

Jonathan Isaac Benichov, Ph.D.

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Education

The City University of New York, New York, NY

Ph.D. in Neuroscience, 2015

- Dissertation: Mechanisms of vocal coordination in zebra finches.
- Advisor: Ofer Tchernichovski, D.V.M., Ph.D.

University of Connecticut, Storrs, CT

Bachelor of Science in Cognitive Science, 2007

- Interdisciplinary course of study with focus in Neuroscience
- Advisor: Michael Turvey, Ph.D.

Publications

- **Benichov, J.** & Tchernichovski, O. (In prep.) Developmental social experience affects the coordination of unlearned calls in zebra finches.
- **Benichov, J.**, Globerson, E. & Tchernichovski, O. (2016). Finding the beat: From socially coordinated vocalizations in songbirds to rhythmic entrainment in humans. *Frontiers in Human Neuroscience; The evolution of rhythm cognition: timing in music & speech*, 10, 255.
- **Benichov, J.**, Benezra, S.E., Vallentin, D., Globerson, E., Long, M.A., & Tchernichovski, O. (2016). The forebrain song system mediates predictive call timing in female and male zebra finches. *Current Biology*, 26(3), 309-318.
- Piquado, T., **Benichov, J.**, Brownell, H. & Wingfield, A. (2012). The hidden effects of hearing acuity on recall performance for prose and the compensatory effects of self-paced listening. *International Journal of Audiology*, 51, 576-583.
- **Benichov, J.**, Cox, L.C., Tun, P.A. & Wingfield, A. (2012). Word recognition within a linguistic context: Effects of age, hearing acuity, verbal ability and cognitive function. *Ear and Hearing*, 32(2), 250-256.
- Tun, P.A., **Benichov, J.** & Wingfield, A. (2010). Response latencies in auditory sentence comprehension: Effects of linguistic versus perceptual challenge. *Psychology and Aging*, 25, 730-735.

Conference Presentations and Talks

- **Benichov, J.**, Benezra, S.E., Globerson, E., Vallentin, D., Long, M.A., & Tchernichovski, O. The dual role of the song system: Forebrain vocal pathway mediates predictive call timing during social interactions. Poster at Songbird 5: Modern Approaches from the Comparative Perspective at the Annual Meeting of the Society for Neuroscience, Chicago, IL, Oct. 2015.
- **Benichov, J.**, Benezra, S., Long, M.A., & Tchernichovski, O. Coordinating calls: Using a vocal robot to study zebra finch call interactions. Invited talk at the Max Planck Institute for Ornithology, Seewiesen, Germany, Jan. 2015.
- **Benichov, J.**, Benezra, S., Long, M.A., & Tchernichovski, O. Mechanisms of vocal coordination in zebra finches: Using a vocal robot to study call interactions and jamming avoidance. Poster at the Annual Meeting of the Society for Neuroscience, Washington, DC, Nov. 2014.
- **Benichov, J.** & Tchernichovski, O. Using a vocal robot to study call coordination in zebra finches. Poster at Life in the Aggregate: Mechanisms and Features of Social Dynamics. Howard Hughes Medical Institute Janelia Research Campus, Ashburn, VA, Oct. 2014.
- **Benichov, J.** & Tchernichovski, O. Exploring vocal interactions using an adaptive computerized playback interface: Effects of dynamic auditory feedback on social behavior in zebra finches. Poster at Dynamical Neuroscience XX: Collective Cognition -The Neurophysiology of Social Neuroscience and at the Annual Meeting of the Society for Neuroscience, New Orleans, LA, Oct. 2012.
- Tchernichovski, O., **Benichov, J.**, et al. Music theory for birds: Searching for structural organization in the interactive vocalizations of songbirds. Work featured in talk at the Monte Verita Workshop on Music in Neuroscience, Ascona, Switzerland, Mar. 2012.
- Ravbar, P., Parra, L.C., Lipkind, D., **Benichov, J.**, & Tchernichovski, O. Vocal exploration changes dynamically at the sub-syllabic level during song learning. Poster at the Annual Meeting of the Society for Neuroscience, San Diego, CA, Nov. 2010.
- **Benichov, J.**, Tun, P.A., & Wingfield, A. Memory for meaning and surface structure in spoken passages: Effects of hearing acuity, age and working memory load. Poster at The Cognitive Aging Conference, Atlanta, GA, Apr. 2010.
- Stanley, R. M., **Benichov, J.**, & Wingfield, A. Speech compression: Latency functions for older and younger adults. Poster at The Cognitive Aging Conference, Atlanta, GA, Apr. 2010.
- **Benichov, J.**, Tun, P.A., & Wingfield, A. Effects of adult aging and hearing acuity on memory for surface structure and meaning in spoken passages. Poster at the Annual Meeting of the Psychonomic Society, Boston, MA, Nov. 2009.
- Tun, P.A., **Benichov, J.**, & Wingfield, A. Effortful Processing of Spoken Sentences in Younger and Older Adults: Effects of Age and Hearing. Poster at The Cognitive Aging Conference, Atlanta, GA, Apr. 2008.

Research Experience

Department of Psychology, Hunter College & Biology Department, The City College of New York, New York, NY
Doctoral Student Researcher, September 2010-June 2016, P.I./Advisor: Ofer Tchernichovski, D.V.M., Ph.D.

- Developing an adaptive bird-computer vocal interface to study the dynamics of vocal interactions.
- Implementing bird-mounted microelectronics to gather vocal, physiological, and kinematic data from awake behaving animals.
- Training and recording behavior of songbirds (*Taeniopygia guttata*) within various social and developmental contexts.
- Analyzing acoustic features of vocalizations across development.

Neuroscience Institute, New York University Langone Medical Center, New York, NY

Doctoral Student Researcher, August 2014-November 2015, P.I./Collaborator: Michael Long, Ph.D.

- Tested whether forebrain (song system) nuclei are necessary for the coordination of unlearned calls in zebra finches.
- Performed stereotaxic surgery, in vivo electrophysiology, tissue ablation, fiber tract transections, & pharmacological microinjections.
- Assessed the effects of song system disruption via behavioral assays and confocal microscopy.

New Media Lab, City University of New York Graduate Center, New York, NY

Doctoral Student Researcher, June 2012-August 2012, Lab Director: Andrea Ades Vásquez

- Designed and initiated development of an online multi-player platform for real-time audiovisual interactions (*RAP:PORT*).

Department of Otolaryngology, Division of Audiology, Boston University Medical Center, Boston, MA

Research Specialist, January 2008-July 2010, Collaborator: L. Clarke Cox, Ph.D.

- Conducted a study on the effects of semantic context on processing of masked speech in clinical populations.
- Administered audiometric (PTA, SRT, DP-AOE, SPIN/SIN) and cognitive tests. Analyzed and published results.

Volen National Center for Complex Systems, Brandeis University, Waltham, MA

Lab Manager and Research Specialist, October 2007-July 2010, P.I.: Arthur Wingfield, D.Phil.

- Oversaw all phases of activity in research studies of speech processing, human memory and aging.
- Collaborated with lab members in shaping research questions and experimental designs.
- Programmed and prepared stimulus presentation and data recording systems.
- Recruited and tested younger and older adult volunteers with various degrees of hearing loss.
- Developed methods for scoring and managing data and performed statistical analyses.
- Trained undergraduate and graduate students in experimental protocol and provided support.

Psychology Department, University of Connecticut, Storrs, CT

Undergraduate Research Assistant, January-August 2006, P.I.: Whitney Tabor, Ph.D.

- Aided in the development of dynamical, self-organizing models of sentence processing.
- Created narrative test stimuli targeted at eliciting various degrees of the garden path reading effect.
- Enlisted participants, performed testing, and analyzed properties of audio spectrograms from “reading out loud” trials.

Yale Liver Center, Section of Digestive Diseases, Yale University School of Medicine, New Haven, CT

Summer Undergraduate Research Assistant, June-August 2005, P.I.: Jonathan Dranoff, M.D.

- Participated in the search for a signaling pathway involved in cirrhosis progression.
- Implemented laboratory methods including cell culture, protein isolation, spectrophotometry, gel electrophoresis (Western blot) and cell proliferation testing (BrdU).

Teaching

Department of Psychology, Hunter College, New York, NY

- *Instructor*, Sensation & Perception; Evolution & Behavior, Spring 2012-Spring 2015
- *Teaching Assistant*, General Experimental Psychology Lab, Fall 2011; Introduction to Psychology, Fall 2014-Spring 2015

Support

- **National Institute on Deafness and Other Communication Disorders (R01 DC004722)**, July 2014-Present
- **The City University of New York Science Scholarship**, September 2010-August 2015
- **The Professional Staff Congress of the City University of New York Research Award**, July 2013-June 2014

Computer Skills

- *Programming*: LabView, MATLAB, PsyScope.
- *Audio*: Sound Analysis Pro, GoldWave, PRAAT, Adobe Audition, and Sound Studio.
- *Video/Graphics*: Final Cut Pro, Blender, Poser, Bryce, Adobe Premiere.
- *Statistics/Office*: SPSS, PrismGraph, Excel, Word, and PowerPoint.
- *3D Printing*: Makerbot Replicator 2X. *Robotics*: Arduino Uno

Association Membership

- **Animal Behavior Society**, June 2014-Present
- **The New York Academy of Sciences**, May 2012-Present
- **Society for Neuroscience**, September 2008-Present