

Abigail L. Noyce

Curriculum Vitae

November 4, 2020

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Education

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| Ph.D., Psychology | Brandeis University, Waltham, MA | February 2014 |
| M.A., Psychology | Brandeis University, Waltham, MA | August 2012 |
| B.A., Psychology | University of New Hampshire, Durham, NH | May 2007 |

Academic positions

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| Special Faculty for Research Department of Psychology Carnegie Mellon University, Pittsburgh, PA | 2020– |
| Research Assistant Professor Department of Psychological and Brain Sciences Boston University, Boston, MA | 2019 |
| Postdoctoral Associate; Postdoctoral Fellow; Research Scientist Supervisors: David Somers and Barbara Shinn-Cunningham Department of Psychological and Brain Sciences Boston University, Boston, MA | 2014–2018 |

Grants and funding

Federal research grants

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| Sensory-Biased Working Memory & Attention Networks in the Human Brain NSF grant 1829394, PI: David C. Somers Role: research scientist \$591,061 | 2018–2021 |
| Multiplexed frontal cortex organization for flexibility in short-term memory NIH grant F32-EY026796, Principal Investigator Ruth L. Kirschstein National Research Service Award \$146,000 | 2016–2018 |

Research and training support

Functional differentiation of auditory attention and working memory in human frontal cortex 2020–2021

CMU-Pitt BRIDGE Center Seed Grant, **Principal Investigator**
\$24,960

Brain-Body-Behavior Interface in Learning and Development 2009–2011

NIH grant T32-GM084907, PI: Robert Sekuler
Role: pre-doctoral trainee

Peer-reviewed publications

Bonacci, L., Bressler, S., **Noyce**, A. L., & Shinn-Cunningham, B. G. (2020). Effects of visual scene complexity on neural signatures of spatial attention. *Frontiers in Human Neuroscience*, *14*, 91.

Bulger, E., Shinn-Cunningham, B. G., & **Noyce**, A. L. (2020). Distractor probabilities modulate flanker task performance. *Attention, Perception, & Psychophysics*.

Fleming, J., **Noyce**, A. L., & Shinn-Cunningham, B. G. (2020). Audio-visual spatial alignment improves integration in the presence of a competing audio-visual stimulus. *Neuropsychologia*, *146*, 107530.

Lefco, R. W., Brissenden, J. A., **Noyce**, A. L., Tobyne, S. M., & Somers, D. C. (2020). Gradients of functional organization in posterior parietal cortex revealed by visual attention, visual short-term memory, and intrinsic functional connectivity. *NeuroImage*, *219*, 117029.

Tobyne, S. M., Somers, D. C., Brissenden, J. A., Michalka, S. W., **Noyce**, A. L., & Osher, D. E. (2018). Prediction of individualized task activation in sensory-modality selective frontal cortex with ‘connectome fingerprinting’. *NeuroImage*, *183*, 173–185.

Noyce, A. L., Cestero, N., Michalka, S. W., Shinn-Cunningham, B. G., & Somers, D. C. (2017). Sensory-biased and multiple-demand processing in human lateral frontal cortex. *Journal of Neuroscience*, *37*, 8755–8766.

Noyce, A. L., Cestero, N., Shinn-Cunningham, B. G., & Somers, D. C. (2016). Short-term memory stores are organized by information domain. *Attention, Perception, & Psychophysics*, *78*, 960–970.

Noyce, A. & Sekuler, R. (2014). Oddball distractors demand attention: Neural and behavioral responses to predictability in the flanker task. *Neuropsychologia*, *65*, 18–24.

Noyce, A. & Sekuler, R. (2014). Violations of newly-learned predictions elicit two distinct P3 components. *Frontiers in Human Neuroscience*, *8*, 374.

Maryott, J., **Noyce**, A., & Sekuler, R. (2011). Eye movements and imitation learning: Intentional disruption of expectation. *Journal of Vision*, *11*(1:7), 1–16.

J. Maryott & A. Noyce shared first authorship of the 2011 *Journal of Vision* paper.

Current projects

Noyce, A. L., Lefco, R., Tobbyne, S. M., Brissenden, J. A., Shinn-Cunningham, B. G., & Somers, D. C. (submitted). Extended frontal networks for visual and auditory working memory.

Conference presentations and peer-reviewed abstracts

Talks (as presenting author)

Noyce, A. L., Lefco, R., Brissenden, J. A., Tobbyne, S. M., Somers, D. C., & Shinn-Cunningham, B. G. (2019, February). *Extended frontal networks for auditory cognition*. Presented at the annual midwinter meeting of the Association for Research in Otolaryngology, Baltimore, MD.

Noyce, A. L., Tobbyne, S. M., Shinn-Cunningham, B. G., & Somers, D. C. (2018, November). *Sensory-selective and sensory-independent auditory and visual working memory in human cerebral cortex*. Presented at the annual meeting of the Society for Neuroscience, San Diego, CA.

Noyce, A. L., Tobbyne, S. M., Michalka, S. W., Osher, D. E., Shinn-Cunningham, B. G., & Somers, D. C. (2017, May). *Visual, spatial, or visuospatial? Disentangling sensory modality and task demands in frontal cortex*. Presented at the annual meeting of the Vision Sciences Society, St. Pete Beach, FL.

Noyce, A. L., Michalka, S. W., Cestero, N., Shinn-Cunningham, B. G., & Somers, D. C. (2016, May). *Frontal lobe contributions to auditory and visual working memory*. Presented at the annual meeting of the Vision Sciences Society, St. Pete Beach, FL.

Noyce, A. & Sekuler, R. (2016, May). *Nonparametric statistical approaches to neuroimaging data*. Presented at the 171st meeting of the Acoustical Society of America, Salt Lake City, UT.

Noyce, A. L., Somers, D. C., & Shinn-Cunningham, B. G. (2016, February). *Auditory attention networks in the frontal lobe show strong sensory modality preferences*. Presented at the annual midwinter meeting of the Association for Research in Otolaryngology, San Diego, CA.

Noyce, A. & Sekuler, R. (2012, May). *Short-term memory resolution changes faster than capacity in visuomotor sequence learning*. Presented at the annual meeting of the Vision Sciences Society, Naples, FL.

Selected posters (since 2015)

An, W. A., Pei, A., **Noyce**, A., & Shinn-Cunningham, B. (2020, July). *Decoding auditory attention from single-trial EEG for a high-efficiency brain-computer interface*. To be presented at the 42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society.

- Fleming, J. T., Njoroge, M., **Noyce**, A. L., Perrachione, T. K., & Shinn-Cunningham, B. G. (2020, March). *Sensory modality and information domain modulate behavioral and neural signatures of working memory interference*. Poster accepted at the annual meeting of the Cognitive Neuroscience Society, Boston, MA. [Meeting cancelled due to covid19.]
- Tong, N., **Noyce**, A. L., Tripathi, V., Tobyne, S. M., Lindsay, M. J., Thayer, G., ... Somers, D. C. (2020, March). *Measuring working memory in visual, auditory, and tactile sensory modalities*. Poster accepted at the annual meeting of the Cognitive Neuroscience Society, Boston, MA. [Meeting cancelled due to covid19.]
- An, W., **Noyce**, A., Pei, A., & Shinn-Cunningham, B. (2020, February). *Extracting neural representations of auditory attentional processes from fMRI using multivariate pattern analysis*. Poster presented at the annual midwinter meeting of the Association for Research in Otolaryngology, San Jose, CA.
- Noyce**, A. L., Lefco, R. W., Brissenden, J. A., Tobyne, S. M., Shinn-Cunningham, B. G., & Somers, D. C. (2019, May). *Visual-biased frontal structures are preferentially connected to multisensory working memory regions*. Poster presented at the annual meeting of the Vision Sciences Society, St. Pete Beach, FL.
- Tong, N., Shearer, B., Somers, D., & **Noyce**, A. (2019, March). *Beyond g: Individual differences in visual and auditory working memory*. Poster presented at the annual meeting of the Cognitive Neuroscience Society, San Francisco, CA.
- Noyce**, A. L., Tobyne, S. M., Michalka, S. W., Shinn-Cunningham, B. G., & Somers, D. C. (2018, June). *Frontal lobe network contributions to auditory and visual cognition*. Poster presented at the International Multisensory Research Forum, Toronto, ON.
- Noyce**, A. L., Tobyne, S. M., Michalka, S. W., Shinn-Cunningham, B. G., & Somers, D. C. (2018, March). *Localizing six bilateral sensory-biased regions in human frontal cortex*. Poster presented at the annual meeting of the Cognitive Neuroscience Society, Boston, MA.
- Fleming, J., Hammerman, A., Shinn-Cunningham, B., & **Noyce**, A. (2018, February). *Neural signatures of audio-visual binding in the "pip and pop" effect*. Poster presented at the midwinter meeting of the Association for Research in Otolaryngology, San Diego, CA.
- Noyce**, A. L., Cestero, N., Michalka, S. W., Shinn-Cunningham, B. G., & Somers, D. C. (2017, November). *Disentangling sensory specialization from task specialization in lateral frontal cortex*. Poster presented at the annual meeting of the Society for Neuroscience, Washington, DC.
- Noyce**, A. L., Michalka, S. W., Tobyne, S. M., Osher, D. E., Shinn-Cunningham, B. G., & Somers, D. C. (2017, May). *Frontal lobe network contributions to audiovisual perception, attention, and memory*. Poster presented at the annual meeting of the Association for Psychological Science, Boston, MA.
- Bressler, S., Liu, D., Cunningham, W., Shinn-Cunningham, B., & **Noyce**, A. (2016, May). *Your brain doesn't know: A visual P300 experiment of "The Dress"*. Poster presented at the annual meeting of the Vision Sciences Society, St. Pete Beach, FL.

- Cestero, N., **Noyce**, A. L., Shinn-Cunningham, B. G., & Somers, D. C. (2016, May). *MVPA reveals specialization and generality of sensory-biased regions of frontal cortex*. Poster presented at the annual meeting of the Vision Sciences Society, St. Pete Beach, FL.
- Lynch, J. D., **Noyce**, A. L., Shinn-Cunningham, B. G., & Somers, D. C. (2016, May). *Memory capacity is further limited when sensory modality and task are mismatched*. Poster presented at the annual meeting of the Vision Sciences Society, St. Pete Beach, FL.
- Noyce**, A. L., Michalka, S. W., Shinn-Cunningham, B. G., & Somers, D. C. (2015, October). *Auditory and visual biases in 'multiple-demand' regions of human lateral frontal cortex*. Poster presented at the annual meeting of the Society for Neuroscience, Chicago, IL.
- Noyce**, A. L., Cestero, N., Shinn-Cunningham, B. G., & Somers, D. C. (2015, May). *Space depends on time: Informational asymmetries in visual and auditory short-term memory*. Poster presented at the annual meeting of the Vision Sciences Society, St. Pete Beach, FL.
- Noyce**, A. L., Somers, D. C., & Shinn-Cunningham, B. G. (2015, February). *Time vs. space: Modality-appropriateness and cross-modal recruitment in auditory and visual short-term memory*. Poster presented at the annual midwinter meeting of the Association for Research in Otolaryngology, Baltimore, MD.

Seminars and colloquia

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| Brain networks for visual and auditory working memory. Pitzer College, Claremont, CA | 2018 |
| Frontal lobe contributions to visual and auditory cognition. College of the Holy Cross, Worcester, MA | 2017 |
| Frontal lobe contributions to visual and auditory cognition. Bridgewater State University, Bridgewater, MA | 2017 |
| Frontal cortex in short-term memory for space and time. University of New Hampshire, Durham, NH | 2016 |
| Neural flexibility underlying attention and memory. Juniata College, Huntingdon, PA | 2015 |

Teaching Experience

Carnegie Mellon University

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| Research Methods in Cognitive Psychology | 2020 |
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Boston University

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| Experimental Psychology: Perception | 2019 |
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Wellesley College

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| Technology & Human Cognition | 2019 |
| Sensation and Perception | 2018 |

Brandeis University

Perception: Human, Animal, Machine 2012

Brandeis University (Teaching Assistant)

Introduction to Psychology; Research Methods; Behavioral Neuroscience; Perception; Statistics; Cognitive Neuroscience 2009–2013

Research students supervised and mentoredCarnegie Mellon University:

Undergraduate students C. Hua ('23), R. Cao ('20).
Graduate students W. An (Ph.D. '21), J. Kwasa (Ph.D. '21)

Boston University:

Undergraduate students L. Zhao (RISE 2018), N. Tong ('18), K. Gomez ('18; UROP grant), G. Belok ('17), J. Lynch ('16; UROP grant; senior honors), N. Cestero ('16; senior honors), K. Martin ('14).
Graduate students J. Fleming (Harvard Ph.D. '20), C. Pirrung (MA '19), C. Clayton (MEng '18), N. Bowers (MA '15).

Brandeis University:

Undergraduate students A. Keller (BS/MS '16), B. Dorfman ('16), A. Aizenman ('13), R. Meyer ('11).

RISE: Research in Science and Engineering (internship for high school seniors); UROP: Undergraduate Research Opportunities Program.

Professional activities and service**Department and university service (Carnegie Mellon University)**

Graduate thesis committees:
Wenkang "Winko" An, Electrical and Computer Engineering 2021

Department and university service (Boston University)

Organizing chair, Games for Engaged Learning 2019 meeting 2019
Undergraduate thesis committees:
Nishmar Cestero, Undergraduate Program in Psychology 2016
James Lynch, Undergraduate Program in Neuroscience 2016
Coordinated BU department seminars in Brain, Behavior, and Cognition 2014–2016

Department and university service (earlier)

Organizing chair, CompNet workshop on prediction errors in cognition 2013
Editorial board, *Inquiry: UNH Undergraduate Research Journal* 2006–2007

Broader service and outreach

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| Data manager, Psychological Science Accelerator Project 002 Object Orientation Project 003 Gendered Prejudice | 2019– |
| Panels on cognitive neuroscience at science fiction conventions | 2014–2019 |
| Volunteer outreach teacher, MIT Educational Studies Program | 2004–2017 |
| New Chapter Mentor, Learning Unlimited | 2011–2016 |

Ad-hoc reviewer

- *Cognition*
- *Cognitive Research: Principles and Implications*
- *eLife*
- *Journal of Experimental Psychology: Human Perception and Performance*
- *Journal of Vision*
- *Memory & Cognition*
- *NeuroImage*
- *PLoS ONE*
- *Psychonomic Bulletin & Review*

Membership in professional organizations

Association for Research in Otolaryngology
Cognitive Neuroscience Society
Society for Neuroscience
Vision Sciences Society

References

Barbara G. Shinn-Cunningham
Director, Carnegie Mellon Neuroscience Institute
Professor, Biomedical Engineering
Carnegie Mellon University, Pittsburgh, PA
bgsc@andrew.cmu.edu

David C. Somers
Professor and Chair, Psychological and Brain Sciences
Boston University, Boston, MA
1-617-358-1372, somers@bu.edu

Robert W. Sekuler
Professor, Psychology
Brandeis University, Waltham, MA
1-781-736-3277, sekuler@brandeis.edu

Teaching References

Margaret M. Keane
Professor and Chair, Psychology
Wellesley College, Wellesley, MA

1-781-283-3545, mkeane@wellesley.edu

Ellen J. Wright

Associate Professor, Psychology

Brandeis University, Waltham, MA

ejwright@brandeis.edu