

GAVIN M. BIDELMAN

CURRICULUM VITAE

DATE: August 2012

OFFICE ADDRESS

School of Communication Sciences & Disorders
University of Memphis
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Memphis, TN, 38105
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EDUCATION

Ph.D. Hearing Science, *Purdue University* 2011
B.Sc. Sound Engineering (summa cum laude), *University of Michigan* 2007
B.M. Music Theory (summa cum laude), *University of Michigan* 2007

PROFESSIONAL EXPERIENCE

Academic appointments

Assistant Professor, School of Communication Sciences & Disorders, Univ. of Memphis 2012 -
Assistant Professor, Institute for Intelligent Systems, Univ. of Memphis 2012 -
Postdoctoral Fellow, Rotman Research Institute, Baycrest, Toronto 2011 - 2012
Research Assistant, Dept. of Speech, Language, & Hearing Sciences, Purdue University 2008 - 2011

Editorial

Assistant to the Section Editor (Auditory Neuroscience: Central): *Ear & Hearing* 2010 -

Ad hoc reviewer for the following journals: 2008 -
Applied Psycholinguistics, Brain & Language, Brain Research, Cerebral Cortex, Cognition, Ear & Hearing, Hearing Research, International Journal of Audiology, Journal of Memory and Language, Journal of Cognitive Neuroscience, Journal of the Acoustical Society of America, Journal of the Association for Research in Otolaryngology, Psychology of Music, Psychophysiology, PLoS One, Music Perception, NeuroImage, Neuropsychologia, Neuroscience Letters

GRANTS

[1] Bidelman, G.M. (PI), "The impact of music on speech processing in older adults", *GRAMMY Foundation*, \$20,000.

RESEARCH INTERESTS

Brainstem and cortical auditory evoked potentials
Experience-dependent auditory neural plasticity and perceptual learning
Neural correlates of psychoacoustic (e.g., pitch) and music phenomena
Cognitive transfer effects between music and language processing
Computational modeling of normal and impaired peripheral auditory nerve physiology

PUBLICATIONS

Peer Reviewed Journal Articles

[1] Bidelman, G.M., Moreno, S., & Alain, C. (submitted) Tracing the emergence of speech perception in the human auditory system.

- [2] Krishnan, A., Bidelman, G. M., Smalt, C. J., Ananthakrishnan, S., & Gandour, J. T. (submitted). Relationship between brainstem, cortical, and behavioral measures relevant to pitch salience in humans. *Neuropsychologia*.
- [3] Smalt, C.J., Krishnan, A., Bidelman, G.M., Ananthakrishnan, S., & Gandour, J.T. (submitted). Neural correlates of cochlear distortion products and their influence on representation of pitch relevant information in the human brainstem. *Hearing Research*.
- [4] Krishnan, A., Gandour, J. T., & Bidelman, G. M. (2012). Experience-dependent plasticity in pitch encoding: From brainstem to auditory cortex. *NeuroReport*, 23(8), 498-502. [invited review]
- [5] Krishnan, A., Gandour, J. T., Ananthakrishnan, S., Bidelman, G. M., & Smalt, C. J. (2011). Functional ear (a)symmetry in brainstem neural activity relevant to encoding of voice pitch: A precursor for hemispheric specialization? *Brain and Language*, 119(3), 226-231.
- [6] Krishnan, A., Gandour, J. T., Ananthakrishnan, S., Bidelman, G. M., & Smalt, C. J. (2011). Linguistic status of timbre influences pitch encoding in the brainstem. *NeuroReport*, 22(16), 801-803.
- [7] Bidelman, G. M., Gandour, J. T., & Krishnan, A. (2011). Musicians demonstrate experience-dependent subcortical enhancement of musical scale features within continuously gliding pitch. *Neuroscience Letters*, 503(3), 203-207.
- [8] Bidelman, G. M., Gandour, J. T., & Krishnan, A. (2011). Musicians and tone-language speakers share enhanced brainstem encoding but not perceptual benefits for musical pitch. *Brain and Cognition*, 77(1), 1-10.
- [9] Henry, K. S., Gall, M. D., Bidelman, G. M., & Lucas, J. R. (2011). Songbirds trade off auditory frequency resolution and temporal resolution. *Journal of Comparative Physiology-A*, 197(4), 351-359.
- [10] Bidelman, G. M. & Heinz, M. G. (2011). Auditory-nerve responses predict pitch attributes related to musical consonance-dissonance for normal and impaired hearing. *Journal of the Acoustical Society of America*, 130(3), 1488-1502.
- [11] Bidelman, G. M. & Krishnan, A. (2011). Brainstem correlates of behavioral and compositional preferences of musical harmony. *NeuroReport*, 22(5), 212-216.
- [12] Bidelman, G. M., Krishnan, A., & Gandour, J. T. (2011). Enhanced brainstem encoding predicts musicians' perceptual advantages with pitch. *European Journal of Neuroscience*, 33(3), 530-538.
- [13] Bidelman, G. M., Gandour, J. T., & Krishnan, A. (2011). Cross-domain effects of music and language experience on the representation of pitch in the human auditory brainstem. *Journal of Cognitive Neuroscience*, 23(2), 424-434.
- [14] Bidelman, G. M. & Krishnan, A. (2010). Effects of reverberation on brainstem representation of speech in musicians and non-musicians. *Brain Research*, 1355, 112-125.
- [15] Krishnan, A., Gandour, J. T., Smalt, C. J., & Bidelman, G. M. (2010). Language-dependent pitch encoding advantage in the brainstem is not limited to acceleration rates that occur in natural speech. *Brain and Language*, 114(3), 193-198.
- [16] Krishnan, A., Bidelman, G. M., & Gandour, J. T. (2010). Neural representation of pitch salience in the human brainstem revealed by psychophysical and electrophysiological indices. *Hearing Research*, 268(1-2), 60-66.
- [17] Krishnan, A., Gandour, J. T., & Bidelman, G. M. (2010). Brainstem pitch representation in native speakers of Mandarin is less susceptible to degradation of stimulus periodicity. *Brain Research*, 1313, 124-133.
- [18] Krishnan, A., Gandour, J. T., & Bidelman, G. M. (2010). The effects of tone language experience on pitch processing in the brainstem. *Journal of Neurolinguistics*, 23(1), 81-95.
- [19] Bidelman, G. M. & Krishnan, A. (2009). Neural correlates of consonance, dissonance, and the hierarchy of musical pitch in the human brainstem. *Journal of Neuroscience*, 29(42), 13165–13171.

- [20] Krishnan, A., Gandour, J. T., Bidelman, G. M., & Swaminathan, J. (2009). Experience-dependent neural representation of dynamic pitch in the brainstem. *NeuroReport*, 20(4), 408-413.

Abstracts and Conference Proceedings

- [1] Kuhn-Popp, N., Herring, A., Rose, N., Craik, F., Rendell, P.G., Moreno, S., Bidelman, G.M., & Kliegel, M. (2012) Virtual-Week Training: A process-oriented training program to improve prospective memory performance in older adults. Presented at The 48th Congress of the German Society for Psychology. September 23-27, 2012.
- [2] Rose, N.S., Craik, F.M., Hering, A., Rendell, P.G., Moreno, S., Bidelman, G.M., & Kliegel, M. (2012) Differential predictors of prospective memory performance in old age: Laboratory and naturalistic tasks are associated with different cognitive processes. Poster presented at the Cognitive Aging Conference. April 19-22, 2012.
- [3] Bidelman, G.M. (2012). Objective information-theoretic algorithm for detecting brainstem evoked responses to complex stimuli. Poster presented at the *35th Meeting of the Association for Research in Otolaryngology*, San Diego, CA., February 25-29, 2012.
- [4] Ananthakrishnan, S., Krishnan, A., Smalt, C.J., & Bidelman, G.M. (2012). Brainstem-level Temporal Fine Structure Encoding in Cochlear Hearing Loss. Poster presented at the *35th Meeting of the Association for Research in Otolaryngology*, San Diego, CA., February 25-29, 2012.
- [5] Krishnan, A., Smalt, C.J., Bidelman, G.M., Ananthakrishnan, S., & Gandour, J.T. (2012). Hierarchical transformations from sensory representations to percept: Relationships between brainstem, cortical, and behavioral encoding of pitch salience. Poster presented at the *35th Meeting of the Association for Research in Otolaryngology*, San Diego, CA., February 25-29, 2012.
- [6] Bidelman, G.M. & Heinz, M.G. (2011). Auditory-nerve responses predict pitch attributes related to musical consonance and dissonance for normal and impaired hearing. Poster presented at the *34th Meeting of the Association for Research in Otolaryngology*, Baltimore, MD., February 19-23, 2011.
- [7] Bidelman, G.M., Krishnan, A., & Gandour, J.T. (2011). Enhanced brainstem pitch encoding in tone-language speakers does not translate to perceptual benefits for music. Poster presented at the *34th Meeting of the Association for Research in Otolaryngology*, Baltimore, MD., February 19-23, 2011.
- [8] Ananthakrishnan, S., Krishnan, A., Gandour, J.T., Bidelman, G.M., & Smalt, C.J. (2011). Brainstem origins of the differential hemispheric laterality for linguistic and nonlinguistic pitch. Poster presented at the *34th Meeting of the Association for Research in Otolaryngology*, Baltimore, MD., February 19-23, 2011.
- [9] Gandour, J., Krishnan, A., & Bidelman, G.M. (2010). Neural substrates of lexical tone as revealed at different stages of cortical and subcortical processing. *Proceedings of the 7th International Conference on Cognitive Science* (pp. 32-33). Beijing, China: University of Science and Technology of China Press.
- [10] Bidelman, G.M., Krishnan, A., & Gandour, J.T. (2010). Neural representation of pitch salience in the human brainstem revealed by psychophysical and electrophysiological indices. Poster presented at the *33rd Meeting of the Association for Research in Otolaryngology*, Anaheim, CA., February 6-10, 2010.
- [11] Bidelman, G.M., Krishnan, A., & Gandour, J.T. (2010). Brainstem Pitch Representation in Native Speakers of Mandarin is Less Susceptible to Degradation of Stimulus Temporal Regularity. Poster presented at the *33rd Meeting of the Association for Research in Otolaryngology*, Anaheim, CA., February 6-10, 2010.

- [12] Ananthakrishnan, S., Krishnan, A., & Bidelman, G.M. (2010). Human Frequency Following Response: Differential Responses to Positive & Negative Gain of Iterated Rippled Noise (IRN) Stimuli. Poster presented at the 33rd Meeting of the Association for Research in Otolaryngology, Anaheim, CA., February 6-10, 2010.
- [13] Bidelman, G.M., Krishnan, A., & Gandour, J.T. (2009). The effects of tone language experience on pitch processing in the brainstem. Poster presented at the inaugural *Neurobiology of Language Conference (NLC '09)*, Chicago, IL., October 15-16, 2009.
- [14] Bidelman, G.M., Gandour, J.T., & Krishnan, A. (2009). Relative influence of musical and linguistic experience on the subcortical encoding of pitch. Poster presented at the *Annual Conference of the Society of Music Perception and Cognition (SMPC '09)*, Indianapolis, IN., August 3-7, 2009.
- [15] Bidelman, G.M. & Krishnan, A. (2009). Subcortical correlates of consonance, dissonance, and musical pitch hierarchy in the human brainstem. Poster presented at the *Annual Conference of the Society of Music Perception and Cognition (SMPC '09)*, Indianapolis, IN., August 3-7, 2009.
- [16] Bidelman, G.M., Gandour, J.T., & Krishnan, A. (2009). Cross-domain effects of language and music experience on the representation of pitch in the human auditory brainstem. Poster presented at the *16th Annual Meeting of the Cognitive Neuroscience Society*, San Francisco, CA., March 21-24, 2009.
- [17] Krishnan, A., Gandour, J.T., Bidelman, G.M., & Swaminathan, J. (2009). Experience-dependent neural representation of dynamic pitch in the brainstem. Poster presented at the *American Auditory Society Annual Meeting*, Scottsdale, AZ., March 5-7, 2009.

Books

Rardin, P., Bidelman, G., Smith, C., & Bagaglia, E. (Eds.). (2010). *Sing to the Colors: The University of Michigan Songbook*. Ann Arbor, MI: Edwards Brothers.

Doctoral Dissertation

Bidelman, G. M. (2011). *Neural Correlates of Musical and Linguistic Pitch as Revealed in the Auditory Brainstem* (Doctoral dissertation, Purdue University).

Video

Bidelman, G. (Producer), (2008). *Hearing Conservation: protecting your ears against harmful sound* [DVD]. Produced for OSHA hearing screenings for the Purdue University Speech and Hearing Clinic.

INVITED TALKS

- [1] Bidelman, G.M. "Translating Art to Science: Music Induced Benefits to Human Cognition". Talk presented at the Inaugural Brain Power Conference, Toronto, ON, May 3-4, 2012.
- [2] Bidelman, G.M. "Neurophysiological origins of consonance, dissonance, and the hierarchy of musical pitch". Talk presented at The Institute for Music & The Mind, McMaster University, Hamilton, ON, March 16, 2012.
- [3] Bidelman, G.M. "Sensory tuning to cognitive benefits: The missing link in transfer effects between music and language processing". Talk presented at the International Laboratory for Brain, Music, and Sound Research (BRAMS), McGill University, Montreal, QC, November 30, 2011.
- [4] Bidelman, G.M. "The Role of the Auditory Brainstem in Speech & Music Processing". Talk presented at the Rotman Research Rounds, Toronto, ON, October 24, 2011.
- [5] Bidelman, G.M. "Subcortical correlates of consonance, dissonance, & the hierarchy of musical pitch." Talk presented at the Purdue University Robert L. Ringel Symposium, W. Lafayette, IN, April 30, 2010.

- [6] Bidelman, G.M. "Influence of language and music experience on the representation of pitch in the human brainstem." Talk presented at the Purdue University Robert L. Ringel Symposium, W. Lafayette, IN, September 26, 2008.

MEDIA COVERAGE

- [1] "Young Baycrest researcher and his co-principal investigators win GRAMMY Foundation Award," *Baycrest News*, Toronto, ON, Canada, April 9, 2012.
- [2] C. Cronwlad. "Biology: Harmony resonate in the brain," *Experimentarium: Science*, Denmark, June 2010.

TEACHING EXPERIENCE

Graduate Courses

Purdue University, SLHS 519 - Clinical Research and Treatment Efficacy Spring 2010

Undergraduate Courses

Invited Guest Lectures, *Purdue University*: 2009 - 2011

"*Anatomy of the Central Auditory Pathway*"

SLHS 304 - Anatomy & Physiology of the Speech & Hearing Mechanism, October 6, 2010.

"*Physiology of the Central Auditory Pathway*"

SLHS 304 - Anatomy & Physiology of the Speech & Hearing Mechanism, October 8, 2010.

"*Brain interactions between music & language*"

SLHS 460 - Language and the Brain, April 2010.

"*Brainstem Encoding of Linguistic and Musical Pitch*"

SLHS 215 –Exploring Audiology and Hearing Science, February 26, 2010.

"*Central Auditory Pathway: Anatomy*"

SLHS 304 - Anatomy & Physiology of the Speech & Hearing Mechanism, October 9, 2009.

"*Central Auditory Pathway: Physiology*"

SLHS 304 - Anatomy & Physiology of the Speech & Hearing Mechanism, October 7, 2009.

"*Music, Language, & The Brain*"

SLHS 460 - Language and the Brain, April 2009.

Student Mentoring

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|---|-----------|
| [1] Joshua Villafuerte, University of Toronto, Psychology PhD student | 2012 |
| [2] Stefanie Hutka, University of Toronto, Psychology PhD student | 2011-2012 |
| [3] Michael Weiss, University of Toronto, Psychology PhD student | 2011-2012 |
| [4] Jessica Warnshuis, Purdue University, AuD student | 2010-2011 |
| [5] Christy Macak, Purdue University, AuD student | 2009-2010 |
| [6] Megan Lyons, Purdue University, AuD student | 2009-2010 |
| [7] Lindsay Prusick, Purdue University, AuD student | 2009-2010 |

SELECTED AWARDS

Ismail Interdisciplinary Doctoral Research Travel Award, <i>Purdue University</i>	2011
Bilsland Dissertation Fellowship, <i>Purdue University</i>	2010-2011
Robert L. Ringel Research Award, <i>Purdue University</i>	2010
Weinburg Funds for student travel, <i>Purdue University</i>	2010
NIDCD/NIH Pre-Doctoral Fellowship (T32 DC 00030)	2008-2010
Speech, Language, & Hearing Sciences Alumni & Friends Scholarship, <i>Purdue University</i>	2008-2009
Ross Fellowship, <i>Purdue University</i>	2007-2008

PROFESSIONAL MEMBERSHIPS

Association for Research in Otolaryngology, <i>member</i>	2008-
Society for Music Perception and Cognition, <i>member</i>	2009-
Cognitive Neuroscience Society, <i>member</i>	2009-
Acoustical Society of America, <i>member</i>	2007-

REFERENCES

Claude Alain, Ph.D.

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3560 Bathurst Street
Toronto, ON M6A 2E1 Canada
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Jack Gandour, Ph.D.

Professor
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Ravi Krishnan, Ph.D.

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Michael Heinz, Ph.D.

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