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**Frank E. Garcea**

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**Education**

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**University of Rochester**, Rochester, NY, USA

Ph.D. Student, September 2012 – present

M.A. Brain and Cognitive Sciences, July 2015

Advisory committee: Bradford Mahon (mentor), Michael Tanenhaus, Robert Jacobs

**St. John Fisher College**, Rochester, NY, USA

September 2006 – May 2010

B.S. Psychology, *cum laude*; Minor, Biology

**Academic Research Experience**

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**Visiting Research Scholar**

October 2015 – December 2015

Department of Psychology, University of Padua (Eduardo Navarrete)

**Research Assistant/Lab Manager**

July 2009 – August 2012

Department of Brain and Cognitive Sciences, University of Rochester (Bradford Z. Mahon)

**Grants, Fellowships, and Awards**

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| 2016       | Kavli Summer Institute in Cognitive Neuroscience Fellow, UC Santa Barbara.                               |
| 2016       | Rovereto Workshop on Concepts, Actions, and Objects, Abstract Award.                                     |
| 2016       | Cognitive Neuroscience Society People's Choice Poster Award.   |
| 2014, 2015 | University of Rochester Center for Visual Science Vision Training Fellowship (NIH Grant 5T32EY007125-24) |
| 2014       | National Science Foundation Graduate Research Fellowship, Honorable Mention.                             |
| 2013       | Rovereto Workshop on Concepts, Actions, and Objects Abstract & Travel Award.                             |
| 2013       | Publication of Special Interest to Progress in the Field of Psychology.                                  |

Exceptional publication award for “What is in a tool concept? Dissociating manipulation knowledge from function knowledge.” (Garcea and Mahon, 2012, *Memory and Cognition*). (<https://www.psychologyprogress.com>).

2010 Psi Chi Undergraduate Research Grant. Competitive undergraduate research grant for dissociating category-specific object recognition processes.

### **Peer-reviewed Publications**

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Chen, Q., Garcea, F.E., Almeida, J., and Mahon, B.Z. (in press). Connectivity-based constraints on category-specificity in the ventral object processing pathway. *Neuropsychologia*.

Kristensen, S., Garcea, F.E., Mahon, B.Z., and Almeida, J. (2016). Temporal frequency tuning reveals interactions between the dorsal and ventral streams. *Journal of Cognitive Neuroscience*, 28, 1295-1302.

Vargas Jr., R., Garcea, F.E., Mahon, B.Z., and Narayan, D. (2016). Refining the clustering coefficient for analysis of social and neural network data. *Social Network Analysis and Mining*, 6:49.

Garcea, F.E., Kristensen, S., Almeida, J., and Mahon, B.Z. (2016). Resilience to the contralateral visual field bias as a window into object representations. *Cortex*, 81, 14-23.

Erdogan, G., Chen, Q., Garcea, F.E., Mahon, B.Z., and Jacobs, R. (2016). Multisensory part-based shape representations of objects in human lateral occipital complex. *Journal of Cognitive Neuroscience*, 28, 869-881.

Chen, Q., Garcea, F.E., and Mahon, B.Z. (2016). The representation of object-directed action and function knowledge in the human brain. *Cerebral Cortex*, 26, 1609-1618.

Stasenko, A., Bonn, C., Teghipco, A., Garcea, F.E., Sweet, C., Dombovy, M., McDonough, J., and Mahon, B.Z. (2015). A causal test of the motor theory of speech perception: a case of impaired speech production and spared speech perception. *Cognitive Neuropsychology*, 32, 38 - 57.

Stasenko, A., Garcea, F.E., Dombovy, M., and Mahon, B.Z. (2014). When concepts lose their color: A case of object color knowledge impairment. *Cortex*, 58, 217-238.

Garcea, F.E., and Mahon, B.Z. (2014). Parcellation of left parietal tool representations by functional connectivity. *Neuropsychologia*, 60, 131-143.

Stasenko, A., Garcea, F.E., and Mahon, B.Z. (2013). What happens to the motor theory of perception when the motor system is damaged? *Language and Cognition*, 5, 225-238.

Garcea, F.E., Dombovy, M., and Mahon, B.Z. (2013). Preserved tool knowledge in the context of impaired action knowledge: Implications for models of semantic memory. *Frontiers in Human Neuroscience*, 7, 1-18.

Garcea, F.E., and Mahon, B.Z. (2012). What is in a tool concept? Dissociating manipulation knowledge from function knowledge. *Memory and Cognition*, 40, 1303-1313.

Garcea, F.E., Almeida, J., and Mahon, B.Z. (2012). A right visual field advantage for visual recognition of manipulable objects. *Cognitive, Affective, and Behavioral Neuroscience*, 12, 813-825.

Mahon, B.Z., Garcea, F.E., and Navarrete, E. (2012). Picture-word interference and the response-exclusion hypothesis: A response to Mulatti and Coltheart. *Cortex*, 48, 373-377.

### **Manuscripts Under Peer-review**

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Garcea, F.E., and Mahon, B.Z. The organization of manipulable object concepts in the human

brain.

Garcea, F.E, Chen, Q., Vargas Jr., R., Narayan, D., and Mahon, B.Z. Task- and domain-specific modulation of functional connectivity in the human brain.

Chen, Q., Garcea, F.E., Jacobs, R., and Mahon, B.Z. Decoding object knowledge in the human brain during tool pantomiming and viewing.

## **Conference Presentations**

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### **Poster Presentations**

Garcea, F.E., Teghipco, A., Tivarus, M.E., Smith, S.O., Pilcher, W.H., and Mahon, B.Z. The role of the right hemisphere in recovery from conduction aphasia: A neurosurgical case study. Poster presentation at the Gordon Research Conference on the Neurobiology of Cognition. July 2016.

Chernoff, B., Garcea, F.E., Teghipco, A., Smith, S.O., Pilcher, W.H., and Mahon, B.Z. A temporal-parietal pathway for accessing action knowledge from visual input. Poster presentation at the Gordon Research Conference on the Neurobiology of Cognition. July 2016.

Chen, Q., Garcea, F.E., and Mahon, B.Z. Decoding object knowledge in the human brain during tool pantomiming and viewing. Poster presentation at the Gordon Research Conference on the Neurobiology of Cognition. July 2016.

Garcea, F.E., Chen, Q., and Mahon, B.Z. Processing dynamics of tool representations in the human brain: Insights from fMRI-based functional connectivity. Poster presentation at Rovereto Workshop on Concepts, Actions, and Objects: Functional and Neural Perspectives. Rovereto, IT. May 2016.

*2016 Rovereto Workshop on Concepts, Actions, and Objects, Abstract Award.*

Garcea, F.E., Vargas, R., Chen, Q., Narayan, D., and Mahon, B.Z., Task-based modulation of functional connectivity in the human brain. Poster presentation at The Cognitive Neuroscience Society Annual Meeting, New York, NY. April 2016.

Chen, Q., Garcea, F.E., Almeida, J., and Mahon, B.Z. Sharp category boundaries in the human brain revealed through multivariate analysis of functional connectivity and stimulus preferences. Poster presentation at The Cognitive Neuroscience Society Annual Meeting, New York, NY. April 2016.

Teghipco, A., Garcea, F.E., Tivarus, M., Smith, S., Pilcher, W.H., and Mahon, B.Z. Recovery from conduction aphasia depends on contributions from the right hemisphere: A case study. Poster presentation at The Cognitive Neuroscience Society Annual Meeting, New York, NY. April 2016.

*2016 CNS People's Choice Poster Award Winner.*

<https://www.cogneurosociety.org/brain-rewire-after-surgery/>

Vargas, R., Jr., Garcea, F.E., Mahon, B.Z., & Narayan, D. Analysis of graph theoretic functional connectivity in the human brain. The Society for Advancement of Chicanos/Hispanics and Native Americans in Science. Washington, D.C. October 2015.

Garcea, F.E, and Mahon, B.Z. Pantomiming object use decouples functional connectivity between temporal and parietal tool-selective areas. Poster presentation at The Cognitive Neuroscience Society Annual Meeting, San Francisco, CA. March 2015.

Chen, Q., Garcea, F.E., and Mahon, B.Z. The representation of object-directed action and function knowledge in the human brain. Poster presentation at The Cognitive Neuroscience Society Annual Meeting, San Francisco, CA. March 2015.

- Garcea, F.E., and Mahon, B.Z. Parcellation of left parietal tool representations by functional connectivity. Poster presentation at The Cognitive Neuroscience Society Annual Meeting, Boston, MA. April 2014.
- Stasenko, A., Teghipco, A., Bonn, C., Garcea, F.E., and Mahon, B.Z. The limits of speech perception without a motor system. Poster presentation at The Cognitive Neuroscience Society Annual Meeting, Boston, MA. April 2014.
- Garcea, F.E., Liao, D.A., and Mahon, B.Z. Parcellation of left parietal cortex by functional connectivity with the ventral and dorsal streams. Poster presentation at Rovereto Workshop on Concepts, Actions, and Objects: Functional and Neural Perspectives. Rovereto, IT. May 2013.
- 2013 Rovereto Workshop on Concepts, Actions, and Objects, Abstract Award.*
- Stasenko, A., Garcea, F.E., Dombovy, M., and Mahon, B.Z. When concepts lose their color: A case of selective loss of knowledge of object-color. Poster presentation at The Cognitive Neuroscience Society Annual Meeting, San Francisco, CA. April 2013.
- Garcea, F.E., and Mahon, B.Z. Relationships among action production, action recognition and semantics: Insights from apraxia. Poster presentation at The Cognitive Neuroscience Society Annual Meeting, Chicago, IL. April 2012.

### **Talk Presentations**

- Garcea, F.E., and Mahon, B.Z. Pantomiming object use decouples functional connectivity between temporal and parietal tool-selective areas. Data Blitz Talk presented at The Cognitive Neuroscience Society. San Francisco, CA. March 2015.
- Garcea, F.E., Liao, D.A., and Mahon, B.Z. Parcellation of left parietal cortex by functional connectivity with the ventral and dorsal streams. Talk presented at Rovereto Workshop on Concepts, Actions, and Objects: Functional and Neural Perspectives. Rovereto, IT. May 2013.

### **University of Rochester Poster Presentations**

- Garcea, F.E., and Mahon, B.Z. Pantomiming object use decouples functional connectivity between temporal and parietal tool-selective areas. Poster presentation at the University of Rochester Neuroscience Retreat. April 2015.
- Garcea, F.E., and Mahon, B.Z. Parcellation of left parietal tool representations by functional connectivity. Poster presentation at the 29<sup>th</sup> Annual Center for Visual Science Symposium. Rochester, NY. August 2014.
- Garcea, F.E., and Mahon, B.Z. Parcellation of left parietal tool representations by functional connectivity. Poster presentation at the Center for Visual Science 50<sup>th</sup> Anniversary Celebration. Rochester, NY. October 2013.
- DeRoma, J., Gaffin-Cahn, E., Garcea, F.E., and Mahon, B.Z. Is it true that a screwdriver is edible? Tracking the eyes while retrieving conceptual information. Poster presentation at The Center for Visual Science Undergraduate Student Fellowship Poster Session, Rochester, NY. August 2013.
- Holcomb, M., Garcea, F.E., Gaffin-Cahn, E., and Mahon, B.Z. Manipulable object knowledge: What the eyes tell us about conceptual and motor information. Poster presentation at The Center for Visual Science Undergraduate Student Fellowship Poster Session, Rochester, NY. August 2013.

Liao, D.A., Garcea, F.E., and Mahon, B.Z. Connectivity in the Tool Network: The Effects of an Induced Lesion. Poster presentation at The University of Rochester Medical Center Summer Scholars Poster Symposium, Rochester, NY. August 2012

Roe, M.A., Garcea, F.E., and Mahon, B.Z. Gray matter density analysis of regions of human cortex that represent tools. University of Rochester Undergraduate Research Exposition, Rochester, NY. April 2012.

### **University of Rochester Talk Presentations**

Garcea, F.E. Manipulable object representations in the human brain. Fourth-year graduate student talk. University of Rochester Department of Brain and Cognitive Sciences. Rochester NY. March 2016.

Garcea, F.E. Characterizing the processing dynamics among manipulable object representations in the human brain. University of Rochester Center for Visual Science Research Talk. Rochester, NY. October 2015.

Garcea, F.E., and Mahon, B.Z. Functional connectivity in the human tool processing network. Talk presented at The University of Rochester Neuroscience Retreat. April 2015.

Garcea, F.E. Dynamic modulation of functional connectivity in the human tool processing network. Third-year graduate student talk. University of Rochester Department of Brain and Cognitive Sciences. Rochester NY. April 2015.

Garcea, F.E. A connectivity-constrained account of tool knowledge in the human brain. University of Rochester Center for Visual Science Research Talk. Rochester, NY. September 2014.

Garcea, F.E. It takes a brain to use a tool. University of Rochester Department of Brain and Cognitive Sciences Lunch Talk. Rochester, NY. March 2014.

Garcea, F.E. Combining neuropsychology and functional imaging to investigate cognitive processing. Talk presented to the University of Rochester Undergraduate Neuroscience Group. May 2013.

### **Invited Talks**

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Moss Rehabilitation Research Institute, Philadelphia, PA, October 2016

Technische Universität München, Munich, Germany, November 2015

### **Ad hoc Reviewer**

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Cognition | Cognitive Neuropsychology | Frontiers in Human Neuroscience | Frontiers in Psychology | Human Brain Mapping | Journal of Neurophysiology | Neuropsychologia | PLOS One | Psychonomic Bulletin and Review

### **Professional Memberships**

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Cognitive Neuroscience Society

Psi Chi: The International Honor Society in Psychology

### **Teaching Experience**

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Teaching Assistant

Fall 2014      BCS 242, Neuropsychology, Dr. John Langfitt

Fall 2013      BCS 110, Neural Foundations of Behavior, Dr. Andrea Hinds

Spring 2013    BCS 110, Neural Foundations of Behavior, Dr. Andrea Hinds

### **Guest Lectures**

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Garcea, F.E. Action and object knowledge in the human brain. Guest lecture for Dr. John Langfitt. University of Rochester, September 30, 2014.

### **Graduate Coursework**

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Behavioral Methods in Cognitive Science	General Linear Approaches to Data Analysis I
Cognition	General Linear Approaches to Data Analysis II
Cognitive Neuroscience	Language
Ethics and Professional Integrity in Research	Perception and Motor Systems
fMRI Methods in Cognitive Science	

### **Undergraduate Students Mentored**

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Alena Stasenko (2012)	Alex Teghipco (2014)
Mary Abbe Roe (2013)	Max Sims (2016)
Diana Liao (2013)	Raouf Belkhir, Bram Diamond (2017)
Michelle Holcomb (2014)	Wesley Lewis (2019)