

# Stephen C. Van Hedger

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## EDUCATION & PROFESSIONAL EXPERIENCE

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<b>Postdoctoral Fellow, University of Western Ontario</b> Brain and Mind Institute Department of Psychology <u>Advisors:</u> Ingrid Johnsrude, Laura Batterink	2018 - present
<b>Postdoctoral Scholar, University of Chicago</b> Chicago Center for Practical Wisdom Department of Psychology <u>Advisors:</u> Howard Nusbaum, Marc Berman	2015 - 2018
<b>Ph.D., Psychology, University of Chicago</b> <u>Advisor:</u> Howard Nusbaum	2015
<b>A.M., Psychology, University of Chicago</b> <u>Advisor:</u> Howard Nusbaum	2012
<b>A.B., Music, University of Chicago</b> General and Departmental Honors Phi Beta Kappa Honor Society	2009

## FELLOWSHIPS, GRANTS, AND AWARDS

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<b>BrainsCAN Tier I Postdoctoral Fellowship Award</b> University of Western Ontario	2018 - 2021
<b>Western Cognitive Neuroscience Postdoctoral Fund</b> University of Western Ontario Brain and Mind Institute	2018 - 2020
<b>John Dewey Prize Lectureship</b> University of Chicago Department of Psychology	2015
<b>Division of Social Sciences Research Grant</b> University of Chicago	2014 - 2015
<b>Starkey Duncan Award for Excellence in Undergraduate Teaching</b> University of Chicago Department of Psychology	2014

<b>Norman H. Anderson Research Fellow</b> University of Chicago Department of Psychology	2011 - 2015
<b>Arts-Science Graduate Collaboration Grant</b> University of Chicago	2010 - 2011
<b>Fulbright Program Finalist</b> United States Department of State	2009 - 2010

## PUBLICATIONS

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### Peer-Reviewed Articles

- [1] Uddin, S., Reis, K., **Van Hedger, S.C.**, Heald, S.L.M., & Nusbaum, H.C. (2020). Cortical mechanisms of talker normalization in fluent sentences. *Brain & Language*, 201, 104722.
- [2] **Van Hedger, S.C.**, Heald, S.L.M., & Nusbaum, H.C. (2019). Absolute pitch can be learned by some adults. *PLOS One*, 10.1371/journal.pone.0223047
- [3] Zhen, A., **Van Hedger, S.C.**, Heald, S.L.M., Goldin-Meadow, S., & Tian, X. (2019). Manual directional gestures facilitate cross-modal perceptual learning. *Cognition*, 187, 178-187.
- [4] **Van Hedger, S.C.**, Nusbaum, H.C., Clohisy, L., Jaeggi, S.M., Buschkuehl, M., & Berman, M.G. (2019). Of cricket chirps and car horns: The effect of nature sounds on cognitive performance. *Psychonomic Bulletin & Review*, 26, 522-530.
- [5] **Van Hedger, S.C.**, Nusbaum, H.C., Heald, S.L.M., Huang, A., Kotabe, H., & Berman, M.G. (2019). The aesthetic preference for nature sounds depends on sound object recognition. *Cognitive Science*, 43, e12734.
- [6] Stenfors, C., **Van Hedger, S.C.** ... Berman, M.G. (2019). Positive effects of nature on cognitive performance across multiple experiments: Test order but not affect modulates the cognitive effects. *Frontiers in Psychology*, 10:1413.
- [7] **Van Hedger, S.C.**, & Nusbaum, H.C. (2018). Individual differences in absolute pitch performance: Contributions of working memory, musical expertise, and tonal language background. *Acta Psychologica*, 191, 251-260.
- [8] **Van Hedger, S.C.**, Heald, S.L.M., Uddin, S., & Nusbaum, H.C. (2018). A note by any other name: Intonation context rapidly influences absolute note judgments. *Journal of Experimental Psychology: Human Perception & Performance*, 44, 1268-1282.
- [9] Uddin, S., Heald, S.L.M., **Van Hedger, S.C.**, & Nusbaum, H.C. (2018). Hearing sounds as words: Neural responses to environmental sounds in the context of fluent speech. *Brain & Language*, 179, 51-61.

- [10] Nusbaum, H.C., Uddin, S., **Van Hedger, S.C.**, & Heald, S.L.M. (2018). Consolidating skill learning through sleep. *Current Opinion in Behavioral Sciences*, 20, 174-182.
- [11] Uddin, S., Heald, S.L.M., **Van Hedger, S.C.**, Klos, S., & Nusbaum, H.C. (2018). Understanding environmental sounds in sentence context. *Cognition*, 172, 134-143.
- [12] **Van Hedger, S.C.**, Heald, S.L.M., & Nusbaum, H.C. (2018). Long-term pitch memory for music recordings is related to auditory working memory precision. *The Quarterly Journal of Experimental Psychology*, 71, 879-891.
- [13] **Van Hedger, S.C.**, Heald, S.L.M., Huang, A., Rutstein, B., & Nusbaum, H.C. (2017). Telling in-tune from out-of-tune: Widespread evidence for implicit absolute intonation. *Psychonomic Bulletin & Review*, 24, 481-488.
- [14] Heald, S.L.M.,\* **Van Hedger, S.C.\***, & Nusbaum, H.C. (2017). Perceptual plasticity for auditory object recognition. *Frontiers in Psychology*, 10.3389/fpsyg.2017.00781
- [15] **Van Hedger, S.C.**, Heald, S.L.M., & Nusbaum, H.C. (2016). What the [bleep]? Enhanced absolute pitch memory for a 1000 Hz sine tone. *Cognition*, 154, 139-150.
- [16] **Van Hedger, S.C.**, Heald, S.L.M., & Nusbaum, H.C. (2015). The effects of acoustic variability on absolute pitch categorization: Evidence of contextual tuning. *Journal of the Acoustical Society of America*, 138, 436-446.
- [17] **Van Hedger, S.C.**, Heald, S.L.M., Koch, R., & Nusbaum, H.C. (2015). Auditory working memory predicts individual differences in absolute pitch learning. *Cognition*, 140, 95-110.
- [18] **Van Hedger, S.C.**, Palmer, C., Hogstrom, A., & Nusbaum, H.C. (2015). Sleep consolidation of musical competence. *Music Perception: An Interdisciplinary Journal*, 33, 163-178.
- [19] Heald, S.L.M., **Van Hedger, S.C.**, & Nusbaum, H.C. (2014). Auditory category knowledge in experts and novices. *Frontiers in Neuroscience*, 8:260. 10.3389/fnins.2014.00260
- [20] **Hedger, S.C.**, Nusbaum, H.C., Lescop, O., Wallisch, P., & Hoeckner, B. (2013). Music can elicit a visual motion aftereffect. *Attention, Perception, & Psychophysics*, 75, 1039-1047.
- [21] **Hedger, S.C.**, Heald, S.L.M., & Nusbaum, H.C. (2013). Absolute pitch may not be so absolute. *Psychological Science*, 24, 1496-1502.
- [22] **Hedger, S. C.**, Nusbaum, H.C., & Hoeckner, B. (2013). Conveying movement in music and prosody. *PLOS One*, 10.1371/journal.pone.0076744

\* Co-First Author

## **Preprints**

- [1] **Van Hedger, S.C.**, Veillette, J., Heald, S.L.M., & Nusbaum, H.C. (2020). Revisiting continuous versus discrete models of human behavior: The case of absolute pitch. *OSF Preprints*, <https://doi.org/10.31219/osf.io/cdzq4>

## **Book Chapters and Encyclopedia Entries**

- [1] **Van Hedger, S.C.**, & Johnsruide, I.S. (in press). Speech perception under adverse listening conditions. In A. Popper, A. Coffin (Eds.), *Springer Handbook of Auditory Research*. Springer, Cham.
- [2] **Van Hedger, S.C.**, & Nusbaum, H.C. (2018). Absolute pitch. In: J. Vonk, T. K. Shackelford (Eds.), *Encyclopedia of Animal Cognition and Behavior*. Springer, Cham.
- [3] Heald, S.L.M., **Van Hedger, S.C.**, & Nusbaum, H.C. (2017). Understanding sound: Auditory skill acquisition. *Psychology of Learning and Motivation*, 67, 53-93.

## **CLASSROOM TEACHING EXPERIENCE**

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### **Instructor of Record**

#### **PSYC 24860 - The Musical Mind (University of Chicago)**

##### *Instructor*

Self-designed course (scope, aims, reading list, lectures, and assignments)  
Prepared and gave nine lectures on a variety of topics (e.g., absolute pitch, musical syntax)  
Led weekly discussion of recent and classic empirical papers in music cognition

#### **SOSC 14100 - Mind I (University of Chicago)**

Led a weekly discussion section of 19 students  
Delivered a lecture (Title: The Musical Mind) to ~100 students  
Responsible for all grading and assignment of final course grades for discussion section

#### **SOSC 14200 - Mind II (University of Chicago)**

Led a weekly discussion section of 19 students  
Delivered a lecture (Title: Mechanisms of Musical Understanding) to ~100 students  
Responsible for all grading and assignment of final course grades for discussion section

### **Teaching Assistant**

#### **SOSC 14100, 14200, 14300 - Mind I, II, III (University of Chicago)**

Evaluated weekly response papers  
Arranged individual meeting with students to discuss ideas from the course

**PSYC 20700 – Sensation and Perception** (*University of Chicago*)

Led weekly discussion sections of approximately 20 students

Delivered a lecture on Music Perception to approximately 60 undergraduates

**PSYC 20200 – Psychological Research Methods** (*University of Chicago*)

Led a weekly discussion section of 20 students

Delivered a lecture on Experimental Designs to approximately 75 undergraduates

Helped students design and conduct two out-of-class research projects

**Guest Lecturer**

**PSYCHOL 2115A – Introduction to Sensation & Perception** (*University of Western Ontario*)

Lecture Title: “How does sleep influence perceptual processes?”

**COMMSCI 4417A – Introduction to Hearing Science** (*University of Western Ontario*)

Lecture Title: “Perceptual Organization of Music”

**PSY 210 – Introduction to Psychological Science** (*Elmhurst College*)

Lecture Title: “Does this Taylor Swift sound sharp? Exploring pitch memory in the general population”

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**MENTORSHIP EXPERIENCE**

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**Research Mentor**

2010 - present

*University of Chicago, University of Western Ontario*

Guided 20+ undergraduate students through conducting psychological research

Co-authored papers with 7 undergraduate students

**Psychology Honors Thesis Advising**

2013 - present

[1] Mykayla Winspear (2019-2020)

*University of Western Ontario*

Title: The Influence of Talker Variability on Statistical Learning

[2] Mackenzie Bacon (2018-2019)

*University of Western Ontario*

Title: Memory for Words and Sentences: The Effect of Acoustical Degradation

[3] Luke Clohisy (2017-2018)

*University of Chicago*

Title: Memory for popular music: Evidence for widespread tempo abilities and implicit pitch categories

[4] Max Bluestone (2015- 2016)

*University of Chicago*

Title: The effects of semantic and temporal congruency on memory for audiovisual clips

[5] Anders Hogstrom (2012-2013)

*University of Chicago*

Title: The sound of silence: Attention entrainment to isochronous and syncopated beats

**Practicum Advisor, Master's Program in Computer Science (MPCS)**

2015 - 2016

*University of Chicago*

Advised two masters students in the design and execution of psychophysical projects

Evaluated students' progress several times throughout the span of the projects

**PRISM Graduate Student Preceptor**

2012 - 2014

*Department of Psychology, University of Chicago*

Organized biannual "lab night" to help students find research opportunities on campus

Planned approximately 6 additional events each year to help students explore employment options

Held office hours for students to discuss how to become more involved in the Psychology major

**Research Consultant, Advanced Graduate Course**

2009 - 2010

*University of Chicago*

Served as primary research consultant for an advanced graduate course in multimedia perception

Assisted graduate students in the design, execution, and data analysis of independent research

## **PEER-REVIEW ACTIVITIES**

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**Ad-Hoc reviewer for:**

Proceedings of the National Academy of Sciences | Proceedings of the Royal Society B | Cognitive Science | eLife | Psychonomic Bulletin and Review | Brain and Language | Social Cognitive and Affective Neuroscience | Journal of Neurolinguistics | PLOS One | Attention, Perception, & Psychophysics | Scientific Reports | Frontiers in Neuroscience | Trends in Hearing | Acta Psychologica | Journal of Experimental Psychology: Learning, Memory, and Cognition | The Journal of the Acoustical Society of America | Current Psychology | Collabra: Psychology | Brain Sciences | Biological Rhythm Research | STEM Fellowship Journal

## **PROFESSIONAL ORGANIZATIONS**

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The Society for Music Perception and Cognition | The Psychonomic Society | Society for the Neurobiology of Language | Association for Research in Otolaryngology | The Association for Psychological Science | The Acoustical Society of America | The American Psychological Association

## **ACADEMIC SERVICE**

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**Fulbright Scholarship Interviewer**

2012 - 2018

*The College, University of Chicago*

Annually review between 4-7 applications for Fulbright Scholarships

Interview applicants and submit recommendations to the university

**Workshop Coordinator (Topic: Perception and Understanding of Music)** 2011 - 2012  
*Council on Advanced Studies, University of Chicago*

Organized biweekly presentations of research given by graduate students and faculty  
 Managed a budget of \$1500 for organizing outside speaker visits

**Travel and Research Committee Member** 2010 - 2014  
*Psychology Graduate Student Organization, University of Chicago*

Reviewed applications for travel and research related expenses among graduate students  
 Allocated funds based on merit and availability

## SELECTED CONFERENCE TALKS

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- [1] **Van Hedger, S.C., & Johnsrude, I.S.** (2020). Understanding different forms of degraded speech as an auditory skill. *43rd Annual Midwinter Meeting of the Association for Research in Otolaryngology*, San Jose, CA
- [2] **Van Hedger, S.C., Heald, S.L.M., & Nusbaum, H.C.** (2019). Robust absolute pitch memory in the general population: Evidence from popular melodies. *Society for Music Perception and Cognition Conference*. New York University, New York, NY
- [3] Heald, S.L.M., **Van Hedger, S.C., & Nusbaum, H.C.** (2016). Working memory predicts individual differences in learning synthetic speech produced by rule. *Annual Meeting of the Psychonomic Society*, Boston, MA
- [4] **Van Hedger, S.C., Heald, S.L., Koch, R., Nusbaum, H.C.** (2015). Auditory working memory predicts individual differences in absolute pitch learning: Evidence from short- and long-term training. *Society for Music Perception and Cognition Conference*. Vanderbilt University, Nashville, TN
- [5] **Van Hedger, S.C., Heald, S.L., Nusbaum, H.C.** (2015). Incidental absolute pitch learning in an interactive multi-modal environment. *Acoustical Society of America 170<sup>th</sup> Meeting*. Jacksonville, FL
- [6] **Van Hedger, S.C., Heald, S.L., Koch, R., Nusbaum, H.C.** (2014). Absolute memory for popular songs is predicted by auditory working memory ability. *Acoustical Society of America 168<sup>th</sup> Meeting*. Indianapolis, IN
- [7] **Hedger, S.C., Heald, S.L., Nusbaum, H.C.** (2013). Absolute pitch may not be so absolute. *Society for Music Perception and Cognition Conference*. Ryerson University, Toronto, ON
- [8] **Hedger, S.C., Klos, S., Nusbaum, H.C.** (2013). Individual differences in the short- and long-term training of musical pitch. *Midwest Music Cognition Symposium*. The Ohio State University, Columbus, OH

- [9] **Hedger, S.C.**, Hoeckner, B., Nusbaum, H.C. (2011). Music Can Convey Movement like Prosody in Speech. *Society for Music Perception and Cognition Conference*. Eastman School of Music, Rochester, NY
- [10] **Hedger, S.C.**, Heald, S.L., DeSouza, J., Hoeckner, B., Nusbaum, H.C. (2011). The Role of Vibrotactile Input in Musical Performance. *Franke Institute for the Humanities*. The University of Chicago, Chicago, IL
- [11] **Hedger, S.C.**, Hoeckner, B., Nusbaum, H.C. (2011). The Sound of Motion in Music. *Midwest Cognitive Science Meeting*. Michigan State University, East Lansing, MI
- [12] Heald, S.L., **Hedger, S.C.**, Lescop, O., Hoeckner, B., Nusbaum, H.C. (2010). Localized Context Influences the Perceptual Judgment of Musical Tones. *Annual Meeting of the Psychonomic Society*, St. Louis, MO

## SELECTED POSTER PRESENTATIONS

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- [1] **Van Hedger, S.C.**, Heald, S.L.M., Nusbaum, H.C., Batterink, L.J., Davis, M.H., & Johnsrude, I.S. (2019). Learning different forms of degraded speech as a cognitive skill. *Annual Meeting of the Psychonomic Society*, Montreal, QC
- [2] Heald, S.L.M., **Van Hedger, S.C.**, & Nusbaum, H.C. (2019). Interpretation of pitch patterns in spoken and sung speech. *Auditory Perception, Cognition, and Action Meeting*, Montreal, QC
- [3] Zhen, A., **Van Hedger, S.C.**, Heald, S.L.M., Goldin-Meadow, S., & Tian, X. (2019). Manual directional gestures facilitate speech learning. *Auditory Perception, Cognition, and Action Meeting*, Montreal, QC
- [4] **Van Hedger, S.C.**, Heald, S.L.M., & Nusbaum, H.C. (2019). Neural bases of note normalization in absolute pitch. *13<sup>th</sup> Annual Canadian Neuroscience Meeting*, Toronto, ON
- [5] **Van Hedger, S.C.**, & Nusbaum, H.C. (2019). Individual differences in absolute pitch performance: Contributions of working memory, musical expertise, and tonal language background. *42<sup>nd</sup> Annual Midwinter Meeting of the Association for Research in Otolaryngology*, Baltimore, MD
- [6] **Van Hedger, S.C.**, & Nusbaum, H.C. (2018). Individual differences in absolute pitch performance: Contributions of working memory, musical expertise, and tonal language background. *Annual Meeting of the Psychonomic Society*, New Orleans, LA
- [7] Heald, S.L.M., **Van Hedger, S.C.**, & Nusbaum, H.C. (2018). Individual differences in auditory working memory is predictive of compensation response to spectral perturbation from EH to AE. *Annual Meeting of the Psychonomic Society*, New Orleans, LA



- [8] Zhen, A., **Van Hedger, S.C.**, Heald, S.L.M., Goldin-Meadow, S., & Tian, X. (2017). Manual directional gestures facilitate learning of Mandarin tones. *Society for the Neurobiology of Language Conference*, Baltimore, MD
- [9] Heald, S.L.M., Uddin, S., **Van Hedger, S.C.**, Snyder, J., & Nusbaum, H.C. (2017). Early sensory changes in neural processing gate generalized perceptual learning. *Society for the Neurobiology of Language Conference*, Baltimore, MD
- [10] **Van Hedger, S.C.**, Heald, S.L.M., Huang, A., Rutstein, B., & Nusbaum, H.C. (2016). Telling in-tune from out-of-tune: Widespread evidence for implicit absolute intonation. *Annual Meeting of the Psychonomic Society*, Boston, MA
- [11] Uddin, S., Heald, S.L.M., **Van Hedger, S.C.**, & Nusbaum, H.C. (2016). Recognizing sounds in sentence context. *Annual Meeting of the Psychonomic Society*, Boston, MA
- [12] **Van Hedger, S.C.**, Heald, S.L., Wu, S., & Nusbaum, H.C. (2015). Judging the absolute pitch of novel recordings of familiar songs. *Annual Meeting of the Psychonomic Society*, Chicago, IL
- [13] **Van Hedger, S.C.**, Heald, S.L., Nusbaum, H.C. (2015). The effects of acoustic variability on absolute pitch categorization: Evidence for contextual tuning. *Acoustical Society of America 170<sup>th</sup> Meeting*. Jacksonville, FL
- [14] Hogstrom, A., **Hedger, S.C.**, Nusbaum, H.C. (2013). The sound of silence: Attention entrainment to isochronous and syncopated beats. *Society for Music Perception and Cognition Conference*. Ryerson University, Toronto, ON
- [15] **Hedger, S.C.**, Nusbaum, H.C., Lescop, O., Wallisch, P., Hoeckner, B. (2013). Music can elicit a visual motion aftereffect: Evidence from behavior and fMRI. *Auditory Cognitive Neuroscience Society Meeting*, Tucson, AZ
- [16] Heald, S.L., **Hedger, S.C.**, Klos, S., Colson, B., Nusbaum, H.C. (2013) Spoken gesture is integrated with sentence meaning during speech comprehension. *Auditory Cognitive Neuroscience Society Meeting*, Tucson, AZ
- [17] **Hedger, S.C.**, Heald, S.L., Nusbaum, H.C. (2012). Absolute pitch may not be so absolute. *Annual Meeting of the Psychonomic Society*, Minneapolis, MN
- [18] **Hedger, S.C.**, Nusbaum, H.C., Lescop, O., Wallisch, P., Hoeckner, B. (2012). Music can elicit a visual motion aftereffect. *Association for Psychological Science Convention*, Chicago, IL
- [19] **Hedger, S.C.**, Palmer, C., Hogstrom, A., Nusbaum, H.C. (2012). The effects of sleep-dependent consolidation on motoric and abstract learning in music. *Midwest Cognitive Science Meeting*. Indiana University, Bloomington, IN

## WORKSHOPS

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- [1] **BrainsCAN Computational Core Methods Lunch** (*University of Western Ontario*)  
Title: "An introduction to running web-based experiments using PsychoPy, jsPsych, and Pavlovio"  
Co-Presenter: J. Paul Minda

## INVITED TALKS

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- [1] **Van Hedger, S.C.** (2020, March). Perceptual understanding in a variable world: Insights from music and speech. Huron University College. London, ON
- [2] **Van Hedger, S.C.** (2020, January). What can pop songs tell us about representations of musical pitch? *Graduate Student Colloquium*. University of Western Ontario. London, ON
- [3] **Van Hedger, S.C.** (2019, April). Absolute pitch can be trained in some high-auditory working memory adults. *The 5<sup>th</sup> Learning and Plasticity (LaP) Meeting*. Äkäslompolo, Finland
- [4] **Van Hedger, S.C.** (2016, June). Pitch memory in adulthood: Individual differences, generalizations, and abstractions. *Musical Learning across the Lifespan Workshop*. University of Western Ontario. London, ON
- [5] **Van Hedger, S.C.** (2015, December). Telling sharp from flat: Pitch memory in the general population. DePauw University. Greencastle, IN
- [6] **Van Hedger, S.C.** (2015, July). Developing a framework for musical understanding. The University of Chicago. Chicago, IL