

## Curriculum Vitae

### Bart Rypma

- Office Address** University of Texas at Dallas  
School of Behavioral and Brain Sciences  
800 West Campbell Road  
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Richardson, TX 75083-0686  
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- Education**
- Ph.D. Georgia Institute of Technology (major in psychology, minor in neuropsychology), June, 1994
  - M.A. Duke University (major in psychology), December, 1989
  - B.A., *cum laude* New York University (major in psychology), June, 1983.
- Post-Doctoral Training** 1994-2001 Stanford University and University of Pennsylvania
- University Appointments**
- 2019-present Director, UT-Dallas BrainHealth Imaging Center
  - 2016-present Professor at University of Texas at Dallas
  - 2014-present Meadows Foundation Endowed Chair in Behavioral and Brain Sciences
  - 2006-2016 Associate Professor at University of Texas at Dallas
  - 2001-2006 Assistant Professor at Rutgers University
- Hospital Appointments**
- 2006-present Associate Professor at University of Texas Southwestern Medical Center
  - 2001-2006 Assistant Professor at University of Medicine and Dentistry of New Jersey
- Other Professional Positions and Major Visiting Appointments**
- 11/11-12/11 Visiting Scientist, University of Medicine and Dentistry of New Jersey
  - 5/11-10/11 *Gästforskare Sektor Psykologi, Karolinska Institutet*, Aging Research Center, Stockholm, Sweden
  - 5/00 –9/01 Associate Research Scientist at University of California-Berkeley, Berkeley, CA
- Honors and Awards**
- 2014 Meadows Foundation Endowed Chair in Behavioral and Brain Sciences
  - 2014 Provost's Award for Faculty Excellence in Undergraduate Mentoring Nominee
  - 2013 Caren and Vin Prothro-Dallas Foundation Award
  - 2007 Metroplex Collaborative Fund Award
  - 2005 Busch Biomedical Sciences Research Award
  - 2005 Johnson & Johnson Pioneers in Science Award
  - 2003 Siemens Award for Innovative Technology Research
  - 1999 American Federation of Aging Research Award
  - 1994 National Research Service Award
  - 1991 Georgia Tech Student Foundation Award

1982-84	Psychology Dept. Award for Distinguished Research
1983	University Honors Scholar
1983	Citrin Award for Outstanding Honors Thesis
1983	Dean's Outstanding Service Award
1983	Honors in Psychology
1982-83	Dean's List
1982	Psychology Dept. Award for Distinguished Research

### Major Committee Assignments

2020-present	Human Subjects Research Safety Working Group
2020-present	Undergraduate Research-Match Processing Committee
2019-present	UT-Dallas BrainHealth Imaging Center Operations, Safety, and Feasibility Committee
2019-present	UT-Dallas BrainHealth Imaging Center Executive Advisory Board (chair)
2018-present	Resting State/Brain Connectivity Conference 2020 - Local Organizing Committee (chair)
2018-2020	UT-Dallas Committee on Tenure Qualifications
2017-2020	UTD Institutional Review Board (chair)
2017-2019	Doctoral Admissions Committee (chair)
2014-2017	UTSW Advanced Imaging Research Center Director Search Committee
2010-2016	UTSW Medical Student Reviewer Committee
2013-2017	UTD Graduate Curriculum Development Committee (chair)
2010-2011	Ad-hoc Neuroscience Track Committee (chair)
2009-2011	Graduate Quantitative Methods Committee
2009-2010	Co-organizer, Dallas Aging & Cognition Conference
2009-2011	UTD Faculty Search Committee
2008-2012	UTD Research Integrity Committee
2009-2012	UTD Institutional Review Board (vice chair)
2008-2012	UTD Center for Brain Health Research Advisory Committee
2006-present	UTSW Advanced Imaging Research Center Research Protocol Review Committee
2006-2013	UTD Graduate Curriculum Development Committee
2006-present	UTD-UTSW Faculty Liaison
2005	Rutgers University Psychology Department Needs and Goals Committee
2004-5	Rutgers University Computer Facilities Usage Committee
2004-5	Rutgers University Psychology Department Graduate Curriculum Committee
2003-4	Rutgers University Psychology Department Graduate Executive Committee
2002	Rutgers University Psychology Department Faculty Search Committee

### Academic Committee Assignments

2021	University of Texas at Dallas School of Behavioral and Brain Sciences: Dr. Yuguang Zhao (chair)
2021	University of Texas at Dallas School of Behavioral and Brain Sciences: Dr. Mark Zuppichini (chair)
2020	University of Texas at Dallas School of Behavioral and Brain Sciences:

2020	Dr. Lyndahl Himes (chair) UTD Promotion and Tenure Committee for Dr. Noah Sasson
2020	University of Texas at Dallas School of Behavioral and Brain Sciences: Dr. Monroe Turner (chair)
2019	University of Texas at Dallas School of Behavioral and Brain Sciences: Dr. Erin Horne
2017	UTD Promotion and Tenure Committee for Dr. Chandramallika Basak (chair)
2017	University of Texas at Dallas School of Brain and Behavioral Sciences: Dr. Margaret O'Connell
2017	UTD Promotion Committee for Dr. Francesca Filbey
2016	University of Texas at Dallas School of Behavioral and Brain Sciences: Dr. Ryan Brigante (chair)
2016	University of Texas at Dallas School of Behavioral and Brain Sciences: Dr. Nicholas A. Hubbard (chair)
2015	University of Texas Southwestern Medical Center: Dr. Tina Jeon
2014	UTD Midprobationary Review Committee for Dr. Kristen Kennedy (chair)
2014	University of Texas at Dallas School of Behavioral and Brain Sciences: Dr. Ehsan Shokri
2013	University of Texas at Dallas School of Behavioral and Brain Sciences: Dr. Tracy Wang
2012	University of Texas at Dallas School of Behavioral and Brain Sciences: Dr. Asha Vas
2012	University of Texas at Dallas School of Behavioral and Brain Sciences: Dr. Vaidehi Natu
2010	University of Texas at Dallas School of Behavioral and Brain Sciences: Dr. Jack Birchfield
2010	University of Texas at Dallas School of Behavioral and Brain Sciences: Dr. Jun-Yi Wang
2009	University of Texas Southwestern Medical Center: Dr. Julie Smith
2006	Rutgers University Center for Neuroscience: Dr. Helen Genova
2006	Rutgers University Psychology Department: Dr. Cory Finlay
2006	Rutgers University Psychology Department: Dr. Ricardo Carrion
2004	Rutgers University Psychology Department: Dr. Michael Patterson
2004	Rutgers University Psychology Department: Dr. Adi Zaimi
2003	Rutgers University Psychology Department: Dr. Gang Chen

#### **Membership in Honorary and Professional Societies**

2014	Psychonomic Society
2012	International Society for Behavioral Neuroscience
2011	National Multiple Sclerosis Society
2010	International Society for Magnetic Resonance in Medicine
2006	Organization for Human Brain Mapping
1995	Society for Neuroscience
1995	Cognitive Neuroscience Society
1994	American Psychological Association

1994 Sigma Xi (Associate)  
1982 Psi Chi

### Major Research Interests

The cognitive and neurobiological mechanisms of human memory  
The neurobiological substrates of age-related changes in human memory  
Experimental methodology of functional magnetic resonance imaging

### Grants and Fellowships

2020-2021 "A Resting-state brain connectivity conference at the University of Texas at Dallas" NIH R13 Grant to UTD.

2018-2021 "Role of astrocytes in neural-vascular coupling and its dysfunction in Multiple Sclerosis" National Multiple Sclerosis Society Research Grant to UTD.

2015-2021 "BOLD and its discontents: Age differences in the neurophysiology of fMRI signal" NIH R01 Grant to UTSW.

2016-2019 "Effects of neural-vascular coupling changes on cognitive performance in multiple sclerosis" National Multiple Sclerosis Society to UTD.

2011-2015 "Hemodynamic Response Function Changes In Multiple Sclerosis" National Multiple Sclerosis Society to UTSW.

2007-2011 "Aging of working memory: Biophysical and neural components" NIH R01 Grant to UTD.

2007-2010 "Attention and executive function in the cortical and subcortical circuitry of Gulf War Veterans" Veteran's Administration Large Grant to UTSW.

2008-2012 "A pattern-based analysis of neural mediators of working memory deficits in autism" University of Texas at Dallas/University of Texas Southwestern Medical Center Grant for High-Risk Collaborative Research.

2006 "A psychometric approach to examining fMRI" University of Texas at Dallas Faculty Initiative Award.

2005-2006 "Neural correlates of age-related memory decline" Busch Biomedical Grant.

2005 -2006 "Neural, vascular and cognitive contributions to age-related memory decline." Johnson & Johnson Discoveries Grant.

2004-2006 "Aging effects on brain function: Real-time analysis of fMRI data" Siemens Innovative Technology Development Grant.

2001-2003 "Age-related changes in human working memory" NIH R03 Grant to Rutgers, The State University of New Jersey.

1999-2000 "Neural correlates of age-related changes in working memory" American Federation for Aging Research to Rutgers, The State University of New Jersey.

1994-1997	"Spatial cognition in aging and Alzheimer's Disease" NIH F32 Kirschstein Fellowship Grant to Stanford University.
1992	"Age-related differences in human spatial cognition" Sigma Xi Grants-in-Aid to Georgia Institute of Technology.
1991-1994	"Predoctoral Fellowship Training Grant" National Institute on Aging to Georgia Institute of Technology.
1987-1991	"Jacob K. Javits National Graduate Fellowship" US Department of Education to Duke University and Georgia Institute of Technology.

### Teaching Experience

2010-present	Methods in Functional Neuroimaging
2006-present	Cognitive Neuroscience
2006	Special Topics Seminar: Working Memory and Executive Function
2003-2008	Cognitive Science
2003-2005	Cognitive Neuroscience Seminar
2002-2003	Special Topics Seminar: The Neuroscience of Memory
1996-97	Physiological Psychology
1994	General Psychology
1991	Introductory Psychology
1988	Cognitive Psychology
1982-83	Introductory Psychology (Undergraduate Teaching Assistant)

### Editorial Experience

2019-present	Special Issue Guest Editor, "Aging and the neural-vascular complex," <i>Psychophysiology</i> .
2010-present	Editor, <i>Brain Connectivity</i>
2012-present	Academic Editor, <i>PLoS One</i>
2020	Ad-hoc Reviewer, <i>Proceedings of the National Academy of Sciences</i>
2020	Editorial Consultant, <i>Nature-Neuroscience</i>
2021	Ad-hoc Reviewer, <i>Cortex</i>
2018-present	Ad-hoc Reviewer, <i>Journal of Cerebral Blood Flow and Metabolism</i>
2018-present	Ad-hoc Reviewer, <i>Multiple Sclerosis Journal</i>
2005-present	Ad-hoc Reviewer, <i>Neurobiology of Aging</i>
2009-present	Ad-hoc Reviewer, <i>Journal of Neuroscience</i>
2003-present	Ad-hoc Reviewer, <i>Nature-Neuroscience</i>
2002-present	Ad-hoc Reviewer, <i>Cerebral Cortex</i>
2000-present	Ad-hoc Reviewer, <i>Human Brain Mapping</i>
1999-present	Ad-hoc Reviewer, <i>Journal of Cognitive Neuroscience</i>
1999-present	Ad-hoc Reviewer, <i>NeuroImage</i>
2013	Ad-hoc Reviewer, <i>JINS</i>
2009-2012	Consulting Editor, <i>Developmental Psychology</i>
2013-present	Ad-hoc Reviewer, <i>Neuropsychologia</i>
2012	Ad-hoc Reviewer, <i>Neuron</i>
2012-present	Ad-hoc Reviewer, <i>PLoS One</i>
2002-2019	National Institutes of Health F01, F02, R01 and Special-Emphasis Study Sections

2008	Ad-hoc Reviewer, <i>Psychological Review</i>
2008	Ad-hoc Reviewer, <i>Intelligence</i>
2006-2015	Ad-hoc Reviewer, <i>American Journal of Psychiatry</i>
2007-2015	Ad-hoc Reviewer, <i>Cognitive, Affective and Behavioral Neuroscience</i>
2007-2009	Ad-hoc Reviewer, <i>Nature</i>
2005-2009	Ad-hoc Reviewer, <i>Biological Psychiatry</i>
2002-2008	Ad-hoc Reviewer, <i>Brain Research</i>
2002-2012	Ad-hoc Reviewer, <i>Brain</i>
2000-2003	Reviewer, University of Michigan Pilot Grants Competition
1997- 2000	Reviewer, Applied Cognitive Aging Seed Grant Program
1995-2020	Ad-hoc Reviewer, <i>Psychology and Aging</i>
1995-2007	Ad-hoc Reviewer, <i>Journals of Gerontology</i>

### Published Manuscripts

1. Zimmerman, B., Rypma, B., Gratton, G. and Fabiani, M. (2021). Age-related changes in cerebrovascular health and their effects on neural function and cognition: A comprehensive review. *Psychophysiology*, in press.
2. Shokri-Kojori, E., Bennett, I.J., Tomeldon, Z.A., Krawczyk, D.C., and Rypma, B. (2021). Differences in effects of aging on brain gray matter and white matter reveal insights into human intelligence. *Brain Research*, in press.
3. Hubbard, N.A., Turner, M.P., Sitek, K.R., West, K., Kaczmarzyk, J.R., Himes, L., Thomas, B.P., Lu, H., and Rypma, B. (2021). Resting cerebral oxygen metabolism demonstrates archetypal network topology. *Human Brain Mapping*, in press.
4. Yabluchanskiy, A., Nyul-Toth, A., Gulej, R., Saunders, D., Towner, R., Turner, M., Zhao, Y., Abdelkarim, D., Rypma, B. and Tarantini, S. (2020). Age-related alterations in the cerebrovasculature affect neurovascular coupling and BOLD fMRI responses: insights from animal models of aging. *Psychophysiology*, in press.
5. Himes, L., Hubbard, N., Maruthy, G.B., Gallagher, J., Turner, M. and Rypma, B. (2020). The relationship between trait mindfulness and emotional reactivity following mood-manipulation. *Mindfulness*, in press.
6. West, K.L., Sivakolundu, D.K., Maruthy, G.B., Zuppichini, M.D., Liu, P., Thomas, B.P., Spence, J.S., Lu, H., Okuda, D.T. and Rypma, B. (2020). Baseline cerebral metabolism predicts fatigue and cognition in Multiple Sclerosis patients. *Neuroimage: Clinical*, in press.
7. Sivakolundu, D.K., West, K.L., Zuppichini, M.D., Wilson, A., Moog, T.M., Blinn, A.P., Newton, B.D., Wang, Y., Stanley, T., Guo, X., Rypma, B. and Okuda, D.T. (2020). BOLD signal within and around white matter lesions distinguishes multiple sclerosis and non-specific white matter disease: A three-dimensional approach. *Journal of Neurology*, 267, 2888-2896.
8. West, K.L., Sivakolundu, D.K., Zuppichini, M.D., Turner, M.T., Spence, J.S., Lu, H., Okuda, D.T. and Rypma, B. (2020). Altered Task-Induced Cerebral Blood Flow and Oxygen Metabolism Underlies Motor Impairment in Multiple Sclerosis. *Journal of Cerebral Blood Flow and Metabolism*, 41, 182-193.
9. Sivakolundu, D.K., West, K.L., Zuppichini, M.D., Abdelkarim, D.A., Turner, M.P., Zhao, Y., Spence, J., Lu, H., Okuda, D.T. and Rypma, B. (2020). The neural-vascular basis of processing

- speed differences in humans: A model-systems approach using multiple sclerosis. *Neuroimage*, 215, 116812.
10. Taneja, K., Liu, P., Cuimei, X., Turner, M., Zhao, Y., Abdelkarim, D., Thomas, B.P., Rypma, B. and Lu, H., (2020). Quantitative cerebrovascular reactivity in normal aging: Comparison between phase-contrast and arterial spin labeling MRI. *Frontiers in Neurology*, 11:758.
  11. Sivakolundu, D.K., West, K.L., Maruthy, G.B., Zuppichini, M., Turner, M.P., Abdelkarim, D., Zhao, Y., Spence, J.S., Lu, H., Okuda, D.T. and Rypma, B. (2020). Reduced arterial compliance along the cerebrovascular tree predicts cognitive slowing in Multiple Sclerosis: Evidence for a neural-vascular uncoupling hypothesis. *Multiple Sclerosis Journal*, 26, 1486-1496.
  12. Thomas, B., Takashi, T., Sheng, M., Tseng, B., Womack, K., Cullum, M.C., Rypma, B., Zhang, R. and Lu, H. (2020). Brain perfusion change in patients with mild cognitive impairment after 12 months of aerobic exercise training. *Journal of Alzheimer's Disease*, 75, 617-631.
  13. Turner, M.P., Fischer, H., Sivakolundu, D.K., Hubbard, N.A., Zhao, Y., and Rypma, B. and Bäckman, L. (2020). Age-differential relationships among dopamine D1 binding potential, fusiform BOLD signal, and face-recognition performance. *NeuroImage*, 206, 116232.
  14. Abdelkarim, D., Zhao, Y., Turner, M.P., Sivakolundu, D.K., Lu, H. and Rypma, B. (2019). A neural-vascular complex of age-related changes in the human brain: Anatomy, physiology, and implications for neurocognitive aging. *Neuroscience and Biobehavioral Reviews*, 107, 927-944.
  15. Sivakolundu, D.K., Hansen, M.R., West, K.L., Stanley, T., Wilson, A., McCreary, M., Turner, M.P., Pinho, M.C., Newton, B.D., Guo, X., Rypma, B. and Okuda, D.T. (2019). Three-dimensional lesion phenotyping and physiologic characterization inform myelination ability in Multiple Sclerosis. *Journal of Neuroimaging*, 29, 605-614.
  16. West, K.L., Zuppichini, M.D., Turner, M.P., Sivakolundu, D.K., Zhao, Y., Abdelkarim, D., Spence, J.S. and Rypma, B. (2019). BOLD hemodynamic response function changes significantly with healthy aging. *NeuroImage*, 188, 198-207.
  17. Turner, M.P., Hubbard, N.A., Sivakolundu, D.K., Himes, L.H., Hutchison, J.L., Hart, Jr., J., Spence, J.S., Frohman, E.M., Frohman, T.C., Okuda, D.T. and Rypma, B. (2019). Preserved canonicity of the BOLD hemodynamic response reflects healthy cognition: Insights into the healthy brain through the window of Multiple Sclerosis. *NeuroImage*, 190, 46-55.
  18. Hubbard, N.A., Weaver, T.P., Turner, M.P. and Rypma, B. (2018). Re-examination of “release-from-PI” phenomena: Deficits in recall accuracy do not recover after a semantic switch. *Memory*, 26, 1191-1205.
  19. Motes, M.A., Yezhuvath, U.S., Aslan, S., Spence, J.S., Rypma, B. and Chapman, S.B. (2018). Higher-order cognitive training effects on processing speed-related neural activity: A randomized trial. *Neurobiology of Aging*, 62, 72-81.
  20. Hubbard, N.A., Turner, M.P., Ouyang, M., Himes, L., Thomas, B.P., Hutchison, J.L., Faghihahmadabadi, S., Davis, S.L., Strain, J.F., Spence, J., Krawczyk, D.C., Huang, H., Lu, H., Hart Jr., J., Frohman, T.C., Frohman, E.M., Okuda, D.T. and Rypma, B. (2017). Calibrated imaging reveals altered grey matter metabolism related to white matter microstructure and symptom severity in multiple sclerosis. *Human Brain Mapping*, 38, 5375-5390.
  21. Hubbard, N.A., Sanchez, A.Y., Caballero, C., Ouyang, M., Turner, M.P., Himes, L., Faghihahmadabadi, S., Thomas, B.P., Hart, J., Huang, H., Okuda, D.T. and Rypma, B. (2017).

- Evaluation of visual-evoked cerebral metabolic rate of oxygen as a diagnostic marker in Multiple Sclerosis. *Brain Sciences*, 7, 6.
22. Hutchison, J.L., Hubbard, T.L., Hubbard, N.A., and Rypma, B. (2017). Ear advantage for musical location and relative pitch: Effects of musical training and attention. *Perception*, 46, 745-762.
  23. Turner, M.P., Hubbard, N.A., Himes, L.M., Faghihahmadabadi, S., Hutchison, J.L., Bennett, I.J., Motes, M.A. and Rypma, B. (2016). Cognitive slowing in Gulf War Illness predicts executive network hyperconnectivity: Study in a population-representative sample. *Neuroimage: Clinical*, 12, 535-541.
  24. Hubbard, N.A., Hutchison, J.L., Turner, M., Sundaram, S., Oasay, L., Robinson, D., Strain, J., Weaver, T., Davis, S.L., Remington, G.M., Huang, H., Biswal, B.B., Hart Jr., J., Frohman, T.C., Frohman, E.M. and Rypma, B. (2016). Asynchrony in executive networks predicts cognitive slowing in Multiple Sclerosis. *Neuropsychology*, 30, 75-86.
  25. Hubbard, N.A., Turner, M., Hutchison, J.L., Ouyang, A., Davis, S.L., Remington, G., Sundaram, S., Brigante, R., Lee, J., Huang, H., Hart Jr., J., Frohman, E. and Rypma, B. (2016). Multiple Sclerosis-related white matter microstructural change alters the BOLD hemodynamic response (2016). *Journal of Cerebral Blood Flow and Metabolism*, 36, 1872-1884.
  26. Akbar, N., Banwell, B., Sled, J.G., Binns, M.A., Doesburg, S.M., Rypma, B., Lysenko, M. and Till, C. (2016). Brain activation patterns and cognitive processing speed in patients with pediatric-onset multiple sclerosis. *Journal of Clinical and Experimental Neuropsychology*, 38, 393-403.
  27. Hubbard, N.A., Turner, M.P. and Rypma, B. (2016). MS-related white matter alters BOLD hemodynamics. *Multiple Sclerosis Journal*, 22, 39.
  28. Hubbard, N.A., Hutchison, J.L., Hambrick, D.Z. and Rypma, B. (2016). The enduring effects of depressive cues on working memory. *Journal of Affective Disorders*, 15, 190-208.
  29. Rypma, B., Fisher, H., Rieckmann, A., Hubbard, N.A., Nyberg, L. and Bäckman, L. (2015). Dopamine D1 binding potential predicts fusiform activity during face-recognition performance. *Journal of Neuroscience*, 35, 14702-14707.
  30. Hubbard, N.A., Faso, D.J., Krawczyk, D.C. and Rypma, B. (2015). Dual roles of trait rumination in problem solving. *Personality and Individual Differences*, 86, 321-325.
  31. Hutchison, J.L., Hubbard, T.L., Hubbard, N.A., Brigante, R.M. and Rypma, B. (2015). Minding the Gap: An experimental assessment of musical segmentation models. *Psychomusicology*, 25, 103-115.
  32. Hubbard, N.A., Hutchison, J.L., Turner, M., Montroy, J., Bowles, R.P. and Rypma, B. (2015). Depressive thoughts limit working memory capacity in dysphoria. *Emotion and Cognition*, 6, 1-17.
  33. Samudra, N., Ivleva, E.I., Hubbard, N.A., Rypma, B., Sweeney, J., Clementz, B.A., Keshavan, M.S., Pearlson, G.D. and Tamminga, C.A. (2015). Alterations in hippocampal-cortical connectivity across psychosis diagnoses. *Psychiatry Research: Neuroimaging*, 233, 148-157.
  34. Rao, N.K., Motes, M.A. and Rypma, B. (2014). Investigating the neural bases for intra-subject cognitive efficiency using functional magnetic resonance imaging. *Frontiers in Human Neuroscience*, 8, 840.

35. Hubbard, N.A., Turner, M.P., Robinson, D.M., Sundaram, S., Oasay, L., Hutchison, J.L., Ouyang, A., Huang, H. and Rypma, B. (2014). Attenuated BOLD hemodynamic response predicted by degree of white matter insult, slows cognition in Multiple Sclerosis. *Multiple Sclerosis Journal*, 20, 267.
36. Kannurpatti, S.S., Motes, M.A., Biswal, B.B. and Rypma, B. (2014). Assessment of unconstrained cerebrovascular reactivity marker for large age-range fMRI studies. *PLoS One*, 9, e88751.
37. Hutchison, J.L., Hubbard, N.A., Brigante, R.M., Turner, M., Sandoval, T.I., Hillis, G.A.J., Weaver, T. and Rypma, B. (2014). The efficiency of region of interest analysis methods for detecting group differences in fMRI. *Journal of Neuroscience Methods*, 226, 57-65.
38. Hubbard, N.A., Hutchison, J.L., Motes, M.A., Shokri-Kojori, E., Brigante, R.M., Haley, R.W. and Rypma, B. (2014). Central executive dysfunction and deferred prefrontal processing in veterans with Gulf War Illness. *Clinical Psychological Science*, 2, 319-327.
39. Di, X., Rypma, B. and Biswal, B.B. (2014). Correspondence of executive function related functional and anatomical alterations in aging brain. *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, 48C, 41-50.
40. Yuan, R., Di, X., Kim, E.H., Barik, S. and Rypma, B. and Biswal, B.B. (2013). Regional homogeneity of resting-state fMRI contributes to both neurovascular and task activation variations. *Magnetic Resonance Imaging*, 31, 1492-1500.
41. Bennett, I.J. and Rypma, B. (2013). Advances in functional neuroanatomy: A review of combined DTI and fMRI studies in healthy younger and older adults. *Neuroscience and Biobehavioral Reviews*, 37, 1201-1210.
42. Hutchison, J.L., Shokri-Kojori, E., Lu, H. and Rypma, B. (2013). A BOLD perspective on age-related flow-metabolism coupling and neural efficiency changes in human visual cortex. *Frontiers in Psychology*, 4, 244.
43. Bennett, I.J., Rivera, H.G. and Rypma, B. (2013). Isolating age-group differences in working memory load-related neural activity: Assessing the contribution of working memory capacity using a partial-trial fMRI method. *Neuroimage*, 72, 20-32.
44. Di, X., Kannurpatti, S.S., Rypma, B. and Biswal, B.B. (2013). Calibrating BOLD fMRI activation with neurovascular and anatomical constraints. *Cerebral Cortex*, 23, 255-263.
45. Hutchison, J.L., Lu, H. and Rypma, B. (2013). Neural mechanisms of age-related slowing: The  $\Delta\text{CBF}/\Delta\text{CMRO}_2$  ratio mediates age-differences in BOLD signal and human performance. *Cerebral Cortex*, 23, 2337-2346.
46. Shokri-Kojori, E., Motes, M., Rypma, B. and Krawczyk, D. (2012). The network architecture of cortical processing in visuo-spatial reasoning. *Nature Scientific Reports*, 2, 411.
47. Kannurpatti, S.S., Rypma, B. and Biswal, B.B. (2012). Prediction of task-related BOLD fMRI with amplitude signatures of resting-state fMRI. *Frontiers in Systems Neuroscience*, 6:7.
48. Hutchison, J.L., Hubbard, T.L., Ferrandino, B., Brigante, R., Wright, J.M. and Rypma, B. (2012). Auditory memory distortion for spoken prose. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 38, 1469-1489.
49. Bennett, I.J., Motes, M.A., Rao, N.K. and Rypma, B. (2012). Relationships between white matter integrity and visual search in healthy aging. *Neurobiology of Aging*, 33, 433.e21-e31.

50. Prabhakaran, V., Rypma B., Narayanan, N.S., Meier, T.B., Austin, B.P., Nair, V.A., Naing, L., Thomas, L.E. and Gabrieli, J.D. (2011). Capacity-speed relationships in prefrontal cortex. *PLoS One*, 6, e27504.
51. Lu, H., Hutchison, J., Xu, F. and Rypma, B. (2011). The relationship between M in calibrated fMRI and the physiologic modulators of fMRI. *Open Neuroimage Journal*, 5, 112-119.
52. Kannurpatti, S.S., Motes, M.A., Rypma, B. and Biswal, B.B. (2011). Non-neural BOLD variability in block and event-related paradigms. *Magnetic Resonance Imaging*, 29, 140-146.
53. Motes, M.A., Biswal, B.B. and Rypma, B. (2011). Age-dependent relationships between prefrontal cortex activation and processing speed. *Cognitive Neuroscience*, 2, 1-10.
54. Kannurpatti, S.S., Motes, M.A., Rypma, B. and Biswal, B.B. (2010). Increasing measurement accuracy of age-related BOLD signal change: Minimizing vascular contributions by resting-state-fluctuation-of-amplitude scaling. *Human Brain Mapping*, 32, 1125-1140.
55. Biswal, B. B., Mennes, M., Zuo, X., Gohel, S., Kelly, C., Smith, S. M., Beckmann, C. F., Adelstein, J. S., Buckner, R. L., Colcombe, S., Dogonowski, A., Ernst, M., Fair, D., Hampson, M., Hoptman, M. J., Hyde, J. S., Kiviniemi, V. J., Kötter, R., Li, S., Lin, C., Lowe, M. J., Mackay, C., Madden, D. J., Madsen, K. H., Margulies, D. S., Mayberg, H. S., McMahon, K., Monk, C. S., Mostofsky, S. H., Nagel, B. J., Pekar, J. J., Peltier, S. J., Petersen, S. E., Riedl, V., Rombouts, S. A., Rypma, B., Schlaggar, B. L., Seidler, R. S., Siegle, G. J., Sorg, C., Teng, G., Veijola, J., Villringer, A., Walter, M., Wang, L., Weng, X., Whitfield-Gabrieli, S., Williamson, P., Windischberger, C., Zang, Y., Zhang, H., Castellanos, F. X. and Milham, M. P. (2010). Towards discovery science of human brain function. *Proceedings of the National Academy of Sciences of the United States of America*, 107, 4734-4739.
56. Biswal, B.B., Eldreth, D.A., Motes, M.A. and Rypma, B. (2010). Task-dependent individual differences in prefrontal connectivity. *Cerebral Cortex*, 20, 2188-2197.
57. Kannurpatti, S.S., Motes, M.A., Rypma, B., and Biswal, B.B. (2010). Neural and vascular variability and the fMRI-BOLD response in normal aging. *Magnetic Resonance Imaging*, 28, 466-476.
58. Motes, M.A. and Rypma, B. (2010). Working memory component processes: Isolating BOLD signal-changes. *NeuroImage*, 49, 1933-1941.
59. Genova, H.M., Hillary, F.G., Wylie, G., Rypma, B. and DeLuca, J. (2009). Examination of processing speed deficits in multiple sclerosis using fMRI. *Journal of the International Neuropsychological Society*, 15, 383-393.
60. Rypma, B. and Prabhakaran, V. (2009). When less is more and when more is more: The mediating roles of capacity and speed in brain-behavior efficiency. *Intelligence*, 37, 207-222.
61. Porcelli, A.J., Cruz, D., Wenberg, K., Patterson, M.D., Biswal, B.B. and Rypma, B. (2008). The effects of acute stress on human prefrontal working memory systems. *Physiology and Behavior*, 95, 282-289.
62. Motes, M.A., Hubbard, T.L., Courtney, J.R. and Rypma, B. (2008). A principal components analysis of dynamic spatial memory bias. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 34, 1076-1083.
63. Prabhakaran, V. and Rypma B. (2007). P-FIT and the neuroscience of intelligence: How well does P fit? *Behavioral and Brain Sciences*, 30, 166-167.

64. Biswal, B.B., Kannurpatti, S.S. and Rypma B. (2007). Hemodynamic scaling of fMRI-BOLD signal: Validation of low-frequency spectral amplitude. *Magnetic Resonance Imaging*, 25, 145-156.
65. Patterson, M.D., Porcelli, A.J., Bly, B.M. and Rypma, B. (2007). Visual working memory for global, object and part-based information. *Memory and Cognition*, 35, 738-751.
66. Rypma B., Eldreth, D.A. and Rebbeschi, D. (2007). Age-related differences in prefrontal cortex activity during delayed-response task performance: A multicomponent analysis. *Cortex*, 43, 65-76.
67. Eldreth, D.A., Patterson, M.D., Porcelli, A.J., Biswal, B.B., Rebbeschi, D. and Rypma, B. (2006). Evidence for multiple manipulation processes in prefrontal cortex. *Brain Research*, 1123, 145-156.
68. Rypma, B., Berger, J.S., Prabhakaran, V., Bly, B.M., Kimberg, D.Y., Biswal, B.B. and D'Esposito, M. (2006). Neural correlates of cognitive efficiency. *NeuroImage*, 33, 969-979.
69. Hillary, F.G., Genova, H.M., Chiaravalloti, N.D., Rypma, B. and DeLuca, J. (2006). Prefrontal modulation of working memory performance in brain injury and disease. *Human Brain Mapping*, 837-847.
70. Rypma, B. (2006). Factors affecting neural activity during delayed response task performance: Testing a memory organization hypothesis of prefrontal function. *Neuroscience*, 139, 223-235.
71. Rypma, B., Berger, J.S., Genova, H. Rebbeschi, D. and D'Esposito, M. (2005). Dissociating age-related changes in cognitive strategy and neural efficiency using event-related fMRI, *Cortex*, 41, 582-594.
72. Patterson, M. and Rypma, B. (2003). Can the unitary view survive the short-term and the long-term? *Behavioral and Brain Sciences*, 26, 751.
73. Rypma, B. and D'Esposito, M. (2003). A subsequent memory effect in dorsolateral prefrontal cortex. *Cognitive Brain Research*, 16, 162-166.
74. Rypma, B., Berger, J.S. and D'Esposito, M. (2002). The influence of working-memory demand and subject performance on prefrontal cortical activity. *Journal of Cognitive Neuroscience*, 14, 721-731.
75. Rypma, B., Prabhakaran, V., Desmond, J.E. and Gabrieli, J.D.E. (2001). Age-related changes in cortical activity during working memory maintenance. *Psychology and Aging*, 16, 371-384.
76. Rypma, B. and D'Esposito, M. (2001). Studies of age-related differences in brain-behavior relationships: Executive control and the frontal lobes. *European Journal of Cognition*, 13, 235-256.
77. Rypma, B. and D'Esposito, M. (2001). Age-related changes in brain-behavior relationships: Evidence from event-related functional MRI studies. In Mayr, U., Spieler, D.H. and Kliegl, R. (Eds.), *Aging and Executive Control*. East Sussex, UK: Taylor and Francis
78. Rypma, B. and Gabrieli, J.D.E. (2001). Functional neuroimaging of short-term memory: The neural mechanisms of mental storage. *Behavioral and Brain Sciences*, 24, 143.
79. Prabhakaran, V., Rypma, B. and Gabrieli, J.D.E. (2001). Neural substrates of mathematical reasoning: An fMRI study of neocortical activation during performance of the Necessary Arithmetic Operations Test. *Neuropsychology*, 15, 115-127.

80. Rypma, B. and D'Esposito, M. (2000). Isolating the neural mechanisms of age-related changes in human working memory. *Nature-Neuroscience*, 3, 509-515.
81. D'Esposito, M., Postle, B.R. and Rypma, B. (2000). Prefrontal cortical contributions to working memory: Evidence from event-related fMRI studies. *Experimental Brain Research*, 133, 3-11.
82. Rypma, B., Prabhakaran, V., Desmond, J.E., Glover, G.H., and Gabrieli, J.D.E. (1999). Load-dependent roles of frontal brain regions in the maintenance of working memory. *NeuroImage*, 9, 216-222.
83. Rypma, B. and D'Esposito, M. (1999). The roles of prefrontal cortex in components of working memory: Effects of memory load and individual differences. *Proceedings of the National Academy of Sciences of the United States of America*, 96, 6558-6563.
84. Zacks, J., Rypma, B., Gabrieli, J.D.E., Tversky, B., and Glover, G.H. (1999). Imagined transformations of bodies: An fMRI investigation. *Neuropsychologia*, 37, 1029-1040.
85. D'Esposito, M., Aguirre, G.K., Zarahn, E. and Rypma, B. (1999). Age differences in the coupling of neural activity to BOLD fMRI hemodynamic response. *Neuroimage*, 10, 6-14.
86. Kalamas, A.D., Gruber, A.L. and Rypma, B. (1999). Autonomic physiological activity in mental rotation tasks. *Perception and Motor Skills*, 88, 211-214.
87. Hertzog, C., Vernon, M.C. and Rypma, B. (1993). Age differences in mental rotation task performance: The influence of speed/accuracy trade-offs. *Journals of Gerontology: Psychological Sciences*, 48, P150-P156.
88. Hertzog, C. and Rypma, B. (1991). Age differences in components of mental rotation task performance. *Bulletin of the Psychonomic Society*, 29, 209-212.
89. Hasher, L., Stoltzfus, E.R., Zacks, R.T. and Rypma, B. (1991). Age and inhibition. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 17, 163-169.
90. Serby, M., Flicker, C., Rypma, B., Weber, S., Rotrosen, J. and Ferris, S. (1989). Scopolamine and olfactory function. *Biological Psychiatry*, 28, 79-82.
91. Serby, M., Zucker, D., Kaufman, M., Franssen, E., Duvvi, K., Rypma, B. and Rotrosen, J. (1987). Clinical stages of dementia and the dexamethasone suppression test. *Progress in Neuropsychopharmacology and Biological Psychiatry*, 7, 239-244.
92. Serby, M., Richardson, S., Rypma, B., Twente, S. and Rotrosen, J. (1986). Somatostatin regulation of the CRF-ACTH Cortisol Axis. *Biological Psychiatry*, 21, 971-974.

### Submitted Manuscripts

- Zuppichini, M.D., Sivakolundu, D.K., West, K.L., Okuda, D., & Rypma, B. (2021). Cerebellar-Parahippocampal Connectivity is Associated with Verbal Memory Impairment in Multiple Sclerosis. Submitted.
- Turner, M.P., Zhao, Y., Abdelkarim, D., Liu, P., Hutchison, J.L., Sivakolundu, D.K., Spence, J.S., Thomas, B.P., Hubbard, N.A., Taneja, K., Lu, H. and Rypma, B. (2021). A tale of two systems: Age-related changes in the linear coupling between cerebral blood flow and oxygen metabolism. Submitted.
- Zhao, Y., Liu, P., Turner, M., Abdelkarim, D., Lu, H., and Rypma, B. (2021). The neural-vascular basis of age-related processing speed decline. Submitted.

- Zuppichini, M., Sivakolundu, D.K., West, K.L., Okuda, D.T., and Rypma, B. (2021). Visual, cognitive, and motor components of processing speed in multiple sclerosis: Cognitive speed alone explains verbal, visuospatial, and working memory ability. Submitted.
- Zhao, Y., Turner, M. P., Motes, M.A., Hubbard, N. A., and Rypma, B. (2021) Domain-general frontal-parietal mechanisms underlying working memory-processing speed relationships: A multivariate fMRI analysis. Submitted.
- Okuda, D.T., Stanley, T., McCreary, M., Wilson, A., Santoyo, J., Hansen, M.R., Pinho, M., Yu, F., Newton, B.D., Billiet, T., Claes, J., Van Hecke, W., Ribbens, A., Zeydan, B., Kantarci, O., Rypma, B., Guo, X. and Moog, T. (2021). Black or African Americans Experience Disparate Pontine Surface Texture Changes and Brainstem Atrophy in Early Multiple Sclerosis. Submitted.
- Zhang, H., Di, X., Meng, C., Rypma, B., Hang, Y. and Biswal, B. (2021). Interaction between memory load and experimental design on brain connectivity and network topology. Submitted.

### **Thesis Manuscripts**

- Rypma, B. (1994). Spatial cognitive processes and aging. Doctoral thesis, Georgia Institute of Technology.
- Rypma B. (1989). Investigations of attention and aging. Master's Thesis, Duke University.
- Rypma, B. (1983). Investigations of the pseudo-homophone effect in the lexical decision task. Honors Thesis, New York University.

### **Colloquia and Invited Talks**

- Rypma, B. (2020). Neurovascular coupling: The brain basis of processing speed decline in aging. Psychology Dept. Colloquium, University of Nebraska – Lincoln, Lincoln, NE.
- Rypma, B. (2020). The neural-vascular complex and its role in cognitive aging. Psychology Dept. Colloquium, Louisiana State University, Shreveport, LA.
- Rypma, B. (2019). Age-related changes in the neurovascular unit: Neural activity, vascular activity and their roles in cognitive aging. Psychology Dept. Colloquium, Stony Brook University, Brookhaven, NY.
- Rypma, B. (2019). A failure to communicate: Age-related changes in neurovascular coupling, neural efficiency, and processing speed. Friedman Brain Institute Translational Neuroscience Seminar Series, Mount Sinai Medical Center, New York City, NY.
- Rypma, B. (2018). A neural-vascular complex of age-related changes in the human brain. Symposium presentation at the Society for Psychophysiological Research, Quebec City, Canada.
- Rypma, B. (2018). The physiologic basis of cognitive slowing. CAMRI Seminar Series, Baylor College of Medicine, Houston, TX.
- Rypma, B. (2017). Neural-vascular aging and its consequences for cognitive aging. Psychiatry Grand Rounds, University of Vermont Medical Center, Burlington, VT.

- Rypma, B. (2016). Cortical network efficiency underlies individual differences in processing speed. Invited symposium: 20 years of resting-state, contributions to understanding cognition. *Cognitive Neuroscience Society*, New York City, NY.
- Brigante, R. and Rypma, B. (2015). Metaphorical Priming of Music Concepts. Auditory Perception, Cognition and Action Meeting, Chicago, IL.
- Rypma, B. (2014). The role of neurovascular coupling changes in fMRI group-comparison studies. The Mahadevan Pillai Memorial Lectures: fMRI: Seeking New Frontiers, Department of Neuroimaging and Intervention Radiology, National Institute of Mental Health and Neuroscience, Bangalore, India.
- Rypma, B. (2014). A neural-vascular complex of age-related changes in the human brain. Reprogramming the Human Brain Symposium, Center for Brain Health, University of Texas at Dallas and University of Texas Southwestern Medical Center, Dallas, TX.
- Rypma, B. (2012). Connectivity dynamics underlying age differences in processing speed. Third Biennial Conference on Resting State Brain Connectivity, Magdeburg, Germany.
- Rypma, B. (2012). Measurement issues in neurocognitive aging: CBF/CMRO<sub>2</sub> mediation of age-related BOLD-signal changes. International Society for Behavioral Neuroscience, Half Moon Bay, CA.
- Rypma, B. (2012). Age-differential modulation of neural activity by dopamine during face recognition: A multimodal neuroimaging study using PET and fMRI. Cognitive Aging Conference, Atlanta, GA.
- Rypma, B. (2012). Taking the measure of neurocognitive aging: CBF/CMRO<sub>2</sub> mediation of age-related BOLD differences. University of Texas at Dallas Center for Vital Longevity, Dallas, TX.
- Rypma, B. (2011). CBF/CMRO<sub>2</sub> mediation of age-related changes in neural activity. Workshop on Plasticity and Aging, Nordic Center of Excellence, *Turun Yliopisto*, Turku, Finland.
- Rypma, B. (2011). Measuring age-related neural efficiency changes using constituents of the BOLD signal. Department of Neuroscience, *Karolinska Institutet*, Stockholm, Sweden.
- Rypma, B. (2011). Working memory, processing speed, and the neural basis of age-related cognitive change. Aging Research Center, *Karolinska Institutet*, Stockholm, Sweden.
- Rypma, B. (2010). A neural efficiency basis for age-related changes in performance. International Congress on Aging and Cognition, Dortmund, Germany.
- Rypma, B. (2010). Decision-making in the adolescent brain: A vortex of change. Symposium on Civil Commitment of Juvenile-Only Sex Offenders at the 118th Annual Meeting of the American Psychological Association, San Diego, CA.

- Rypma, B. (2010). Resting-state connectivity, effective state connectivity, and their relations to task performance. The Second Biennial Conference on Resting State Connectivity, Milwaukee, WI.
- Rypma, B. (2010). PFC mediation of age-related changes in processing efficiency. Dallas Aging and Cognition Conference, Center for Vital Longevity, University of Texas at Dallas, Dallas, TX.
- Rypma, B. (2008). Using Granger Causality Analysis to test hypotheses of individual differences in brain-behavior relationships. Workshop on Connectivity in the Resting Brain, Otto von Guericke University, Magdeburg, Germany.
- Rypma, B. (2008). Improving cognitive processes: What should be targeted? Center for Healthy Minds, Sarasota, FL.
- Rypma, B. (2007). Using fMRI to investigate the neural basis of working memory. Conference on Integrating Imaging and Genetics in Cognition, Royal Dutch Academy of Arts and Sciences, Amsterdam, Netherlands.
- Rypma, B. (2007). The challenge of change: How are cognitive functions preserved in the aging human brain? Reprogramming the Human Brain Symposium, Center for Brain Health, University of Texas at Dallas and University of Texas Southwestern Medical Center, Dallas, TX.
- Rypma, B. (2006). Individual differences in working memory: Effects of age and processing speed. Neurology-Psychiatry Grand Rounds, University of Texas-Southwestern Medical Center, Dallas, TX.
- Rypma, B. (2005). Neural mechanisms of working memory: Investigating effects of age and individual differences using event-related fMRI. University of Texas-Southwestern Medical Center Colloquium, Dallas, TX.
- Rypma, B. (2004). Individual differences in working memory: Effects of age and processing speed. Institute for Research in Cognitive Science Colloquium, University of Pennsylvania, Philadelphia, PA.
- Rypma, B. (2004). Dissociating age-related changes in working memory strategy and efficiency using event-related fMRI. 2<sup>nd</sup> International Conference on Working Memory, Kyoto, Japan
- Rypma, B. (2004). Dissociating age-related changes in cognitive strategy and neural efficiency using fMRI. Symposium on Neuroimaging of Individual Differences at the 34th Annual Meeting of the Society for Neuroscience, San Diego, CA.
- Rypma, B. (2003). Isolating the neural mechanisms of age-related changes in working memory: Effects of age and individual differences. Symposium presentation "Attention and working memory changes with aging" at the Society for Psychophysiological Research, Chicago, IL.

- Rypma, B. (2002). Dissociating age-related changes in cognitive strategy and neural efficiency using event-related fMRI. Cognitive Aging Conference, Atlanta, GA.
- Rypma, B. (2002). The neuroscience of individual differences in working memory performance. Kessler Rehabilitation Institute, West Orange, NJ.
- Rypma, B. (2001). Brain-behavior relationships and age-related changes in working memory. Psychology Dept. Colloquium, Barnard College, New York, NY.
- Rypma, B. (2001). Individual differences in human working memory: A neuroscience perspective. Psychology Dept. Colloquium, University of California – Davis, Davis, CA.
- Rypma, B. (2001). Age-related changes in human working memory: The role of individual differences in processing speed. Psychology Dept. Colloquium, University of Arizona, Tucson, AZ
- Rypma, B. (2000). Studies of individual differences in working memory using fMRI. Psychology Dept. Colloquium, University of California – Berkeley, Berkeley, CA.
- Rypma, B. (2000). The neural mechanisms of mental storage. Psychology Department Colloquium, San Diego State University, San Diego, CA.
- Rypma, B. (2000). Isolating the neural mechanisms of age-related changes in human working memory. Psychology Dept. Colloquium, University of Illinois, Urbana-Champaign, IL.
- Rypma, B. (1999). Isolating neural mechanisms of age-related cognitive change using fMRI. Psychology Department Colloquium, University of Delaware, Newark, DE.
- Rypma, B. (1999). FMRI studies of human working memory. *Universitätsklinikum Ulm*, Ulm, Germany.
- Rypma, B. (1999). Studies of working memory processes using fMRI. Psychology Department Colloquium, University of Aberdeen, Aberdeen, Scotland.
- Rypma, B. (1999). Neural correlates of human working memory: FMRI studies. Psychology Department Colloquium, Brooklyn College, Brooklyn, NY.
- Rypma, B., Prabhakaran, V., Smith, J.A.L., Desmond, J.E., Glover, G.H., and Gabrieli, J.D.E. (1997). Neural correlates of mathematical reasoning: An fMRI study of word-problem solving. Cognitive Science '97 Symposium on brain imaging: Measurement, modeling and high-level cognition, Stanford University, Palo Alto, CA.
- Rypma, B. (1996). FMRI of object identification and memory. Neuroradiology Grand Rounds, Mt. Sinai Medical Center, New York City, NY.
- Rypma, B. (1993). What do studies of mental rotation tell us about cognitive aging? Fourth Annual Sigma Phi Omega Conference for Gerontology and Geriatrics, University of Georgia, Athens, GA.

## Abstracts

1. Zuppichini, M.D., West, K.L., Sivakolundu, D.K., Okuda, D. & Rypma, B. (2019). Cerebellar Connectivity Changes Related to Cognition in Multiple Sclerosis. *Society for Neuroscience*, Chicago, Illinois.
2. West, K.L., Sivakolundu, D.K., Maruthy, G.B., Zuppichini, M.D., Lu, H., Okuda, D.T. & Rypma, B. (2019). Baseline brain oxygen metabolism predicts fatigue in Multiple Sclerosis. *Society for Neuroscience*, Chicago, IL.
3. Zuppichini, M.D., West, K.L., Sivakolundu, D.K., Maruthy, G., Okuda, D. & Rypma, B. (2019). Verbal Memory Impairment in Multiple Sclerosis is explained by processing speed. *European Committee for Treatment and Research in Multiple Sclerosis*, Stockholm, Sweden.
4. West, K.L., Sivakolundu, D.K., Maruthy, G.B., Zuppichini, M.D., Lu, H., Okuda, D.T. & Rypma, B. (2019). Baseline brain oxygen metabolism predicts fatigue in Multiple Sclerosis. *European Committee for Treatment and Research in Multiple Sclerosis Annual Meeting*, Stockholm, Sweden.
5. West, K.L., Sivakolundu, D.K., Zuppichini, M.D., Maruthy, G.B., Lu, H., Okuda, D.T. & Rypma, B. (2019). Evaluating brain oxygen metabolism and cognition in multiple sclerosis. *International Society for Magnetic Resonance in Medicine*, Montreal, Canada.
6. Zuppichini, M.D., West, K.L., Sivakolundu, D.K. & Rypma, B. (2019). Relapsing-Remitting Multiple Sclerosis Patients with Slowed Cognitive Processing Speed are Impaired on Verbal, Visuospatial, and Working Memory measures. *Annual Meeting of the Consortium of Multiple Sclerosis Centers*, Seattle, WA.
7. West, K.L., Sivakolundu, D.K., Zuppichini, M.D., Maruthy, G.B., Okuda, D., Lu, H. & Rypma, B. (2019). Evaluating brain oxygen metabolism and cognition in multiple sclerosis. *International Society for Magnetic Resonance in Medicine*, Montréal, Canada.
8. Sivakolundu, D.K., West, K., Zuppichini, M., Abdelkarim, D., Turner, M., Zhao, Y., Hart Jr., J., Lu, H., Okuda, D. & Rypma, B. (2019) Neural-Vascular Uncoupling: The Pathophysiology of Cognitive Slowing in Multiple Sclerosis. *Americas Committee for Treatment and Research in Multiple Sclerosis Forum*, Dallas, TX.
9. West, K., Sivakolundu, D., Zuppichini, M., Turner, M., Himes, L., Turner, M., Lu, H., Okuda, D. & Rypma, B. (2019). Neural-Vascular Uncoupling Mediates Motor Performance Decline in Multiple Sclerosis. *Americas Committee for Treatment and Research in Multiple Sclerosis Forum*. Dallas, TX.
10. Zuppichini, M.D., West, K.L., Sivakolundu, D.K., Okuda, D., Hart, J., Spence, J. & Rypma, B. (2019). Processing Speed Explains Verbal Learning and Memory Ability in Relapsing-Remitting Multiple Sclerosis. *Americas Committee for Treatment and Research in Multiple Sclerosis Forum*, Dallas, TX.
11. Sivakolundu, D.K., West, K.L., Zuppichini, M., Abdelkarim, D., Turner, M., Zhao, Y., Hart, J., Okuda, D.T. & Rypma, B.(2018) Neural-vascular uncoupling explains cognitive slowing in multiple sclerosis. *European Committee for Treatment and Research in Multiple Sclerosis*. Berlin, Germany.
12. Abdelkarim, D.H., Turner, M.P., Sivakolundu, D.K., Zhao, Y., West, K.L, Thomas, B.P., Lu, H. & Rypma, B. (2018). Age-related decline in arterio-venous compliance and relationships to cognitive performance. *Society for Neuroscience*. San Diego.
13. Himes, L., Hubbard, N., Turner, M., Batchalli Maruthy, G. & Rypma, B. (2018). Connectivity differences with subgenual anterior cingulate cortex during self-referential processing in depressed and healthy participants. *Society for Neuroscience*. San Diego.

14. Sivakolundu, D., West, K.L., Abdelkarim, D.H., Zuppichini, M.D., Turner, M.P., Zhao, Y., Hart, J., Lu, H., Okuda, D. & Rypma, B. (2018). Neural-vascular uncoupling explains cognitive slowing in Multiple Sclerosis. *Society for Neuroscience*. San Diego.
15. Zhao, Y., Hubbard, N., Motes, M. & Rypma, B. (2018). The primacy of processing speed: Distributed neural activity during digit-symbol performance distinguishes individual differences in working memory performance. *Society for Neuroscience*. San Diego.
16. Turner, M.P., West, K.L., Sivakolundu, D.K., Zhao, Y., Abdelkarim, D.H., Thomas, B.P., Lu, H. & Rypma, B. (2018). Age-related declines in neural-vascular coupling: Regional variability, effects of task demand, and relationship to cognitive performance. *Society for Neuroscience*. San Diego.
17. Turner, M.P., Fischer, H., Sivakolundu, D.K., Hubbard, N.A., Rieckmann, A., Rypma, B. & Bäckman, L. (2018). Age-differential relationships among dopamine D1 binding potential, fusiform BOLD signal, and face-recognition performance. *Society for Neuroscience*. San Diego.
18. Turner, M.P., West, K.L., Zuppichini, M.D., Sivakolundu, D.K., Zhao, Y., Abdelkarim, D.H., Prabhakaran, V. & Rypma, B. (2018). Age-differences in canonicality of the hemodynamic response function and relationships to cognitive performance: a population-based study. *Society for Neuroscience*. San Diego.
19. Zuppichini, M.D., West, K.L., Turner, M.P., Sivakolundu, D.K., Abdelkarim, D.H., Zhao, Y., Spence, J. & Rypma, B. (2018). BOLD hemodynamic response function changes significantly with healthy aging: a population-based study. *Society for Neuroscience*. San Diego.
20. West, K.L., Sivakolundu, D.K., Zuppichini, M.D., Turner, M.P., Himes, L., Hart, Jr, J., Lu, H., Okuda, D. & Rypma, B. (2018). Neural-vascular uncoupling mediates motor performance decline in Multiple Sclerosis. *Society for Neuroscience*. San Diego.
21. Brigante, R.M., Hubbard, T.L., Dowling, W.J. & Rypma, B. Auditory tuning judgments are influenced by visual brightness. *Psychonomic Society Annual Meeting*. Vancouver, BC.
22. Himes, L., Hubbard, N., Turner, M., Robinson, C., Oppenheimer, R., Ellison, C. & Rypma, B. (2017). A study of network changes during depressive self-referential processing in never-depressed individuals. *Society for Neuroscience Conference*. Washington D.C.
23. Hubbard, N.A., Ouyang, M., Huang, H., Okuda, D.T. & Rypma, B. (2017). Visually-evoked cerebral metabolic rate is highly specific for the diagnosis of Multiple Sclerosis. *ACTRIMS*. Orlando, FL.
24. Sivakolundu, D.K., West, K.L., Turner, M., Himes, L., Hubbard, N.A., Thomas, B.P., Frohman, E., Hart, Jr, J., Okuda, D.T. & Rypma, B. (2017), Evidence for neural-vascular uncoupling in multiple sclerosis: a calibrated functional MRI study in visual cortex. *Society for Neuroscience*, Washington, DC.
25. Sivakolundu, D.K., West, K.L., Turner, M., Himes, L., Hubbard, N.A., Thomas, B.P., Frohman, E., Hart, Jr, J., Okuda, D.T. & Rypma, B. (2017). Calibrated fMRI study reveals neural-vascular uncoupling in the visual cortex of multiple sclerosis patients. *European Committee for Treatment and Research in Multiple Sclerosis*, Paris, France.
26. Thomas, B.P., Takashi, T., Sheng, M., Tseng, B.Y., Womack, K., Cullum, M.C., Rypma, B., Zhang, R. & Lu, H. (2017). One-year aerobic exercise increases regional cerebral blood flow in anterior cingulate cortex: a blinded, randomized trial in patients with amnesic Mild Cognitive Impairment. *Society for Neuroscience*. Washington DC.
27. West, K.L., Sivakolundu, D.K., Himes, L.M., Turner, M.P., Thomas, B.P., Frohman, E.M., Hart, J., Okuda, D.T. & Rypma, B.P. (2017). Progressive neural-vascular uncoupling with persistent motor activity in multiple sclerosis. *Society for Neuroscience*, Washington, DC.

28. West, K.L., Sivakolundu, D.K., Himes, L.M., Turner, M.P., Thomas, B.P., Frohman, E.M., Hart, J., Okuda, D.T. & Rypma, B.P. Evidence for neural-vascular uncoupling in multiple sclerosis: a calibrated fMRI study in motor cortex. *European Committee for Treatment and Research in Multiple Sclerosis*, Paris, France.
29. Himes, L., Hubbard, N.A., Turner, M.P. & Rypma, B. (2016). Age-related white matter micro- and macro-structural changes associated with functional connectivity decline in resting state network. *Society for Neuroscience Conference*. San Diego, CA.
30. Turner, M.P., Hubbard N.A., Himes L.M., Motes M.A. & Rypma B. (2016). Changes in functional connectivity across the lifespan reflect declines in cognitive efficiency. *Society for Neuroscience Conference*. San Diego, CA.
31. Himes, L., Hubbard, N.A., Turner, M.P. & Rypma, B. (2016). Cortical network efficiency underlies individual differences in processing speed. *Cognitive Neuroscience Society Conference*. New York City, NY.
32. Hubbard, N.A., Turner, M. & Rypma, B. (2015). MS-related white matter damage alters BOLD hemodynamics. *ACTRIMS*. New Orleans, LA.
33. Hubbard, N.A., Hutchison, J.L. & Rypma, B. (2015). Acute and persistent effects of depressed mood and depressive thoughts on working memory capacity. *Association for Psychological Science Conference*. New York City, NY.
34. Hubbard, N.A., Turner, M., Sundaram, S., Remington, G., Davis, S., Frohman, T., Frohman, E. & Rypma, B. (2015). Resting hemodynamic fluctuations predict cognition in multiple sclerosis. *Association for Psychological Science Conference*. New York City, NY.
35. Turner, M., Hutchison, J., Hubbard, N.A., Hanzhang, L. & Rypma, B. (2015). The physiologic basis for age-related changes in processing efficiency: fMRI and EEG evidence. *Dallas Aging and Cognition Conference*, Dallas, TX.
36. Turner, M.P., Hubbard, N.A., Hutchison, J.L., Lu, H., Hart, Jr., J., Davis, S., Remington, G., Frohman, T., Frohman, E. & Rypma, B. (2015). Evidence for a neural-vascular coupling mechanism for individual differences in processing speed: a model-free analysis of BOLD signal in healthy and white-matter disease populations. *Society for Neuroscience Conference*, Chicago, IL.
37. Brigante, R., Deupree, K., Slinker, E. & Rypma, B. (2015). Levels of processing differentially influence visual and auditory memory distortions. *Cognitive Neuroscience Society*, San Francisco, CA.
38. Shokri-Kojori, E., Bennett, I.J., Krawczyk, D. & Rypma, B. (2014). Microstructural estimates of grey matter and white matter age differentially and predict lifespan variability in fluid and crystallized intelligence. *Society for Neuroscience*, Washington, D.C.
39. Samudra, N., Ivleva, E.I., Hubbard, N.A., Rypma, B. & Tamminga, C.A. (2014). Hippocampal-cortical resting state fMRI network disconnectivity in psychosis: A seed-based voxel-wise analysis. *Association for Clinical and Translational Science*, Washington, D.C.
40. Hubbard, N.A., Turner, M., Hutchison, J.L., Ouyang, A., Huang, H. & Rypma, B. (2014). Attenuated BOLD hemodynamic response predicted by degree of white matter insult, slowed cognition in Multiple Sclerosis. *ACTRIMS-ECTRIMS*, Boston, MA.
41. Turner, M., Hutchison, J.L., Lu, H. & Rypma, B. (2014). A neural-vascular basis for age-related changes in processing efficiency. *Cognitive Aging Conference*, Atlanta, GA

42. Hutchison, J. L., Gundapuneedi, T., Huang, H., Hubbard, N., Remington, G., Davis, S., Hart, J., Frohman, E. & Rypma, B. (2013). Diffusion-tensor metric sensitivity to white-matter changes in multiple-sclerosis and cognitive performance. Paper and dynamic posters presented at the 43rd Annual Meeting of the *Society of Neuroscience*, San Diego, CA.
43. Brigante, R. & Rypma, B. (2013). Behavioral and neural priming of tonal and dissonant musical chords. *Association for Psychological Science*, Washington, D.C.
44. Weaver, T.S., Hubbard, N.A. & Rypma, B. (2013). Significant depressive symptomology and affective working memory. Paper presented at the Annual Meeting of the *Association for Psychological Science*, Washington, D.C.
45. Dalaparathi, V., Weaver, T.S. & Rypma, B. (2013). Age differences in prefrontal activity during supracapacity working memory performance. Paper presented at the second Biennial Dallas Aging and Cognition Conference, Dallas, TX.
46. Hubbard, N.A., Hutchison, J.L., Remington, G., Hart, Jr. J., Davis, S., Frohman, E. & Rypma, B. (2013). Temporal desynchronization of speed-based networks in Multiple Sclerosis. *Society for Neuroscience*, San Diego, CA.
47. Hutchison, J.L., Hubbard, N.A., Remington, G., Hart, Jr. J., Davis, S., Frohman, E. Rypma, B. (2013). Brain changes in Multiple Sclerosis. *Society for Neuroscience*, San Diego, CA.
48. Gundapuneedi, T., Huang, H., Hubbard, N., Hutchison, J. & Rypma, B. (2013). White-matter microstructural alterations and their correlations to psychological measures. *International Society of Magnetic Resonance in Medicine*, Seattle, WA.
49. Bennett, I.J., Tomeldan, Z.A., Cocjin, S.A., Rypma, B. (2012). Combined DTI-fMRI study of structure-function relationships between adjacent brain regions in aging. *Cognitive Aging Conference*, Atlanta, GA.
50. Bennett, I.J., Rivera, H.G., Rypma, B. (2012). Working memory load-related activity varies in aging: A test of competing neurocognitive aging theories. *Cognitive Neuroscience Society*, Chicago, IL.
51. Bennett, I.J., Rypma, B. (2011). Structure-function relationships in healthy aging and mild cognitive impairment: A combined DTI-fMRI study. *Society for Neuroscience*, Washington, DC.
52. Lu, H., Hutchison, J., Xu, F. & Rypma, B. (2011). The relationship between M in calibrated fMRI and the physiologic modulators of fMRI. *International Society for Magnetic Resonance in Medicine*, Stockholm, Sweden.
53. Shokri-Kojori, E.S., Bennett, I.J., Motes, M., Krawczyk, D. & Rypma, B. (2011). Functional and Anatomical Connectivity Predicting Performance in a Digit Symbol Substitution Task. *Cognitive Neuroscience Society*, San Francisco, CA.
54. Colby, M.A.E., Bennett, I.J., Pham, L., Karnik-Henry, M., Sandoval, T.I., & Rypma, B. (2011). Working memory and processing speed in healthy aging: An fMRI analysis. *Dallas ACC Conference*, Dallas, TX.
55. Hutchison, J. L., Sandoval, T., Hillis, G. A. J., Shokri-Kojori, E., Colby, M. E., Motes, M. A., Maciejewski, M., & Rypma, B. (2010). Standard space and individually-derived regions of interest: An experimental comparison. *International Society for Magnetic Resonance in Medicine*, Stockholm, Sweden.
56. Bennett, I.J., Rivera, H.G., Colby, M.A.E., Karnik-Henry, M., & Rypma, B. (2010). Processing speed accounts for age group differences in working memory-related performance and neural activity. *Society for Neuroscience*, San Diego, CA.

57. Shokri-Kojori, E., Abdi H., Motes M., Rypma, B. & Krawczyk, D. (2010). Comparison of Multivariate Granger Causal Connectivity Techniques: A Simulation Approach. *Society for Neuroscience Annual Meeting*, San Diego, CA.
58. Motes, M.A., Gamino, J.F., Rao, N.K., Shokri-Kojori, E., Dewey, L., Jantz, T., Hart, Jr., J., Rypma, B. & Chapman, S.B. (2010). Cognitive processing speed correlates with differential use of prefrontal cortex in youths, young adults, and elderly adults. *Society for Neuroscience*, San Diego, CA.
59. Rivera, H.G., Bennett, I.J., Colby, M.A.E., Karnik-Henry, M. & Rypma, B. (2010). Relationships between working memory performance and maintenance phase activity: An aging study. *Society for Neuroscience*, San Diego, CA.
60. Shokri-Kojori, E., Motes, M., Rypma, B. & Krawczyk, D. The Flow of Information across the Brain in Human Reasoning, *The Greater Dallas Human Brain Imaging Retreat* (2010), Dallas, TX.
61. Colby, M.A.E., Bennett, I.J., Karnik-Henry, M., Sandoval, T.I. & Rypma, B. (2010). Neural mechanisms of working memory and processing speed in healthy aging. *The Greater Dallas Human Brain Imaging Retreat*, Dallas, TX.
62. Colby, M.A.E., Bennett, I.J., Karnik-Henry, M., Tisdale, E.K., Jordan, L.A., Motes, M.A., Sandoval, T.I. & Rypma, B. (2010). Neural mediation of working memory by processing speed in older adults. *Society for Psychophysiological Research*, Portland, OR.
63. Bennett, I.J., Motes, M.A., Rao, N.K. & Rypma, B. (2010). Brain Structure Predicts Behavioral Performance: A Diffusion Tensor Imaging Study of Visual Search in Healthy Aging. *Center for Vital Longevity Grand Opening*, Dallas, TX.
64. Hillis, G.A.J., Sandoval, T.I., Motes, M.A., Bennett, I.J., Maciejewski, M.J., Hutchison, J. & Rypma, B.P. (2010). Pre-frontal Cortex Dysfunction in Gulf War Illness. *Cognitive Neuroscience Society*, Montreal, Canada.
65. Bennett, I.J., Motes, M.A., Rao, N.K. & Rypma, B. (2010). Accounting for age group differences in white matter integrity. *Dallas ACC Conference*, Dallas, TX.
66. Bennett, I.J., Karnik-Henry, M., Colby, M.A.E. & Rypma, B. (2010). Processing speed mediates working memory, but not visual search: A behavioral and functional imaging study of older adults. *Cognitive Aging Conference*, Atlanta, GA.
67. Colby, M.A.E., Motes, M.A. & Rypma, B. (2009). Neural mediators of working memory deficits in autism spectrum disorders. *Society for Psychophysiological Research*, Berlin, Germany.
68. Shokri-Kojori, E., Motes, M., Rypma, B. & Krawczyk, D. (2009). Complexity-based Connectivity Analysis in Visuo-Spatial Reasoning, *Society for Neuroscience*. Chicago, IL.
69. Colby, M.A.E., Motes, M.A. & Rypma, B. (2009). Individual differences analysis of prefrontal working memory functions. *Society for Neuroscience*, Chicago, IL.
70. Maciejewski, M., Motes, M. & Rypma, B. (2009). Individual Differences Cognitive Ability-Neural Activity Relations. *Society for Neuroscience*. Chicago, IL.
71. Motes, M.A., Rao, N.K., Hillis, G.A., Anand, R. & Rypma, B. (2009). Functional anatomy of visual search for conjunctions. *Society for Neuroscience*. Chicago, IL.
72. Maciejewski, M., Byrapureddy, R., Motes, M. & Rypma, B. (2009). Individual Differences in the Time-course of Processing Speed-Neural Activity Relations. *Cognitive Neuroscience Society*, San Francisco, CA.

73. Hutchison, J., Lu, H., Hillis, G. A., Sandoval, T. I. & Rypma, B. (2009). Visual cortex in younger and older adults: A comparison of activation from different baseline states. *Cognitive Neuroscience Society*, San Francisco, CA.
74. Motes, M.A., Biswal, B. & Rypma, B. (2009). Age difference in the mediation of cognitive processing speed by prefrontal cortex. *Cognitive Neuroscience Society*, San Francisco, CA.
75. Shokri-Kojori, E., McClelland, M., Motes, M., Rypma, B., Krawczyk, D. (2009). Investigation of Functional Connectivity in a Visuo-Spatial Reasoning Task Using Granger Causality. *Cognitive Neuroscience Society* San Francisco, CA.
76. Hutchison, J., Lu, H., Hillis, G. A., Sandoval, T. I. & Rypma, B. (2008). An empirical comparison of positive and negative baseline measures in younger and older adults using fMRI. *Society for Neuroscience*. Washington, DC.
77. Motes, M.A., Biswal, B. & Rypma, B. (2008). Age-related differences in the mediation of cognitive processing speed by prefrontal cortex. *Society for Neuroscience*. Washington, DC.
78. Motes, M. A. & Rypma, B. (2008). Examining working memory component processes. *Human Brain Mapping*, Melbourne, Australia.
79. Motes, M.A. and Rypma B. (2008). Brain regions mediating working memory component processes. *Cognitive Neuroscience Society*, San Francisco, CA.
80. Patterson, M.D., Bly, B.M., Porcelli, A.J. & Rypma, B. (2006). Global configural representational bias in visual working memory is independent of top down control. *Society for Neuroscience*, San Francisco, CA
81. Porcelli, A.J., Cruz, D., Wenberg, K., Patterson, M., Biswal, B. and Rypma, B. (2006). The effects of acute stress on human prefrontal working memory systems. *Cognitive Neuroscience Society*, San Francisco, CA.
82. Price, R., Eldreth, D.A., Rypma, B. & Mohlman, J. (2006). Relationship between executive function and symptomatology in individuals with generalized anxiety disorder. *Cognitive Neuroscience Society*, San Francisco, CA.
83. Eldreth, D.A., Price, R., Rypma, B. & Mohlman, J. (2006). Worry related amygdala activation in older adults with generalized anxiety disorder. *Cognitive Aging Conference*, Atlanta, GA
84. Patterson, M.D., Eldreth, D. A., Zaconne, E. & Rypma, B. (2005). The role of automaticity in working memory performance. *Cognitive Neuroscience Society*, New York, NY.
85. Patterson, Michael D. & Rypma, B. (2005). Neural correlates of automatic and controlled working memory performance. *Society for Neuroscience*, Washington D.C.
86. Porcelli, A.J., Wenberg, K., Cruz, D., Patterson, M.D. & Rypma, B. (2004). Effects of acute stress on prefrontal working memory systems. *Society for Neuroscience*, San Diego, CA.
87. Patterson, M.D., Porcelli, A.J., Eldreth, D.A., Zaconne, E. & Rypma, B. (2004). The neural basis of object working memory consolidation: An event-related fMRI study. *Cognitive Neuroscience Society*, San Francisco, CA.
88. Eldreth, D.A., Porcelli, A.J., Geneva, H.M., Patterson, M.D., Hillary, F.G., Zaconne, E., Bukowski, E., Witham, J. & Rypma, B. (2004). Neural correlates of age-related reduction in processing speed: An event-related fMRI study. *Cognitive Neuroscience Society*, San Francisco, CA.

89. Eldreth, D.A., Porcelli, A.J., Genova, H.M., Patterson, M.D., Hillary, F.G., Zaconne, E., Bukowski, E., Witham, J. & Rypma, B. (2004). Neural correlates of age-related reduction in processing speed: An event-related fMRI study. *Cognitive Aging Conference*, Atlanta, GA.
90. Eldreth, D. A., Porcelli, A. J., Patterson, M. D., Bukowski, E., Witham, J., Zaconne, E. & Rypma, B. (2004). Age related changes in neural efficiency and cognitive performance: an event-related fMRI study. Presented at the 34th Annual Meeting of the Society for Neuroscience, San Diego, CA.
91. Rypma, B., Patterson, M.D. and Bly, B.M. (2003). A comparison of load and manipulation effects in verbal working memory: An event-related fMRI study. *Cognitive Neuroscience Society*, New York, NY.
92. Patterson, M.D., Bly, B.M. and Rypma, B. (2003). A comparison of load and manipulation effects in object working memory: An event-related fMRI study. *Cognitive Neuroscience Society*, New York, NY.
93. Hillary, F.G., Bly, B.M., DeLuca, J. and Rypma, B. (2003). Comparisons of prefrontal hemispheric asymmetry in younger and older adults during working memory performance using event-related fMRI. *Cognitive Neuroscience Society*, New York, NY.
94. Giangrante, H.M., Hillary, F.G., Patterson, M.D., Bly, B.M., DeLuca, J. and Rypma, B. (2003). Examining the neural substrates of reduced processing speed in multiple sclerosis using fMRI. *Cognitive Neuroscience Society*, New York, NY.
95. Rypma, B., Berger, J.S. and D'Esposito, M. (2002). Dissociating age-related effects of cognitive strategy and neural efficiency using event-related fMRI. *Cognitive Neuroscience Society*, San Francisco, CA.
96. Rypma, B., Duncan, J., Berger, J.S., McClintock, C., D'Esposito, M. (2001). Neural correlates of individual differences in executive control. *Society for Neuroscience*, San Diego, CA.
97. Rypma, B. Berger, J.S., McClintock, C. and D'Esposito, M. (2001). Processing speed and neural activity: Neural mechanisms of brain-behavior relationships. *Cognitive Neuroscience Society*, New York, NY.
98. Rypma, B., Berger, J.S. and D'Esposito, M. (2000). The effects of increasing mnemonic demand on prefrontal brain activity and brain-behavior relationships. *Cognitive Neuroscience Society*, San Francisco, CA.
99. Rypma, B., Berger, J.S. and D'Esposito, M. (2000). Neural mechanisms of age-related changes in human working memory. *Frontal Lobes 2000*, Toronto, OT.
100. Rypma, B. and D'Esposito, M. (1999). Age-differential prefrontal cortical activity in components of working memory. *Society for Neuroscience*, Miami Beach, FL.
101. Rypma, B., Zarahn, E. and D'Esposito, M. (1998). Neural correlates of memory set-size effects. *Society for Neuroscience*, Los Angeles, CA.
102. Rypma, B., Zarahn, E. and D'Esposito, M. (1998). Age differences in the coupling of neural activity to BOLD fMRI hemodynamic response: Spatial extent, signal intensity, and noise. *NeuroImage*, 7, S521.
103. Prabhakaran, V., Rypma, B., Desmond, J.E., Glover, G.H. and Gabrieli, J.D.E. (1997). The role of frontal-striatal thalamic circuits in working memory: An fMRI study. *Society for Neuroscience*, New Orleans, LA.
104. Gabrieli, J.D.E., Rypma, B., Prabhakaran, V., Wagner, A.D., Desmond, J.E. and Glover, G.H. (1997). Common right prefrontal processes involved in episodic retrieval, working memory, and reasoning. *Society for Neuroscience*, New Orleans, LA.

105. Smith, J.A.L., Prabhakaran, V., Rypma, B., Gabrieli, J.D.E., Desmond, J.E. and Glover, G.H. (1997). Neural activity associated with mathematical reasoning using fMRI. *Society for Neuroscience*, New Orleans, LA.
106. Rypma, B., Prabhakaran, V., Desmond, J.E., Glover, G.H. & Gabrieli, J.D.E., (1997). Age- related changes in cerebral activity during a working memory task. *Society for Neuroscience*, New Orleans, LA.
107. Vaidya, C.J., Gabrieli, J.D.E., Rypma, B., Desmond, J.E. and Glover, G.H. (1997). FMRI of frontal lobe function in children with attention deficit disorder on and off ritalin. *Society for Neuroscience*, New Orleans, LA.
108. Zacks, J., Rypma, B., Gabrieli, J.D.E., Tversky, B. & Glover, G.H. (1997). Imagined transformations of bodies: An fMRI investigation. *Society for Neuroscience*, New Orleans, LA.
109. Rypma, B., Prabhakaran, V., Smith, J.A.L., Desmond, J.E., Glover, G.H. & Gabrieli, J.D.E. (1997). Neural substrates of mathematical reasoning. *The Psychonomic Society*, Philadelphia, PA.
110. Rypma, B., DeBell, M.A., Gabrieli, J.D.E., Prabhakaran, V., Zabinski, M.F., Desmond, J.E., Glover, G.H. (1996). Functional MRI studies of mental rotation and object identification processes. *Society for Neuroscience*, Washington, D.C.
111. Smith, J.A. L., Rypma, B., Prabhakaran, V., Desmond, J.E., Glover, G.H. and Gabrieli, J.D.E. (1996). A functional MRI study of working memory central executive. *Society for Neuroscience*, Washington, D.C.
112. Rypma, B., Gabrieli, J.D.E., Prabhakaran, V. & Desmond, J.E. (1996). FMRI of working memory and aging. *The Psychonomic Society*, Chicago, IL.
113. Rypma, B., Vaidya, C.J., Lange, K., Desmond, J.E., Fleischman, D.A. & Gabrieli, J.D.E. (1995). Evidence for multiple perceptual implicit memory processes. *Society for Neuroscience*, San Diego, CA.
114. Rypma, B. (1995). Effects of stimulus complexity and aging on performance with rotated natural objects. *The Psychonomic Society*, Los Angeles, CA.
115. Rypma, B. (1992). Object recognition in young and old adults. *The Georgia Tech Cognitive Science Conference*, 1, 23.
116. Rypma, B. and Hertzog, C. (1993). Are age differences in spatial working memory parity- specific? *The Rotman Research Institute Conference*, Toronto, Canada.
117. Shaw, R., Rypma, B. & Toffle, C. (1992). The effects if environmental support on age differences in ignoring distraction in reading. *The Cognitive Aging Conference*, Atlanta, GA.
118. Hertzog, C. and Rypma, B. (1991). Age differences in serial mental rotation: Replication and extension. *The Psychonomic Society*, San Francisco, CA.
119. Hertzog, C. and Rypma, B. (1990). Age differences in components of mental rotation performance. *The Psychonomic Society*, New Orleans, LA.
120. Hasher, L., Rypma, B., Stoltzfus, E.R. & Zacks, R.T. (1989). Age deficits in inhibitory mechanisms: Data and theory. *The Psychonomic Society*, Atlanta, GA.
121. Rypma, B. and Hertzog, C. (1989). Components of mental rotation performance in young and old adults. *The Sigma Phi Omega Student Conference for Gerontology and Geriatrics*, Athens, GA.
122. Rypma, B., Dorfman, D. and Glanzer, M. (1984). Investigations of the pseudo-homophone effect in lexical decision. *The Eastern Psychological Association*, Baltimore, MD.

123.Rypma, B. (1981). Phonological recoding in lexical access. *The Psi Chi Society*, Hunter College, New York, NY.