Public Library of Science (PLOS) ONE* • *Rehabilitation Research and Practice*

### Grants

Austrian Science Fund  
European Research Council  
Fonds de recherche du Québec – Nature et technologies (Canada)  
Medical Research Council (MRC), United Kingdom  
Netherlands Organisation for Scientific Research (NWO)

## PROFESSIONAL MEMBERSHIPS

Association for Psychological Science • Organization for Human Brain Mapping • Society for Cognitive Neuroscience • Society for Neuroscience

## PROFESSIONAL TRAINING

- 2016 Alan Alda Center for Communicating Science and the Kavli Institute at Cornell, Ithaca, USA  
*Science Communications Workshop*
- 2012 Center for Teaching Excellence, Cornell University, Ithaca, USA  
*Junior Faculty Course Design Institute*
- 2009 Martinos Center for Biomedical Imaging, Charlestown MA, USA  
*Near-Infrared Spectroscopy and Diffuse Optical Tomography Visiting Fellowship Course*
- 2009 Martinos Center for Biomedical Imaging, Charlestown MA, USA  
*SPM8 Workshop*
- 2008 Behavioural Research and Imaging Network (BRAIN), Toronto, ON, Canada  
*Workshop on Multivariate Analysis of Neuroimaging Data*
- 2008 Rotman Research Institute at Baycrest, Toronto, ON, Canada  
*Neuroimaging: Experimental Design, Methods and Analysis*
- 2004 The International Neuropsychological Society's Vivian Smith Advanced Studies Institute, Xylokastro, Greece  
*The Frontal Lobes*
- 2003 Medical College of Wisconsin, WI, USA  
*Introductory Course in Functional Magnetic Resonance Imaging*

## INVITED TALKS & LECTURES

*Network dynamics and neurocognitive aging.* Multi-disciplinary Perspectives in Aging Research Symposium. The York University Centre for Aging Research and Education & Canadian Association on Gerontology – Student Connection, York University, ON, Canada (May, 2016).

*Determinants of Financial Vulnerability in Community-Dwelling Older Adults: A Pilot Research Study.* Bronfenbrenner Center for Translational Research, Cornell University, Ithaca, NY, USA (October, 2015).

*The default network and self-generated thought: component processes, dynamic control and clinical relevance.* Memory and Aging Center Colloquium, University of California at San Francisco, CA, USA (May, 2015).

*Default and executive network interactivity involved in goal-directed cognition.* Institute of Cognitive Science, Intermountain Neuroimaging Consortium Colloquium, Colorado University at Boulder, CO, USA (May, 2015).

*The default network and self-generated thought: component processes and dynamic control.* National Institutes of Health, Science event lecture, Bethesda, MD, USA (April, 2015).

*Default and executive network interactivity involved in goal-directed cognition.* Department of Psychology Colloquium, New York University, NY, USA (February, 2015).

*Default and executive network interactivity involved in goal-directed cognition.* Toronto Western Research Institute Imaging Rounds, Toronto Western Hospital, ON, Canada (October, 2014).

*The default network and self-generated thought: component processes and dynamic control.* Duke Institute for Brain Sciences, Center for Cognitive Neuroscience Colloquium, Duke University, Raleigh NC, USA (May, 2014).

*Imagine all the people: Neuroimaging evidence for memory's role in navigating the social world.* Science Seminar Series, Sarah Lawrence College, Bronxville, NY, USA (November, 2013).

*Face in the crowd: Sociomnemonic influences on working memory.* Cognitive Science @ Cornell's Anniversary Symposium. Cornell University, Ithaca, NY, USA (October, 2013)



*Goal-directed cognition and large-scale network interactivity.* Brownbag, Phyllis Green and Randolph Cowen Institute for Pediatric Neuroscience, Child Mind Institute, New York University School of Medicine, NY, USA (May, 2013).

*Imagine all the people: Neuroimaging evidence for memory's role in navigating the social world.* Neurobiology and Behavior Seminar Series, Department of Neurobiology and Behavior. Cornell University, Ithaca, NY, USA (February, 2013).

*Goal-directed cognition and large-scale network interactivity.* Neuropsychology Seminar Series, Department of Psychology. Queens College, City University of New York, USA (February, 2013).

*Large-scale brain network interactivity: Implications for goal-directed cognition and aging.* Colloquium Series, Department of Psychology. Cornell University, Ithaca, NY, USA (January, 2013).

*Imagine all the people: Neuroimaging evidence for memory's role in navigating the social world.* Program for Culture, Brain, Development, and Mental Health Colloquium, Foundation for Psychocultural Research and UCLA, Los Angeles, CA, USA (November, 2012).

*Functional neuroanatomy of self-projection: Autobiographical and social contributions to imagination.* Neuroscience Day at Cornell. Cornell University, Ithaca, NY, USA (October, 2012)

*Imagine all the people: Neuroimaging evidence for memory's role in navigating the social world.* Social Brain Sciences Colloquium. Dartmouth University, Hanover, NH, USA (September, 2012).

*Large-scale brain network interactivity and aging.* Human Development Brown Bag Colloquium. Cornell University, Ithaca, NY, USA (September, 2012).

*Neural correlates of autobiographical planning and the intrinsic connectivity between large-scale brain networks.* Advanced Laboratory in Cognitive Neuroscience & Memory Research Seminar. Harvard University, Cambridge, MA, USA (March, 2012).

*Functional neuroanatomy of self-projection: Autobiographical and social contributions to imagination.* Conversations on Mind, Brain & Behavior. Notre Dame, South Bend, IN, USA (March, 2012).

*An examination of large-scale brain networks' involvement in goal-directed cognition: Partial least squares and graph-analytic theory approaches to fMRI data.* Quantitative Studies Group Colloquia. Notre Dame, South Bend, IN, USA (March, 2012).

*Functional neuroanatomy of simulation: fMRI evidence from episodic simulation and mental inference judgments of the self and others.* Advanced Laboratory in Cognitive Neuroscience & Memory Research Seminar. Harvard University, Cambridge, MA, USA (October, 2011).

*Changes in large-scale network coupling, but not task-related activation, with healthy aging.* Brain Aging Neuroimaging Group (BANG!). Massachusetts General Hospital, Martinos Center for Biomedical Imaging, Charlestown, MA, USA (May, 2011).

*Integrity of default, attention and control networks with advancing age: Evidence from autobiographical and visuospatial planning.* Advanced Laboratory in Cognitive Neuroscience & Memory Research Seminar. Harvard University, Cambridge, MA, USA (April, 2011).

*The cognitive neuroscience of future-oriented thinking: Implications for memory, social cognition and aging.* Science Luncheon Series, Center for Vital Longevity, Dallas, TX, USA (March, 2011).

*The Default Network: Relationship to cognition and resting-state networks.* Sunnybrook Hospital, Neuroimaging Research Rounds, Toronto, ON, Canada (March, 2011).

*Default, attention and control network interactivity: Evidence from task-evoked and resting-state neuroimaging studies.* Rotman Rounds, Rotman Research Institute at Baycrest, Toronto, ON, Canada (March, 2011).

*The Default Network: Relationship to cognition and resting-state networks.* Boston VA Neuroimaging Research Lecture Series, Boston, MA, USA (March, 2011).

*The cognitive neuroscience of future-oriented thinking.* Cognition, Brain & Behavior Research Seminar. Harvard University, Cambridge, MA, USA (December, 2010).

*I remember you: A role for memory in social cognition and the functional neuroanatomy of their interaction.* Aging, Cognition & Culture Seminar, Brandeis University, Waltham, MA, USA (July, 2010).

*Core Network Cognition.* Toronto Western Research Institute Imaging Rounds, Toronto Western Hospital, ON, Canada (October, 2009).

*Default Network Cognition.* Harvard Medical School Neurophysiology Seminar, Boston, MA, USA (July, 2009).

*Multiple pathways to the future: Brain networks that support autobiographical and visuospatial planning.* Advanced Laboratory in Cognitive Neuroscience & Memory Research Seminar. Harvard University, Cambridge, MA, USA (May, 2009).

*Behavioral and Neural Elements of Self-Projection.* Advanced Laboratory in Cognitive Neuroscience & Memory Research Seminar. Harvard University, Cambridge, MA, USA (November, 2008).

*A common neural basis of autobiographical memory, prospection, navigation and theory-of-mind within the default network?* Toronto Western Research Institute Imaging Rounds, Toronto Western Hospital, ON, Canada (April, 2008).

*Does your job change your brain, or does your brain change your job? The relationship of occupation to atrophy in frontotemporal dementia.* Rotman Rounds, Rotman Research Institute at Baycrest, Toronto, ON, Canada (April, 2008).

## PRESENTATIONS AT MEETINGS AND SYMPOSIA

### Talks

Schmitz, T.R. & **Spreng, R.N.** (November, 2016). Basal forebrain degeneration precedes and predicts the cortical spread of Alzheimer's pathology. Society for Neuroscience, Annual Meeting, San Diego, CA, USA.

**Spreng, R.N.** (June, 2016). Default and executive network interactivity involved in goal-directed cognition. Organization for Human Brain Mapping Annual Meeting, Geneva, Switzerland.

**Spreng, R.N.** (May, 2016). Social and cognitive dimensions of interpersonal vulnerability in older adulthood. Opportunities for Advancing Behavioral and Social Research on Aging, APS Pre-Conference sponsored by the National Institute on Aging. Chicago, IL, USA.

**Spreng, R.N.**, Karlawish, J. & Marson, D. (October, 2015). Risk Factors: Diminished Cognitive/Decisional Capacity (Break out session). NIH Workshop: Multiple Approaches to Understanding and Preventing Elder Abuse. National Institutes of Health, Bethesda, MD, USA.

**Spreng, R.N.** (May, 2015). Understanding why older adults are vulnerable to financial exploitation and abuse. Institute on Aging and the Department of Medical Ethics and Health Policy Annual Retreat, Aging with Financial Security. Smilow Center for Translational Research, University of Pennsylvania, Philadelphia, PA, USA.

- Stevens, W.D., **Spreng, R.N.**, Viviano, J., Schacter, D.L. (November, 2014). Age-related dedifferentiation of intrinsic functional connectivity both within and between the default and dorsal attention networks. Society for Neuroscience, Annual Meeting, Washington DC, USA.
- Spreng, R.N.** (February, 2014). The default network and self-generated thought: component processes and dynamic control. The default mode network in aesthetics and creativity, symposium hosted by the Italian Academy for Advanced Studies in America at Columbia University in cooperation with the College of Arts and Science at New York University, New York, NY, USA.
- Spreng, R.N.**, Turner, G.R. (November, 2013). Structural covariance of the default network in healthy and pathological aging. Society for Neuroscience, Annual Meeting, San Diego, CA, USA.
- Spreng, R.N.**, Schacter, D.L. (January, 2012). Age-related differences in medial prefrontal connectivity during autobiographical planning. Social-Personality Gerontology preconference to the Society of Personality and Social Psychology Annual Meeting, San Diego, CA, USA.
- Spreng, R.N.**, Schacter, D.L. (November, 2011) Autobiographical and visuospatial planning in young and old adult: An fMRI study. Gerontological Society of America Annual Meeting, Boston, MA, USA.
- Stevens, W.D., **Spreng, R.N.**, Gaessar, B., Schacter, D.L. (June, 2011). Image-Invariant Neural Priming of Faces is Associated with Changes in Functional Connectivity of FFA. Organization for Human Brain Mapping Annual Meeting, Quebec City, Canada. *Also presented as a poster.*
- Spreng, R.N.** (March, 2011) The shared functional neuroanatomy of theory of mind and autobiographical memory. Eastern Psychological Society Annual Meeting, Boston, MA, USA.
- Spreng, R.N.** (December, 2010). Default, attention and control network interactivity during goal-directed planning. Charles River Association for Memory, Cambridge, MA, USA.
- Spreng, R.N.**, Gilmore, A.W., Schacter, D.L. (April, 2010). Levels of difficulty in autobiographical and visuospatial planning differentially modulate core, dorsal attention and control network activity. Slide presentation at the Cognitive Neuroscience Society Annual Meeting, Montreal, QC, Canada.

## Posters

- <sup>†</sup>Lam J., Turner, G.R. & **Spreng, R.N.** (November, 2016). Dynamic default network engagement as a function of stimulus familiarity and task performance. Society for Neuroscience, Annual Meeting, San Diego, CA, USA.
- De Brigard, F., Stewart, G.W., Parikh, N. & **Spreng, R.N.** (November, 2016). A quantitative meta-analysis of neuroimaging studies on counterfactual thinking. Society for Neuroscience, Annual Meeting, San Diego, CA, USA.
- <sup>†</sup>Xu, N., Doerschuk, P.C. & **Spreng, R.N.** (August, 2016). What are the most talkative brain regions? 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Orlando, FL, USA.
- Chong, M., Bhushan, C., Joshi, A.A., Haldar, J.P., **Spreng, R.N.** & Leahy, R.M. (June, 2016). Individual performance of resting fMRI parcellation with group connectivity priors. Organization for Human Brain Mapping Annual Meeting, Geneva, Switzerland.

- †Laurita, A.C. & **Spreng, R.N.** Neural representations of adult attachment. (April, 2016) Social & Affective Neuroscience Society Annual Meeting, New York City, NY, USA.
- †DuPre, E., †Lockrow, A., Luh, W.-M. & **Spreng, R.N.** (April, 2016). Age-related changes in the neural correlates of remembering, imagining, and mentalizing. Cognitive Neuroscience Society Annual Meeting, New York City, NY, USA.
- †Sevinc, G. & **Spreng, R.N.** (April, 2016). The processing of moral salience during a semantic association task. Cognitive Neuroscience Society Annual Meeting, New York City, NY, USA.
- Markello, R., †Lockrow, A., Luh, W.-M., **Spreng, R.N.** & Anderson, A. (April, 2016). Heart rate variability reveals brain-body loops in the insular cortex. Cognitive Neuroscience Society Annual Meeting, New York City, NY, USA.
- Parikh, N., Ruzic, L., Stewart, G.W., **Spreng, R.N.** & De Brigard, F. (April, 2016). Neural effects of plausibility during episodic and semantic counterfactual thinking. Cognitive Neuroscience Society Annual Meeting, New York City, NY, USA.
- †DuPre, E. & **Spreng, R.N.** (October, 2015). Relationship between large-scale cortical networks estimated by structural covariance and resting-state functional connectivity MRI. Society for Neuroscience, Annual Meeting, Chicago, IL, USA.
- †Ferguson, M., Anderson, J., & **Spreng, R.N.**, (June, 2015). Multivariate network patterns relate behavior to resting-state functional connectivity MRI. Organization for Human Brain Mapping Annual Meeting, Honolulu, HI, USA.
- Chong, M., Joshi, A., Haldar, J., DuPre, E., Luh, W.-M., Shattuck, D., **Spreng, R.N.**, & Leahy, R. (June, 2015). A group approach to functional cortical parcellation from resting-state fMRI. Organization for Human Brain Mapping Annual Meeting, Honolulu, HI, USA.
- Spreng, R.N.**, Daley, M., & Turner, G.R. (June, 2014). Evaluating network thresholding methods for fMRI. Organization for Human Brain Mapping Annual Meeting, Hamburg, Germany.
- Spreng, R.N.**, †DuPre, E., Selarka, D. †Gojkovic, S., †Mildner, J., †Kurkela, K. & Turner, G.R. (April, 2014). Contextually relevant default network activity facilitates working memory performance. Cognitive Neuroscience Society Annual Meeting, Boston, MA, USA.
- †DuPre, E., Marusak, H.A., Gotlib, I.H., Thomason, M.E., **Spreng, R.N.** (April, 2014). Developmental trajectory of functional connectivity of the default network. Cognitive Neuroscience Society Annual Meeting, Boston, MA, USA.
- Xu, N., **Spreng, R.N.**, Doerschuk, P.C. (April, 2014). Directed interactivity of large-scale brain networks: Introducing a new method for estimating resting-state effective connectivity MRI. Cognitive Neuroscience Society Annual Meeting, Boston, MA, USA.
- Madore, K.P., **Spreng, R.N.**, Schacter, D.L. (April, 2014). Episodic simulation and prospective memory: Correlates of sustained executive activity. Cognitive Neuroscience Society Annual Meeting, Boston, MA, USA.
- Lemire-Rodger, S., **Spreng, R.N.**, Selarka, D., Turner, G.R. (April, 2014). Fractionating executive control in the human brain. Cognitive Neuroscience Society Annual Meeting, Boston, MA, USA.

- Persson, J., **Spreng, R.N.**, Turner, G.R., Herlitz, A., Morell, A., Stening, E., Wahlund, L.-O. Wikström, J., Söderlund, H. (April, 2014). Sex differences in volume and structural covariance of the anterior and posterior hippocampus. Cognitive Neuroscience Society Annual Meeting, Boston, MA, USA.
- De Brigard, F., **Spreng, R.N.**, Mitchell, J.P., Schacter, D.L. (November, 2013). Neural activity associated with self, other, and object-based counterfactual thinking. Society for Neuroscience, Annual Meeting, San Diego, CA, USA.
- Spreng, R.N.** & Schacter, D.L. (June, 2013). Attenuated anticorrelation with aging: Evidence from an autobiographical planning task. Organization for Human Brain Mapping Annual Meeting, Seattle, WA, USA
- Spreng, R.N.**, Gerlach, K.D., Schacter, D.L. (April, 2013). Default network and executive control correlates of autobiographical plans and their qualitative features revealed by parametric modulation analyses. Cognitive Neuroscience Society Annual Meeting, San Francisco, CA, USA.
- Zhang, G., Ke, Z., Cain, M., **Spreng, R.N.** (July, 2012). Identifying subsystems of the default network using dynamic factor analysis. Developing Novel Statistical Methods in NeuroImaging preconference to the Joint Statistical Meeting, San Diego, CA, USA.
- Spreng, R.N.**, Hassabis, D., Robbins, C., Schacter, D.L. (November, 2011). Functional neuroanatomy of simulation: fMRI evidence from episodic simulation and mental inference judgments of the self and others. Society for Neuroscience, Washington DC, USA.
- Mar, R.A., **Spreng, R.N.** (September, 2011). Neural Overlap between Memory and Social Cognition during Resting State. 11th International Conference on Cognitive Neuroscience, Mallorca, Spain.
- Stevens, W.D., **Spreng, R.N.**, Gaassar, B., Schacter, D.L. (June, 2011). Image-Invariant Neural Priming of Faces is Associated with Changes in Functional Connectivity of FFA. Organization for Human Brain Mapping Annual Meeting, Quebec City, Canada. *Also presented as a talk.*
- Spreng, R.N.**, Sepulcre, J., Schacter, D.L. (June, 2011). Intrinsic connectivity within and between the default, attention and control networks of the brain. Organization for Human Brain Mapping Annual Meeting, Quebec City, Canada.
- Strother, S.C., Oder, A.E. **Spreng, R.N.**, Spring, R., Grady, C.G. (August, 2010). The NPAIRS Computational Statistics Framework for Data Analysis in Neuroimaging. Annual International Conference on Computational Statistics, Paris, France.
- Oder, A.E., **Spreng, R.N.**, Somji, I., Churchill, N.W., Strother, S.C. (June, 2010). PLSNPAIRS: An Open Software Package for Data-driven Analysis of fMRI Data in a Resampling Framework. Organization for Human Brain Mapping Annual Meeting, Barcelona, Spain.
- Gerlach, K.D., Wig, G.S., **Spreng, R.N.**, Gilmore, A.W., Schacter, D.L. (June, 2010). Neural activity associated with goal-directed simulation of future events. Organization for Human Brain Mapping Annual Meeting, Barcelona, Spain.
- Spreng, R.N.**, Gilmore, A.W., Schacter, D.L. (January, 2010). The cognitive neuroscience of autobiographical planning: Implications for aging. Center for Vital Longevity, Dallas, TX, USA.

- Spreng, R.N.**, Chamberlain, J., Gilmore, A.W., Stevens, W.D., Schacter, D.L. (December, 2009). The neural basis of autobiographical and visuospatial planning. Charles River Association for Memory, Cambridge, MA, USA.
- Spreng, R.N.**, Chamberlain, J., Gilmore, A.W., Stevens, W.D., Schacter, D.L. (October, 2009). The neural basis of autobiographical and visuospatial planning. Society for Neuroscience, Chicago, IL, USA.
- Stevens, W.D., Gaessar, B., **Spreng, R.N.**, Schacter, D.L. (October, 2009). Exposure to variable images of unfamiliar faces improves subsequent face-recognition and is associated with image-invariant neural priming across distributed brain regions. Society for Neuroscience, Chicago, IL, USA.
- Spreng, R.N.**, Rosen, H., Strother, S., Black, S., Chow, T., Diehl-Schmid, J., Freedman, M., Graff-Radford, N., Hodges, J., Lipton, A., Mendez, M., Morelli, S., Miller, B., Levine, B. (September, 2008). Occupation attributes relate to origin of atrophy in frontotemporal lobar degeneration. International Conference on Frontotemporal Dementia, Rotterdam, The Netherlands.
- Mar, R.A., Kim, A.S.N., **Spreng, R.N.** (November, 2007). The neural basis of projecting the self into narratives. Paper presented at the Theory of Mind and Literature Conference, Purdue University, West Lafayette, Indiana, USA.
- Spreng, R.N.**, Rosen, H., Chow, T., Morelli, S., Freedman, M., Black, S.E., Miller, B., Levine, B. (February, 2005). Career selection in frontotemporal lobar degeneration: Relationship to localization of atrophy. Poster presented at the 33rd Annual International Neuropsychological Society Meeting, St. Louis, Missouri, USA.
- Spreng, R. N.**, Sengdy, P., Levine, B. (February, 2005). The distribution of autobiographical memories and plans across the lifespan. Poster presented at the 33rd Annual International Neuropsychological Society Meeting, St. Louis, Missouri, USA.
- Spreng, R. N.**, McKinnon, M., Binns, M., Levine, B. (January, 2005). Re-assessing empathy: A factor-analytic solution to multiple self-report empathy scales. Poster presented at the 6th Annual Convention of the Society for Personality and Social Psychology, New Orleans, Louisiana, USA.
- Spreng, R. N.**, Levine, B. (September, 2003). Prospective and retrospective autobiographical event distribution across the lifespan. Poster presented at the Brenda Milner Symposium, Montreal Neurological Institute, Montreal, Quebec, Canada.
- Spreng, R. N.**, Levine, B. (August, 2003). Temporal distribution of autobiographical thought over past and future. Poster presented at the 111th Annual Convention of the American Psychological Association, Toronto, Ontario, Canada.

## **OUTREACH**

*Aging and brain health: Strategies and challenges.* Talk presented to the Cornell Association of Professors Emeriti, Ithaca, NY (March, 2016).

*Aging and brain health: Strategies and challenges.* Talk presented at the Ithaca Sunrise Rotary Club, Ithaca, NY (October, 2015).

*Aging and brain health: Strategies and challenges.* Talk presented at Longview, Ithaca, NY (September, 2015).

*Aging and brain health: Strategies and challenges.* Talk presented at the Tompkins County Office for the Aging, 40<sup>th</sup> Annual Luncheon, Ithaca, NY (May, 2015).

*Aging and brain health: Strategies and challenges.* Talk presented at the Tompkins County Office for the Aging, Ithaca, NY (December, 2014).

## **MEDIA COVERAGE**

*Are Cholinergic Neurons “Patient Zero” of Alzheimer’s Disease?* (November, 2016)

**Alzforum** <http://www.alzforum.org/news/research-news/are-cholinergic-neurons-patient-zero-alzheimers-disease>

*How Empathic Are You?* (June, 2016)

**Buzzfeed** <https://www.buzzfeed.com/kellyoakes/whats-your-empathy-score?>

*Purpose in Life Impedes Impulsivity* (December, 2015)

**Pacific Standard** <http://www.psmag.com/health-and-behavior/purpose-in-life-impedes-impulsivity>

*How Can Daydreaming Improve Goal-Oriented Results?* (December, 2014)

**Psychology Today** <http://www.psychologytoday.com/blog/the-athletes-way/201411/how-can-daydreaming-improve-goal-oriented-results>

*Reminiscing can help boost mental performance* (October 23, 2014)

**Science Daily** <http://www.sciencedaily.com/releases/2014/10/141023111050.htm>

*Academic Minute: Aging Brain Network* (April 2014)

**Northeast Public Radio** <http://wamc.org/post/dr-nathan-spreng-cornell-university-aging-brain-network>

*Loss of brain volume could flag Alzheimer’s* (September 2013)

**Futurity** <http://www.futurity.org/faster-brain-shrinkage-flag-alzheimers/>

*Talk of the Town* (1hr radio interview; August, 2013)

**WVBR 93.5 FM**

*Who are you thinking about? The fMRI knows* (June 2013)

**APA Monitor on Psychology** <http://www.apa.org/monitor/2013/06/frmi.aspx>

*Brain Scans Can Now Tell Who You’re Thinking About* (March, 2013)

**Singularity Hub** <http://singularityhub.com/2013/03/23/brain-scans-can-now-tell-who-youre-thinking-about/>

*Brain Researchers Can Detect Who We Are Thinking About* (March, 2013)

**Scientific American** <http://www.scientificamerican.com/article.cfm?id=brain-researchers-can-detect-who-we-are-thinking-about>

*Brain scan knows who you are thinking about* (March, 2013)

**Discovery News** <http://news.discovery.com/tech/biotechnology/brain-scan-knows-who-youre-thinking-about-130314.htm>

*Черты личности разных людей кодируются в различных регионах мозга* (March, 2013)

**RBC Daily** <http://rbcdaily.ru/cnews/562949986270836>

*Brain scan that shows researchers what you are thinking about* (March, 2013)

**Daily Mail** <http://www.dailymail.co.uk/sciencetech/article-2293683/Brain-scan-breakthrough-researches-just-youre-thinking-lead-treatment-disorders-like-autism.html>

*The New Power of Memory: Sharp Recall Skills Prove Key to Future Success; Some Excel at 'Mental Time Travel'* (March 2013)  
**Wall Street Journal** <http://online.wsj.com/article/SB10001424127887324281004578354131329060180.html>

*Mental Picture of Others Can Be Seen Using fMRI, Finds New Study* (March, 2013)  
**Science Daily** <http://www.sciencedaily.com/releases/2013/03/130305091000.htm>

*When disaster strikes others: How your brain responds Empathy and coping in the wake of a disaster* (March, 2011)  
**Psychology Today** <http://www.psychologytoday.com/blog/fulfillment-any-age/201103/when-disaster-strikes-others-how-your-brain-responds>

*Künstler trifft es links, Lehrer rechts: Die Berufswahl verrät, in welcher Hirnhälfte die Demenz zuerst zuschlägt* (February, 2011)  
**Psychologie Heute**

*Business Minded: The intriguing link between dementia and your daily grind* (January, 2011)  
**Psychology Today**

*Peoples' jobs linked to area of brain degeneration* (October 19, 2010)  
**Medical Post**

*Dementia, career choice linked* (September 23, 2010)  
**National Post** <http://news.nationalpost.com/2010/09/23/dementia-career-choice-linked-in-study/>

*For Sufferers of an Early-Onset Dementia, Career Choice May Determine Location of Disease in Brain* (September 22, 2010)  
**Science Daily** <http://www.sciencedaily.com/releases/2010/09/100922124348.htm>