

Academic Appointments

- 2015 – pres. **Assistant Professor**, Dept. of Psychological and Brain Sciences, Indiana University
 2014 – 2015 **Research Assistant Professor**, Dept. of Psychological and Brain Sciences, Boston University

Research Training

- 2008 – 2014 **Boston University, Boston, MA**
 Postdoctoral fellowship in the Department of Psychological and Brain Sciences
 Advisor: Michael Hasselmo
- 2002 – 2008 **Princeton University, Princeton, NJ** (M.A. conferred 5/2004, Ph.D. conferred 5/2008)
 Graduate training in the Department of Psychology
 Advisors: Kenneth Norman (Primary), Jonathan Cohen
 Thesis title: *Testing a model of competition-dependent weakening through pattern classification of EEG*
- 1998 – 2002 **Brandeis University, Waltham, MA** (B.S. conferred May 2002)
 Undergraduate honors research in the Department of Psychology, Neuroscience major
 Advisor: Michael Kahana

Funding & Awards

- 2016 – 2017 **Ralph E. Powe Junior Faculty Enhancement Award from Oak Ridge Associated Universities**
 2010 – 2013 **NIH Post-doctoral Ruth L. Kirschstein National Research Service Award (NRSA; F32 MH090671)**
 2006 – 2007 **NIH Pre-doctoral Ruth L. Kirschstein National Research Service Award (NRSA; F31 MH077469)**
 2002 – 2005 **NIH Princeton University Training Program in Quantitative Neuroscience (T32 MH065214)**
 2001 & 2002 **NSF Integrative Graduate Education and Research Training Fellowship (IGERT)**

Publications

Journal Articles

- Climer, J.R., DiTullio, R., **Newman, E.L.**, Hasselmo, M.E., Eden, U.T. (2015) Examination of rhythmicity of extracellularly recorded neurons in the entorhinal cortex. *Hippocampus*. 25(4), 460-473. doi: 10.1002/hipo.22383
- Newman, E.L.**, Hasselmo, M.E. (2014) Grid cell properties vary as a function of theta phase locking preferences in the rat medial entorhinal cortex. *Frontiers in Systems Neuroscience*. 8:193. doi: 10.3389/fnsys.2014.00193
- Newman, E.L.**, Climer, J.R., Hasselmo, M.E. (2014) Grid cell spatial tuning reduced following systemic muscarinic receptor blockade. *Hippocampus*, 24(6), 643-655.
- Newman, E.L.**, Hasselmo, M.E. (2014) CA3 sees the big picture while dentate gyrus splits hairs. *Neuron*, 81(2).
- Onslow, A.C.E., Hasselmo, M.E., **Newman, E.L.** (2014) DC-shifts in amplitude in-field generated by an oscillatory interference model of grid cell firing. *Frontiers in Systems Neuroscience*. 8(1).
- Newman, E.L.**, Gillet, S.N., Climer, J.R., Hasselmo, M.E. (2013) Cholinergic blockade reduced theta-gamma phase amplitude coupling and speed modulation of theta frequency consistent with behavioral effects on encoding. *Journal of Neuroscience*, 33(50), 19635-19646.
- Climer, J.R., **Newman, E.L.**, Hasselmo, M.E. (2013) Phase coding by grid cells in unconstrained environments: Two-

dimensional phase precession. *European Journal of Neuroscience*, 38(4): 2526-41.

Newman, E.L., Shay, C.F., Hasselmo, M.E. (2012) Malignant synaptic growth and Alzheimer's disease. *Future Neurology*, 7(5), 557-571.

Newman, E.L., Gupta, K., Climer, J.R., Monaghan, C.K., Hasselmo, M.E. (2012) Cholinergic modulation of cognitive processing: insights drawn from computational models. *Frontiers in Behavioral Neuroscience*, 6(24).

Newman, E.L., Norman, K.A. (2010). Moderate excitation leads to weakening of perceptual representations. *Cerebral Cortex* 20(11) pp. 2760-70.

Hasselmo, M.E., Brandon, M.P., Yoshida, M., Fransen, E., Giocomo, L.M., Heys, J., **Newman, E.L.** (2009). A phase code for memory could arise from circuit mechanisms in entorhinal cortex. *Neural Networks* 22(8) pp. 1129-38.

Newman, E.L., Caplan, J.B., Kirschen, M.P., Korolev, I.O., Sekuler, R., Kahana, M.J. (2007) Learning your way around town: Virtual taxi drivers reveal secrets of navigational learning. *Cognition* 104(2), 231-253.

Norman, K.A., **Newman, E.L.** & Detre, G.J. (2007). A neural network model of retrieval-induced forgetting. *Psychological Review* 114 (4), 887-953.

Norman*, K.A., **Newman***, E.L., Detre, G.J., Polyn, S.M. (2006) How inhibitory oscillations can train neural networks and punish competitors. *Neural Computation* 18:1577-1610.

* **Indicates co-first authorship**

Norman, K.A., **Newman, E.L.**, Perotte, A.J. (2005) Methods for reducing interference in the complementary learning systems model: Oscillating inhibition and autonomous memory rehearsal. *Neural Networks* 18:1212-1228.

Ekstrom, A.D., Kahana, M.J., Caplan, J.B., Fields T.A., Isham, E.A., **Newman, E.L.**, Fried I. (2003). Cellular networks underlying human spatial navigation. *Nature* 425:184-188.

Caplan, J.B., Madsen, J.R., Schulze-Bonhage, A., Aschenbrenner-Scheibe, R., **Newman, E.L.**, Kahana, M.J. (2003) Human theta oscillations related to sensorimotor integration and spatial learning. *Journal of Neuroscience* 23(11):4726-4736.

Book Chapters

Norman, K. A., Quamme, J.R., **Newman, E.L.** (2009). Multivariate methods for tracking cognitive states. In F. Rösler, C. Ranganath, B. Röder, & R. H. Kluwe (Eds.), *Neuroimaging in Human Memory: Linking cognitive processes to neural systems*. New York: Oxford University Press.

Selected Presentations at Scientific Meetings

Newman, E.L. (2015) Rhythms of neural information processing and their cholinergic conductor. *Presentation at the 39th Annual Winter Conference on the Neurobiology of Learning and Memory, Park City, UT.*

Newman, E. L., Gillet, S. N., Climer, J. R., Hasselmo, M. E. (2013) Falling on deaf ears: gamma generation impaired following systemic administration of the cholinergic antagonist scopolamine in rats. *11th Annual Alzheimer's Disease Research Day, Boston University.*

Newman, E. L., Gillet, S. N., Climer, J. R., Hasselmo, M. E. (2013) Speed modulation of theta frequency and theta-gamma coupling diminished following systemic scopolamine administration. *Society for Neuroscience abstracts.*

Newman, E. L., Gillet, S. N., Climer, J. R., Hasselmo, M. E. (2012) Effects of cholinergic modulation on interactions of

entorhinal cortex and hippocampus as measured by theta modulation of high and low gamma in the rat. *Society for Neuroscience abstracts*.

Newman, E.L., Hasselmo, M.E. (2011) Grid cells and acetylcholine: Role of muscarinic modulation in theta rhythmicity and spatial tuning of grid cell firing fields. *Society for Neuroscience abstracts*.

Gillet, S.N., **Newman, E.L.**, Hasselmo, M.E. (2011) Projected stimuli sufficient for successful learning in a conditional discrimination forced choice task. *Society for Neuroscience abstracts*.

Newman, E.L., Abi-Karam, A., Bogaard, A., Hasselmo, M.E. (2010) Analysis of grid cell spatial firing patterns in the rat during manipulations of optic flow. *Society for Neuroscience abstracts*.

Newman, E.L., Norman, K.A. (2008) Suppressing perceptual representations through partial activation. *Society for Neuroscience abstracts*.

Newman, E.L., Norman, K.A. (2007) Using EEG pattern classification to track competition in negative priming. *Cognitive Neuroscience Society meeting*, New York, NY.

Newman, E.L., Gobbini, I., Bryan, R., Haxby, J., Norman, K.A. (2006) Sub-trial classification of categorical perception in EEG. *Annual meeting of the Organization for Human Brain Mapping*.

Newman, E.L., Norman, K.A. (2003) A Neural Network Model of Retrieval-Induced Forgetting. *Cognitive Neuroscience Society meeting*, New York, NY.

Ekstrom, A.D., Fried, I., **Newman, E.L.**, Caplan, J.B., Kahana, M.J. (2002) Cellular Correlates of Human Spatial Navigation. *Society for Neuroscience abstracts*.

Caplan, J.B., Madsen, J.R., **Newman, E.L.**, Kahana, M.J. (2002) Oscillatory Correlates of Exploratory and Goal-Seeking Behavior in Humans. *Society for Neuroscience abstracts*.

Reviewing service (ad-hoc)

- | | |
|--|---------------------------------------|
| ACS Chemical Neuroscience | Journal of Computational Neuroscience |
| Behavioural Brain Research | Journal of Neuroscience |
| Behavioral Neuroscience | Journal of Neurophysiology |
| Brain and Behavior | Journal of Psychopharmacology |
| Brain Research | Learning & Memory |
| Cerebral Cortex | Nature Communications |
| Current Biology | NeuroImage |
| Developmental Psychology | Neuroscientist |
| European Journal of Cognitive Psychology | Psychological Review |
| Frontiers in Cellular Neuroscience | Psychonomic Bulletin & Review |
| Frontiers in Systems Neuroscience | Psychopharmacology |
| Hippocampus | |

Selected trainees

- 2013 – present **Samuel Levy** Research assistant
 Animal behavior • Rat electrophysiology • Microdialysis • Programming intensive data analysis
- 2012 – 2014 **Elijah Petter** Undergraduate research program
 Animal behavior • Rat electrophysiology
 Now: Graduate student, Duke University (Lab of Warren Meck)

- 2011, 2013 **Mitchell Morton** High school research program
Animal behavior • Rat electrophysiology
Now: Undergraduate student, Columbia University (Labs of Maria Karayiorgou and Joseph Gogos)
- 2010 – 2012 **Shea Gillet** Undergraduate research program
Animal behavior • Rat electrophysiology
Now: Graduate student, UCSD (Lab of Jeffrey Isaacson)
- 2011 **Angel Patricio Lara** High school research program for at-risk students
Animal behavior
Now: Undergraduate student, Bunker Hill Community College
- 2010 – 2011 **Owen Dean** Undergraduate research program
Programming intensive data analysis
Now: Research assistant, NYU (Lab of Michael Long)