

## Jonathan Isaac Benichov, Ph.D.

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### Education

**The City University of New York**, New York, NY

*Ph.D. in Neuroscience*, September 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*, August 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. (In prep.) Rhythmic behavior in songbirds. *Frontiers Research Topic. The evolution of rhythm cognition: timing in music and speech.*
- **Benichov, J.**, Benezra, S.E., Vallentin, D., Globerson, E., Long, M.A., & Tchernichovski, O. (In Press). The forebrain song system mediates predictive call timing in female and male zebra finches. *Current Biology.*
- 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-Present, 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, NYU 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, CUNY 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 of study participant. 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