

KATHERINE D DUNCAN

University of Toronto
Department of Psychology
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EDUCATION

Ph.D. Psychology, New York University, New York, NY, USA 2006 - 2011
Advisor: Lila Davachi

B.S. Specialist in Psychology and major in Cognitive Science
University of Toronto, Toronto, ON, Canada 2001 - 2006
Advisor: Morris Moscovitch

POSITIONS HELD

Assistant Professor, Department of Psychology, University of Toronto, 2015-present
Toronto, ON, Canada

Postdoctoral Research Fellow, Columbia University, 2011-2015
New York, NY, USA
Advisor: Daphna Shohamy

GRANTS AND HONORS

Natural Sciences and Engineering Research Council of Canada 2016-2021
Project title: Investigating the Influence of Novelty on Learning and Memory
(\$185,000 CAD)

Ontario Research Fund 2015-2020
Project title: Dynamic Memory States in the Human Brain. (\$100,000 CAD)

Psychology PostDoc Program, University of Toronto 2015-2017
Co-Investigators: Amy Finn & Christopher Honey (\$40,000 CAD)

Canadian Foundation for Innovation Infrastructure Grant 2015-2020
Project title: Dynamic Memory States in the Human Brain. (\$100,000 CAD)

Canadian Institute of Health Research Fellowship 2013-2016
Project Title: Memory Dysfunction in Schizophrenia and Parkinson's Disease:
Investigating the Role of Dopamine using Pharmacological fMRI (\$150,000 CAD)

PUBLICATIONS

Patil A, **Duncan K**. Shifting the balance between pattern separation and completion: Recent memory retrieval increases people's subsequent ability to recall associations. In preparation.

Duncan K, Doll B, Daw N, Shohamy D. Hippocampal contributions to configural feedback-based learning. In preparation.

Duncan K, Shohamy D. Memory states influence choices. Accepted at *Journal of Experimental Psychology: General*.

Tompson A, **Duncan K**, Davachi L. High-resolution investigation of memory-specific reinstatement in the hippocampus and perirhinal cortex. In revision at *Hippocampus*.

Tompson A, **Duncan K**, Davachi L. (2015) Post-encoding functional connectivity during an irrelevant task reveals differential contributions of VTA interactions with MTL subregions to associative and item memory consolidation. *Journal of Neuroscience* 35, 7326-7331.

Doll BB, **Duncan K**, Simon D, Shohamy D, Daw N. (2015) Model-based choices involve prospective neural activity. *Nature Neuroscience* 18, 767-772.

Duncan K, Tompson A, Davachi L. (2014) Associative encoding and retrieval are predicted by functional connectivity in distinct hippocampal area CA1 pathways. *Journal of Neuroscience* 34, 11188-11198.

Duncan K, Sadanand A, Davachi L (2012) Memory's penumbra: Episodic memory decisions induce lingering mnemonic biases. *Science* 337: 485-487.

Duncan K, Ketz N, Inati S, Davachi L (2012) Area CA1 as a match/mismatch detector: A high-resolution fMRI study of the human hippocampus. *Hippocampus* 22: 389-398.

Duncan K (2011) Neural and cognitive mechanisms underlying human episodic memory encoding and retrieval. *Doctoral Thesis, New York University*.

Staresina B, **Duncan K**, Davachi L (2011) Perirhinal and parahippocampal cortices differentially contribute to later recollection of object- and scene-related event details. *Journal of Neuroscience* 31: 8739-8747.

Duncan K, Curtis C, Davachi L (2009) Distinct memory signatures in the hippocampus: intentional states distinguish match and mismatch enhancement signals. *Journal of Neuroscience* 29: 131-139.

CONFERENCE PRESENTATIONS

Patil A, Mian F, El Sheikh J, Duncan K. “Shifting the balance between pattern separation and completion: Recent memory retrieval increases people's subsequent ability to recall associations”, Cognitive Neuroscience Society, 2016, New York.

Sharp M, Foerde K, **Duncan K**, Shohamy D. “Effects of dopamine on the consolidation of learning and memory: Implications for Parkinson’s disease”, Cognitive Neuroscience Society, 2016, New York.

Lohans L, **Duncan K**, Thesen T, Devinsky O, Davachi L, “Modulation of mnemonic processing based on task relevance”, Cognitive Neuroscience Society Annual Meeting, 2016, New York.

Patil A, Mian F, El Sheikh J, Duncan K. “Shifting the balance between pattern separation and completion: Recent memory retrieval increases people's subsequent ability to recall associations”, Lake Ontario Visionary Establishment, 2016, Niagara Falls.

Duncan K, Doll BB, Daw ND, Shohamy D, “Hippocampal Contributions to Configural Probabilistic Learning”, Society of Neuroscience Annual Meeting, 2015, Chicago.

Sharp M, Foerde K, **Duncan K**, Shohamy D. “Effects of dopamine on the consolidation of incremental learning: Implications for Parkinson’s disease”, Society of Neuroscience Annual Meeting, 2015, Chicago.

Tomparry A, **Duncan K**, Davach L, “High-resolution investigation of trial-level and state-level similarity in the hippocampal subfields and MTL cortex”, Society for Neuroscience Annual Meeting, 2013, San Diego.

Duncan K, Doll BB, Daw ND, Shohamy D, "Interaction between the medial temporal lobe and the striatum during configural and elemental probabilistic classification learning", Society for Neuroscience Annual Meeting, 2013, San Diego.

Doll, BB, **Duncan K**, Simon DA, Shohamy D, Daw ND, "Neural correlates of model-based and model-free reinforcement learning strategies", Society for Neuroscience Annual Meeting, 2013, San Diego.

Duncan K, Shohamy D, "Recent exposure to novelty influences how memory guides decisions", Multidisciplinary Conference on Reinforcement Learning and Decision Making, 2013, Princeton.

Doll, BB, **Duncan K**, Simon DA, Shohamy D, Daw ND, "Neural correlates of forward planning in model-based reinforcement learning", Multidisciplinary Conference on Reinforcement Learning and Decision Making, 2013, Princeton.

Duncan K, Shohamy D, “Value-based decisions are modulated by exposure to familiar vs. novel cues”, Cognitive Neuroscience Society Annual Meeting, 2013, San Francisco.

Tomparry A, **Duncan K**, Davachi L, “What counts as ‘rest’?: low–frequency correlations within the medial temporal lobe during an unrelated task predict memory”, Cognitive Neuroscience Society Annual Meeting, 2013, San Francisco.

Duncan K, Davachi L, “High-resolution fMRI measurements of hippocampal and medial temporal lobe subregion interactions during episodic memory formation and retrieval.” Cognitive Neuroscience Society Annual Meeting, 2011, San Francisco.

Duncan K, Davachi L, “Carry-over effects provide evidence for pattern separation and completion biases.” Society for Neuroscience Annual Meeting, 2010, San Diego.

Duncan K, Staresina B, Davachi L, “Temporal Dynamics of blood-oxygen-level dependent (BOLD) responses in the medial temporal lobe during associative encoding.” Cognitive Neuroscience Society Annual Meeting, 2010, Montreal.

Staresina B, **Duncan K**, Davachi L, “Domain specificity in medial temporal lobe cortex during episodic memory formation.” Cognitive Neuroscience Society Annual Meeting, 2010, Montreal.

Duncan K, Ketz N, Davachi L, “‘Match’ and ‘mismatch’ signals: A high-resolution fMRI study of the human hippocampus.” Cognitive Neuroscience Society Annual Meeting, 2009, San Francisco.

Duncan K, Ketz N, Davachi L, “‘Match’ and ‘mismatch’ signals: A high-resolution fMRI study of the human hippocampus.” Society for Neuroscience Annual Meeting, 2008, Washington DC.

Duncan K, Davachi L, “Relational ‘match’ and ‘mismatch’ signals in the human hippocampus are differentially modulated by active maintenance and perceptual novelty.” Cognitive Neuroscience Society Annual Meeting, 2008, San Francisco.

Duncan K, Davachi L, “Relational ‘match’ and ‘mismatch’ signals in the human hippocampus.” Society for Neuroscience Annual Meeting, 2007, San Diego.

TALKS

“Recent exposure to novelty shapes basic human memory processes.” International Conference On Memory, Budapest, Hungary, 2016.

“Memory states influence value-based decision making”. University College London Affective Brain Seminar Series, London, 2016.

“Reading between the trials: How learning and memory relate to background measures of functional connectivity”. Toronto Western Research Institute Imaging Rounds, Toronto, 2016.

“The influence of ongoing cognitive and neural processing on learning and memory”. Ebbinghaus Empire Meeting, Toronto, 2016.

“Reading between the trials: how learning and memory relate to background measures of functional connectivity”. Rotman Research Institute Rounds, Toronto, 2016.

“The penumbra of memory: How lingering biases in mnemonic processing influence memory.” Everything Neuroscience Conference, Toronto, ON, 2015.

"Hippocampal contributions to configural probabilistic learning." Manhattan Area Memory Meeting, Princeton, NJ, 2015.

"Contributions of episodic memory to value-based decisions." Society for Neuroeconomics, Miami, FL, 2014.

"Contributions of episodic memory to value-based decisions." Manhattan Area Memory Meeting, New York, NY, 2014.

"The penumbra of memory: How lingering biases in mnemonic processing influence memories and decisions." University of Toronto, Toronto, ON, 2013.

"Recent exposure to novelty influences how memory guides decisions". Manhattan Area Memory Meeting, New York University, NY, 2013.

“The penumbra of memory: How our memories and decisions are influenced by recent mnemonic processing”. Cognitive Lunch Talk Series, Columbia University, NY, 2013.

"The distinct processing demands of episodic encoding and retrieval: behavioral consequences and hippocampal mechanisms". The Rotman Research Institute, Toronto, ON, 2012.

“High-resolution fMRI reveals distinct encoding and retrieval states within the hippocampal and midbrain network”. Society for Neuroscience, Washington DC, 2011.

“The tension between encoding and retrieval: An investigation of behavioral consequences and hippocampal mechanisms”. Motivated Memory Group Meeting, Duke University, Durham, 2010.

“The tension between encoding and retrieval: An investigation of behavioral consequences and hippocampal mechanisms”. Learning Lab Group Meeting, Columbia University, New York, 2010.

“Characterizing the variability of hemodynamic responses in the medial temporal lobe: Functional significance and implications for modeling”. Center for Brain Imaging Users Group Meeting, New York, 2010.

“Match/mismatch calculations in the human hippocampus: A high-resolution fMRI study”. Society for Neuroscience, Chicago, 2009.

“Relational ‘match’ and ‘mismatch’ signals in the human hippocampus are differentially modulated by active maintenance and perceptual novelty”. Brown Bag Series, New York University, New York, 2008.

PROFESSIONAL ACTIVITIES

Ad Hoc Reviewer: *Journal of Neuroscience, ELife, Journal of Cognitive Neuroscience, Hippocampus, Neuropsychologia, Cerebral Cortex, Neuroimage, Journal of Neurophysiology, Journal of Language and Memory, Neurobiology of Learning and Memory, Social Cognitive and Affective Neuroscience, Memory & Cognition, and Neurocase*

Professional membership in the *Society for Neuroscience* and the *Cognitive Neuroscience Society*, 2007-present; *Society for Neuroeconomics*, 2014-2015.

Co-organizer of the Brown Bag Talk Series, New York University, 2009-2010.

On organizing committee for the Advanced MRI Work shop at the Center for Brain Imaging, NYU, 2010.

TEACHING EXPERIENCE

<i>Instructor, University of Toronto, Cognitive Deficits in Neurological Disorders</i>	2016
<i>Instructor, New York University, Cognition</i>	2011
<i>Teaching Assistant, New York University, Cognition</i> <i>Led two weekly recitation sections</i>	2010
<i>Teaching Assistant, New York University, Intermediate masters statistics</i> <i>Led weekly recitation and lab sections</i>	2009
<i>Teaching Assistant, New York University, Lab in human cognition</i> <i>Led weekly lab sections</i>	2008
<i>Teaching Assistant, New York University, Introduction to psychology</i>	2007

POSTDOCTORAL TRAINEES

Andrew Bauer	2016-
Meg Schlichting	2016-

GRADUATE STUDENTS MENTORED

Anuya Patil	2015-	<i>Current Masters Student, University of Toronto</i>
Rachel Downey	2015-16	<i>Current PhD Student, Concordia University</i>
Vasilisa Skvortsova	2008-10	<i>Obtained PhD, Ecole des Neurosciences de Paris</i>

UNDERGRADUATE STUDENTS MENTORED

Azara Lalla	2016-	<i>Current Undergraduate, University of Toronto</i>
Helen Liu	2016-	<i>Current Undergraduate, University of Toronto</i>
Yaxxin Liu	2016-	<i>Current Undergraduate, University of Toronto</i>
Freda Jian	2016-	<i>Current Undergraduate, University of Toronto</i>
Hannah Tarder-Stoll	2016-	<i>Current Undergraduate, University of Toronto</i>
Sara Pishdadian	2016	<i>Current Masters Student, York University</i>
Luisa Man	2015-16	<i>Current Masters Student, Queen's University</i>
Shafquat Arefeen	2015-16	<i>Financial Data Analyst, Ontario Securities Commission</i>
Dylan Tucker	2015-16	<i>Current Medical Student, McMaster University</i>
Eugeniya Barkova	2015-16	
Ragave Illaalagan	2015-16	<i>Current Undergraduate, University of Toronto</i>
Jihad El Sheikh	2015-16	<i>Current Undergraduate, University of Toronto</i>
Andrew Gregory	2014-15	<i>Current Graduate Student, UC Irvine</i>
Luke Lawson	2014-15	<i>Current research assistant, Columbia University</i>
Emily Feldstein	2014	<i>Current undergraduate student, Yale University</i>
Allie Fetner	2013-14	<i>Current post-bacc student, Columbia University</i>
Annika Semmler	2013	<i>Current Medical student, Vrije Universiteit</i>

Sam Meyer	2011-13	<i>Current PhD student, University of New Mexico</i>
Alex Chang	2012	
Alice Berners-Lee	2010-11	<i>Current PhD student, Jonh's Hopkins</i>
Arhanti Sadanand	2010-11	<i>Obtained MD, Virginia Commonwealth University</i>