

Michael F. Bonner

CONTACT INFORMATION

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ACADEMIC APPOINTMENTS

Assistant Professor	Department of Cognitive Science, Johns Hopkins University	starting January 2019
Postdoctoral Fellow	Department of Psychology, University of Pennsylvania	2014-present
	Department of Neurology, University of Pennsylvania	2013-2014

EDUCATION

PhD	University of Pennsylvania Neuroscience Advisor: Professor Murray Grossman Thesis: Neural representations at the interface of perception and memory	December 2012
BS	Pennsylvania State University Biochemistry and Molecular Biology Minors in Chemistry and Microbiology	December 2005

GRANTS AND AWARDS

Postdoctoral Fellows Award, Cognitive Neuroscience Society	2014
Travel Award for Concepts, Actions, and Objects Workshop	2013
NIH T32 Neuroimaging Trainee	2009-2012
Judy Lee Writing Award, Penn Creative Writing Program	2007
Discovery Summer Research Grant, Pennsylvania State University	2005
Shigley Scholarship in Biochemistry, Pennsylvania State University	2004-2005

Frank Thomson Scholarship, Pennsylvania State University
Dean's Honor List, Pennsylvania State University

2000-2004
2001-2005

PREPRINTS

1. Price AR, **Bonner MF**, Peelle JE & Grossman M (2017) Neural coding of fine-grained object knowledge in perirhinal cortex. *bioRxiv*, doi: 10.1101/194829

PUBLICATIONS

1. **Bonner MF** & Epstein RA (2017) Computational mechanisms underlying cortical responses to the affordance properties of visual scenes. *PLOS Computational Biology*. 14:e1006111
2. **Bonner MF** & Epstein RA (2017) Coding of navigational affordances in the human visual system. *Proceedings of the National Academy of Sciences*, 114(18): 4793-8
3. Price AR, Peelle JE, **Bonner MF**, Grossman M & Hamilton RH (2016) Causal evidence for a mechanism of semantic integration in the angular gyrus as revealed by high-definition transcranial direct current stimulation. *Journal of Neuroscience*, 36(13): 3829-38
4. **Bonner MF**, Price AR, Peelle JE & Grossman M (2016) Semantics of the visual environment encoded in parahippocampal cortex. *Journal of Cognitive Neuroscience*, 28(3): 361-78
5. Price AR, **Bonner MF** & Grossman M (2015) Semantic memory: cognitive and neuroanatomical perspectives. In: *Brain Mapping: An Encyclopedic Reference*. Toga AW, Poldrack RA (Eds.), Waltham: Academic Press. 529-36
6. Price AR, **Bonner MF**, Peelle JE & Grossman M (2015) Converging evidence for the neuroanatomic basis of combinatorial semantics in the angular gyrus. *Journal of Neuroscience*, 35: 3276-84
7. **Bonner MF** & Grossman M (2014) The neural basis of semantic memory. In: *Dementia and Memory*. Nilsson L-G, Ohta N (Eds.) Hove: Psychology Press. 207-24
8. **Bonner MF** & Grossman M (2013) Deficits in semantic memory associated with focal neurodegenerative diseases. In: *The Boston Process Approach to Neuropsychological Assessment: A Practitioner's Guide*. Ashendorf L, Swenson R, Libon DJ (Eds.) Oxford: Oxford University Press. 200-16
9. **Bonner MF** & Price AR (2013) Where is the anterior temporal lobe and what does it do? *Journal of Neuroscience*, 33: 4213-5

10. **Bonner MF**, Peelle JE, Cook PA & Grossman M (2013) Heteromodal conceptual processing in the angular gyrus. *NeuroImage*, 71: 175-86
11. Grossman M, Peelle JE, Smith EE, McMillan CT, Cook P, Powers J, Dreyfuss M, **Bonner MF**, Richmond L, Boller A, Camp E & Burkholder L (2013) Category-specific semantic memory: Converging evidence from BOLD fMRI and Alzheimer's disease. *NeuroImage*, 68: 263-74
12. **Bonner MF** & Grossman M (2012) Gray matter density of auditory association cortex relates to knowledge of sound concepts in primary progressive aphasia. *Journal of Neuroscience*, 32(23): 7986-91
13. Grossman M, **Bonner MF** & Weinstein J (2011) Music and Semantic Dementia—Reply. *Archives of Neurology*, 68: 1089-90
14. Weinstein J, Koenig P, Gunawardena D, McMillan C, **Bonner MF** & Grossman M (2011) Preserved musical semantic memory in semantic dementia. *Archives of Neurology*, 68: 248-50
15. **Bonner MF**, Ash S & Grossman M (2010) The new classification of primary progressive aphasia into semantic, logopenic, or nonfluent/agrammatic variants. *Current Neurology and Neuroscience Reports*, 10(6): 484-90
16. Farag C, Troiani V, **Bonner MF**, Powers C, Avants B, Gee J, & Grossman M (2010) Hierarchical organization of scripts: converging evidence from fMRI and frontotemporal degeneration. *Cerebral Cortex*, 20: 2453-63
17. **Bonner MF**, Vesely L, Price C, Anderson C, Richmond L, Farag C, Avants B & Grossman M (2009) Reversal of the concreteness effect in semantic dementia. *Cognitive Neuropsychology*, 26(6): 568-79
18. Vesely L, **Bonner MF**, Reilly J & Grossman M (2007) Free association in semantic dementia: The importance of being abstract. *Brain and Language*, 103(1-2): 154-5
19. Zhang R, Liu ST, Chen W, **Bonner MF**, Pehrson J, Yen TJ & Adams PD (2007) HP1 proteins are essential for a dynamic nuclear response that rescues the function of perturbed heterochromatin in primary human cells. *Molecular and Cellular Biology*, 27(3): 949-62

CONFERENCE TALKS

1. **Bonner MF** & Epstein R. Computational mechanisms underlying the cortical analysis of affordance properties in visual scenes. *Society for Neuroscience*, Washington D.C., November 2017
2. **Bonner MF** & Epstein R. Neural coding of navigational affordances in visual scenes. *Society for Neuroscience*, San Diego, CA, November 2016
 - Organized a session on Scene Perception and Spatial Navigation and served as chair
3. **Bonner MF**, Ryan J & Epstein R. Neural coding of navigational affordances in visual scenes. *Vision Sciences Society*, St. Pete Beach, FL, May 2016
4. Price AR, **Bonner MF**, Peelle JE & Grossman M. Neural mechanisms for object semantics: fine-grained feature statistics for object representation. *Society for Neuroscience*, Chicago, IL, October 2015
5. Price AR, **Bonner MF**, Peelle JE & Grossman M. Neural coding of object knowledge reflects the co-occurrence statistics of the environment. *Vision Sciences Society*, St. Pete Beach, FL, May 2015
6. Price AR, Hamilton RH, **Bonner MF**, Peelle JE & Grossman M. Modulating language comprehension using HD-tDCS. *NYC Neuromodulation*, New York, NY, January 2015
7. Price AR, **Bonner MF**, Peelle JE & Grossman M. Modulating conceptual combination using focal non-invasive brain stimulation. *Society for Neuroscience*, Washington D.C., November 2014
8. **Bonner MF**, Peelle JE, Price AR & Grossman M. Structural covariance of the semantic memory network in healthy adults. *Society for the Neurobiology of Language*, San Diego, CA, November 2013
9. **Bonner MF**, Price AR, Peelle JE & Grossman M. At the interface of visual perception and long-term memory: Object knowledge and the medial temporal lobe. *Workshop on Concepts, Actions, and Objects*, Rovereto, Italy, May 2013
 - Selected for a travel award
10. **Bonner MF**, Price AR, Peelle JE & Grossman M. At the interface of visual perception and long-term memory: Object knowledge and the medial temporal lobe. *Vision Sciences Society*, Naples, FL, May 2013

11. **Bonner MF**, Price AR, Peelle JE & Grossman M. The medial temporal lobe supports visual semantic memory. *Society for the Neurobiology of Language*, San Sebastian, Spain, October 2012
12. Price AR, **Bonner MF**, Peelle JE & Grossman M. Conceptual combination in the angular gyrus. *Society for Neuroscience*, New Orleans, LA, October 2012
13. **Bonner MF**, Price AR, Peelle JE & Grossman M. The medial temporal lobe supports visual conceptual memory. *Society for Neuroscience*, New Orleans, LA, October 2012
14. **Bonner MF**, Vesely L, McMillan C, Avants B & Grossman, M. Reversal of the concreteness effect for verbs in semantic dementia. *Society for Neuroscience*, Chicago, IL, October 2009
15. **Bonner MF**. Free association in semantic dementia: The importance of being abstract. *Winter School for the International Research Training Group*, Aachen, Germany, October 2008

CONFERENCE POSTERS

1. **Bonner MF** & Epstein R. Computational mechanisms underlying fMRI responses to affordance properties in visual scenes. *Conference on Cognitive Computational Neuroscience*, New York, NY, September 2017
2. **Bonner MF** & Epstein R. Coding of navigational affordances in the human visual system. *Statistical Analysis of Neural Data Workshop*, Pittsburgh, PA, June 2017
3. **Bonner MF** & Epstein R. Computational mechanisms for identifying the navigational affordances of scenes in a deep convolutional neural network. *Vision Sciences Society*, St. Pete Beach, FL, May 2017
4. Price AR, **Bonner MF**, Peelle JE & Grossman M. A common, fine-grained code for object meaning in perirhinal cortex. *Society for Neuroscience*, San Diego, CA, November 2016
5. Price AR, **Bonner MF**, Peelle JE & Grossman M. Intersubject similarity of multivoxel codes in perirhinal cortex reflects the typicality of visual objects. *Vision Sciences Society*, St. Pete Beach, FL, May 2016
6. **Bonner MF**, Ryan J & Epstein R. Neural coding of navigational affordances in visual scenes. *Society for Neuroscience*, Chicago, IL, October 2015

7. Price AR, Peelle JE, **Bonner MF**, Grossman M & Hamilton RH. Altering mechanisms of combinatorial semantics through brain stimulation to the angular gyrus. *Society for the Neurobiology of Language*, Chicago, IL, October 2015
8. **Bonner MF**, Ryan J & Epstein R. Neural coding of navigational affordances in the local visual environment. *Vision Sciences Society*, St. Pete Beach, FL, May 2015
9. **Bonner MF**, Peelle JE, Price AR & Grossman M. Individual variability in a cortical semantic hub. *Society for the Neurobiology of Language*, Amsterdam, Netherlands, August 2014
10. Price AR, **Bonner MF**, Peelle JE & Grossman M. Modulating conceptual combination using focal non-invasive brain stimulation. *Society for the Neurobiology of Language*, Amsterdam, Netherlands, August 2014
11. **Bonner MF**, Peelle JE, Price AR & Grossman M. Individual variability in a cortical semantic hub. *Cold Spring Harbor Laboratory Symposium on Cognition*, Cold Spring Harbor, NY, May 2014
12. **Bonner MF**, Peelle JE, Price AR & Grossman M. Individual variability in a cortical semantic hub. *Cognitive Neuroscience Society*, Boston, MA, April 2014
 - Selected for a postdoctoral-fellows award
13. **Bonner MF**, Peelle JE, Price AR & Grossman M. Structural variability in a large-scale cortical network that relates to individual differences in language performance. *Society for Neuroscience*, San Diego, CA, November 2013
14. **Bonner MF**, Peelle JE, Cook P & Grossman M. The angular gyrus supports heteromodal semantic representations. *Society for the Neurobiology of Language*, San Sebastian, Spain, October 2012
15. Price AR, **Bonner MF**, Peelle JE & Grossman M. Conceptual combination in the angular gyrus. *Society for the Neurobiology of Language*, San Sebastian, Spain, October 2012
16. **Bonner MF**, Price AR, Peelle JE & Grossman M. Semantic retrieval recruits heteromodal regions and modality-specific association cortices. *Cognitive Neuroscience Society*, Chicago, IL, April 2012
17. Price AR, **Bonner MF**, Peelle JE & Grossman M. When concepts combine: semantic processing in the angular gyrus. *Cognitive Neuroscience Society*, Chicago, IL, April 2012

18. **Bonner MF** & Grossman M. When concepts go quiet: Reduced gray matter in auditory association cortex relates to knowledge of sound concepts in primary progressive aphasia. *Society for Neuroscience*, Washington D.C., November 2011
19. Price AR, **Bonner MF**, Peelle JE & Grossman M. The representations of sensory-motor word features during a semantic association task. *Society for Neuroscience*, Washington D.C., November 2011
20. **Bonner MF** & Grossman M. When concepts go quiet: Reduced gray matter in auditory association cortex relates to knowledge of sound concepts in primary progressive aphasia. *Society for the Neurobiology of Language*, Annapolis, MD, November 2011
21. Price AR, **Bonner MF**, Peelle JE & Grossman M. The representations of sensory-motor word features during a semantic association task. *Society for the Neurobiology of Language*, Annapolis, MD, November 2011
22. **Bonner MF**, Peelle JE & Grossman M. The role of angular gyrus and sensory-motor association cortices in representing word meanings: An fMRI study. *Cognitive Neuroscience Society*, San Francisco, CA, April 2011
23. Price AR, **Bonner MF**, Peelle JE & Grossman M. Word associations involve modality-specific cortices. *Cognitive Neuroscience Society*, San Francisco, CA, April 2011
24. **Bonner MF** & Grossman M. Sound, sight and action in meaning: fMRI evidence of word representations in perceptual and motor cortices. *Society for Neuroscience*, San Diego, CA, November 2010
25. Dreyfuss M, Smith EE, McMillan C, Gunawardena D, Richmond L, **Bonner MF** & Grossman M. Neural representation of word meaning: an fMRI study. *Society for Neuroscience*, San Diego, CA, November 2010
26. Grossman M, Smith EE, Gunawardena DE, Dreyfuss M, Richmond L, **Bonner MF** & McMillan C. Neural representation of word meaning in healthy seniors: an fMRI study. *Society for Neuroscience*, San Diego, CA, November 2010
27. **Bonner MF** & Grossman M. Sound, sight and action in meaning: fMRI evidence of word representations in perceptual and motor cortices. *Neurobiology of Language Conference*, San Diego, CA, November 2010
28. Dreyfuss M, Smith EE, McMillan C, Gunawardena D, Richmond L, **Bonner MF** & Grossman M. Neural representation of word meaning: an fMRI study. *Neurobiology of Language Conference*, San Diego, CA, November 2010

29. Grossman M, Smith EE, Gunawardena DE, Dreyfuss M, Richmond L, **Bonner MF** & McMillan C. Neural representation of word meaning in healthy seniors: an fMRI study. *Neurobiology of Language Conference*, San Diego, CA, November 2010
30. **Bonner MF** & Grossman M. Turning down the volume on semantics: Impaired knowledge of sound words in logopenic progressive aphasia. *Cognitive Neuroscience Society*, Montreal, Canada, April 2010
31. **Bonner MF**, Vesely L, McMillan C, Avants B & Grossman, M. Reversal of the concreteness effect for verbs in semantic dementia. *Neurobiology of Language Conference*, Chicago, IL, October 2009
32. Farag C, McCluskey L, Elman L, Goldmann Gross R, **Bonner MF** & Grossman M. Insensitive to hierarchy: ALS and FTD display overlapping executive impairment. *American Academy of Neurology*, Seattle, WA, April 2009
33. Vesely L, **Bonner MF**, Reilly J & Grossman M. Free association in semantic dementia: The importance of being abstract. *Academy of Aphasia*, Washington D.C., October 2007

INVITED TALKS

- Behavioral & Cognitive Neuroscience Retreat, University of Pennsylvania 2016
- Theatre Arts Program, University of Pennsylvania 2014
- Concepts Seminar, Harvard University 2014
- Cognitive Neuroscience Lab, Temple University 2014
- Department of Psychology, Washington University in St. Louis 2013
- Center for Cognitive Neuroscience Colloquium, University of Pennsylvania 2011

OTHER RESEARCH EXPERIENCE

Fox Chase Cancer Center, Philadelphia, PA, 2006
Scientific Technician, Genome Stability Group, Lab of Dr. Peter Adams

Pennsylvania State University, State College, PA, 2004-2005
Undergraduate Research, Center for Gene Regulation, Lab of Dr. Song Tan

TEACHING

Experience:

- Guest lecture on memory, Pre-Freshman Program, University of Pennsylvania, 2013

- Guest lecture on MRI, BE 483: Molecular Imaging, University of Pennsylvania, 2009
- Teaching assistant, BBB 109: Introduction to Brain and Behavior, University of Pennsylvania, 2009
- Tutor for chemistry and physics, Comprehensive Studies Program of the Pennsylvania State University, 2004-2005

Mentoring:

- Conor Gibbons High school student, Holy Ghost Preparatory School, 2015
- Talya Kramer Undergraduate student, University of Pennsylvania, 2014
- Jaime McKenna Undergraduate student, University of Pennsylvania, 2012-2013
- Nishant Neel Undergraduate student, University of Pennsylvania, 2012
- Vanessa Chuo Undergraduate student, University of Pennsylvania, 2011
- Thomas Case High school student, Germantown Friends School, 2010
- Amanda Fielding Undergraduate student, Holy Family University, 2007

Training:

- Methods in Biomedical Science and Engineering Education, BE 895, University of Pennsylvania, 2009

PUBLIC ENGAGEMENT

- Presentation on neuroscience during career day at Northwood Academy Charter School, Philadelphia, PA, 2014
- Member of a discussion panel at a public event on the science of sound, in collaboration with Pig Iron Theatre Company, 2014
- Discussion leader on neurodegenerative disease and language impairments at the Penn Neuroscience Boot Camp, 2011

PROFESSIONAL SERVICE

Ad hoc reviewer:

- Brain and Language
- Cerebral Cortex
- Cognitive and Behavioral Neurology
- Cortex
- Current Biology
- Journal of Cognitive Neuroscience
- Journal of Neuroscience
- NeuroImage
- Psychology Press
- Scientific Reports

Professional memberships:

- Cognitive Neuroscience Society
- Society for Neuroscience
- Society for the Neurobiology of Language
- Vision Sciences Society