

*Thomas M. Biba*  
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## Education

### **University of Toronto**

PhD Candidate in Psychology  
Concentration: Cognitive Neuroscience

GPA: 4.0

### **University of Toronto**

M.A. in Psychology  
Concentration: Cognitive Neuroscience

Degree Awarded: October 2021

GPA: 4.0

### **University of San Francisco**

B.A. in Psychology, *Summa Cum Laude*  
Concentration: Honors in Psychology  
Minor in Philosophy

Degree Awarded: December 2016

GPA: 3.94

### **City College of San Francisco**

A.S. in Social and Behavioral Sciences, *High Honors*  
A.A. in Liberal Arts and Humanities, *High Honors*

Degrees Awarded: December 2013

GPA: 3.73

### **Relevant Coursework (Graduate)**

Functional Neuroanatomy of the MTL, Pattern Analysis in Neuroimaging, Neural Oscillations: Methods and Applications

### **Relevant Coursework (Undergraduate)**

Honors Thesis Seminar, Advanced Research Methods, Philosophy of Social Science, Logic, The Social Implications of Scientific Rationality, Learning and Memory, Cognitive Psychology, Biological Psychology, Research Design, Psychological Statistics, Human Biology

## Research Experience

### **PhD Student, Duncan Lab and Neuron to Brain Lab**

October 2021- Present

*PI: Dr. Katherine Duncan, University of Toronto*

*PI: Dr. Taufik Valiante, Krembil Brain Institute*

- Replicate and extend online experiment investigating behavioral oscillations in mnemonic processing, using TurkPrime, Inquisit and R
- Prepare in lab version of this experiment for intra-cranial electroencephalography (iEEG)
- Help with connecting stereo-electroencephalography (sEEG) patients to Neuralynx at Toronto Western Hospital (TWH)
- Run behavioral tasks with epilepsy patients while recording sEEG at TWH
- Present research at conferences and invited talks at other universities
- Draft manuscript of recent findings

### **Masters Student, Duncan Lab**

August 2020- September 2021

*PI: Dr. Katherine Duncan, University of Toronto*

- Design experiment and collect and analyze behavioral data in a study investigating the behavioral oscillations in mnemonic processing, using TurkPrime, Inquisit and R
- Analyze fMRI data in an experiment investigating the influence of fluctuations in perceptual and mnemonic processing on pattern completion, using machine learning algorithms implemented in PyMVPA to conduct MVPA analyses.

**Lab Manager, Hutchinson Lab of Cognitive Neuroscience**

July 2017 – August 2020

*PI: Dr. Benjamin Hutchinson, University of Oregon*

- Collect and analyze fMRI and behavioral data in an experiment investigating the neural basis of temporal attention. Utilize FSL for fMRI data analysis and R for behavioral data analysis.
- Conduct a meta-analysis of the divided attention literature, exploring the role of attention in episodic memory retrieval, utilizing R for data analysis and Latex for composing the manuscript.
- Build an fMRI analysis pipeline incorporating dcm2Bids and fMRIPrep for preprocessing and FSL for univariate analysis, implemented in Bash and Python in a cluster environment.
- Obtain certification as an fMRI scanner operator to run participants without a supervising technician and run participants in various fMRI experiments: Screening participants, running scans from start to finish, and modifying scan sequences when necessary.
- Help set up a real-time fMRI experiment aimed at resolving the competition between mnemonic and perceptual processing.
- Manage lab operations: compose and revise IRB documents, interview and train research assistants, schedule and screen participants for fMRI and behavioral experiments, and complete various administrative tasks.

**Lab Manager, DuBrow Lab**

January 2019 - August 2020

*PI: Dr. Sarah DuBrow, University of Oregon*

- Design an experiment investigating the effect of context ambiguity on event memory, coding the experiment in Python and analyzing the behavioral data in R.
- Code a stimulus rating task in Inquisit and collect rating data online using Mturk for stimulus development.
- Recruit participants, train research assistants and manage lab operations.

**Research Assistant, Memory and Cognition Lab**

September 2015 – May 2017

*PI: Dr. Benjamin Levy, University of San Francisco*

- Designed an experiment examining the mnemonic consequences of thought suppression, coding the task in Matlab and analyzing the behavioral data in R.
- Designed an experiment testing the effects of visual context on cognition and affect, coding the task in Matlab and analyzing the behavioral data in SPSS.
- Generated abstract stimuli algorithmically using Mathematica and ran online surveys using Qualtrics, launched on Mturk, to collect ratings of stimulus features.
- Recruited and trained research assistants and collected behavioral data in various memory experiments using Matlab.
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**Research Assistant, Psychophysiology Lab**

June – December 2015

PI: Dr. James Gross, Stanford University

- Composed an extensive literature review postulating novel mechanisms for the cognitive and affective benefits of experiencing natural environments.
- Collected and analyzed behavioral data in an experiment examining the affective benefits of nature experience, using Qualtrics for data collection and Excel for data analysis.
- Designed and ran online surveys refining stimulus material using Qualtrics.

## Technical Skills

Programming Languages

- *Matlab (Psychtoolbox), Bash (shell), R (lme4, ggplot2, metafor), Python (PsychoPy), Inquisit, Latex (Overleaf)*

fMRI Analysis Software

- *FSL, fMRIPrep, PyMVPA*

Computing/Online Interfaces

- *Run jobs in a cluster environment, Mturk (TurkPrime), Qualtrics*

## Conference Symposium Presentations

**Biba, T.,** Herrmann, B., Fukuda, K., Katz, C., Valiante, T., Duncan, K. (2022). Memory's pulse: theta rhythmic sampling underlies episodic memory formation. *Society for Neuroscience, San Diego, CA.*

**Biba, T.,** Herrmann, B., Fukuda, K., Katz, C., Valiante, T., Duncan, K. (2022). Rhythmic sampling underlies episodic memory formation. *Toronto Area Memory Group, Toronto, ON.*

## Conference Poster Presentations

**Biba, T.,** Bjorn, H., Fukuda, K., & Duncan, K. (2022). Rhythmic sampling underlies episodic memory formation. *Cognitive Neuroscience Society, San Francisco, CA.*

Han, D., **Biba, T.,** & DuBrow, S. (2021). Investigating the relationship between prediction errors in task states and memory. *Western Psychological Association, Las Vegas, Nevada*

**Biba, T.,** Singh, I., & Hutchinson, J. B. (2019). The neural basis of internal attention: characterizing attentional orienting along a memory array. *Cognitive Neuroscience Society, San Francisco, CA.*

Zollars, H., T., Patel, R., Rejer, N., Licas, C., Weiss, J., **Biba, T.,** Ennis, M., & Levy, B. (2019). Exploring the memorial consequences of thought suppression: is the rebound of suppressed thoughts replicable? *Western Psychological Association, Sacramento, CA.*

**Biba, T.,** Levy, B. J., & Matsko, V. (2017). Influence of the abstract low-level visual features of nature on affect and cognition. *Western Psychological Association, Sacramento, CA.*

Uchigakiuchi, T., Saito, J., **Biba, T.,** Chi, A., Soriano Smith, R., & Levy, B. J. (2017). The reliability of retrieval-induced forgetting revisited. *Western Psychological Association, Sacramento, CA.*

## Invited Presentations

**Biba, T.,** Decker, A., Herrmann, B., Fukuda, K., Katz, C., Valiante, T., Duncan, K. (2022). Memory's pulse: theta rhythmic sampling underlies episodic memory formation. *Columbia Memory Group meeting, New York, NY.*

**Biba, T.,** Decker, A., Herrmann, B., Fukuda, K., Katz, C., Valiante, T., Duncan, K. (2022). Memory's pulse: theta rhythmic sampling underlies episodic memory formation. *Temple Memory Group meeting, Philadelphia, PA.*

**Biba, T.,** Decker, A., Herrmann, B., Fukuda, K., Katz, C., Valiante, T., Duncan, K. (2022). Science in Practice. *Vergennes Union High School, Vergennes, VT.*

## Manuscripts in Preparation

**Biba, T.,** Decker, A., Herrmann, B., Fukuda, K., Katz, C., Valiante, T., Duncan, K. (In preparation). *Memory's pulse: episodic memory formation is theta rhythmic.*

**Biba, T. &** Hutchinson, J. B. (In preparation). *The role of attention in episodic memory retrieval: Insights from a meta-analysis of the divided attention paradigm.*

## Professional Memberships

Society for Neuroscience 2022  
Cognitive Neuroscience Society, 2016-2022  
Psi Chi Honors Society Member, 2015

## Awards

Graduate Student Award, Cognitive Neuroscience Society, 2022