

I. PERSONAL INFORMATION

DANIEL LIU BOWLING, PHD

Assistant Professor of Psychiatry and Behavioral Sciences and Music (by courtesy)
Stanford University, School of Medicine and School of Humanities and Sciences.

II. EDUCATIONAL BACKGROUND

Translation Medicine, Certificate. Eureka Institute	02/2019
Neurobiology, Ph.D. Duke University Advisor: Prof. Dale Purves	05/2012
Cognitive Neuroscience, Certificate. Duke University	05/2008
Biological Psychology, B.S. (<i>Summa Cum Laude</i>) University of California at San Diego	06/2006
Neuro-Philosophy, B.A. (<i>Summa Cum Laude</i>) University of California at San Diego Advisor: Prof. Patricia Churchland	06/2006

III. PROFESSIONAL APPOINTMENTS

Assistant Professor Department of Psychiatry and Behavioral Sciences Stanford University, School of Medicine.	06/2025 – Present
Assistant Professor (by Courtesy) Department of Music Stanford University, School of Humanities and Sciences.	06/2025 – Present
Instructor Department of Psychiatry and Behavioral Sciences Stanford University, School of Medicine. Faculty Mentor: Prof. Karen Parker	12/2018 – Present
Lisa Meitner Research Fellow Department of Cognitive Biology. Faculty of Life Sciences, University of Vienna, Austria	04/2015– 10/2018
Postdoctoral Researcher Department of Cognitive Biology, Faculty of Life Sciences Faculty of Life Sciences, University of Vienna, Austria	07/2012– 03/2015

Adviser: Prof. Tecumseh Fitch

IV. HONORS & AWARDS

Tuition Award. *MCHRI-Eureka Certificate Course in Translational Medicine*. Asilomar, CA. (2020)

Young Investigator Award. *Faculty of Life Sciences, University of Vienna*. Vienna, Austria. (2016)

Travel Award. *Cold Spring Harbor Laboratory*. New York, NY. (2016)

Innovation Award. For “A Distinct Role of the Temporal-Parietal Junction in Predicting Socially Guided Decisions.” *Social and Affective Neuroscience Society*. Website: <https://socialaffectiveneuro.org>.

Best Talk. For “Synchrony and Temporal Regularity in Human Vocalization.” *Syntax of the Mind International Conference*. Vienna, Austria. (2014).

Best Poster. For “Emotional Expression in Music Mirrors Vocalization.” *Neuroscience and Behavioral Disorders Annual Retreat*. Singapore. (2010).

Summa Cum Laude. For GPA 3.890. Latin Honors at UCSD. San Diego, CA. (2006).

Coaches Award. For varsity boys soccer. Henry M. Gunn High School. Palo Alto, CA. (2002).

Multiple 1st and 2nd place finishes in Piano and Speech Arts Competitions. Calgary Performing Arts Festivals. Calgary, AB. (1991-1998).

V. SCHOLARLY PUBLICATIONS

Annotations * = corresponding; † = co-first author

A. Published Peer-Reviewed Original Research:

1. Venkatesan T*, Demetriou A, Koops V. & **Bowling DL**. (2025) Beating Stress: Music with monaural beats effects anxiety and mood in a non-clinical population. *Frontiers in Psychology*
2. Orpella K†, **Bowling DL**†, Tomaino C, & Ripollés P*. (2025) Effects of Music Advertised to Support Focus on Mood and Processing Speech. *PLoS ONE*, 20(2): e0316047
3. Noufi C, Berger J, Parker KJ, & **Bowling DL**. Acoustically-Driven Phoneme Removal that Preserves Vocal Affective Cues. *Proceedings of ICASSP 2023* –

- 2023 IEEE International Conference on Acoustic, Speech and Signal Processing), Rhodes Island, Greece, pp. 1-5.
4. **Bowling DL***, Gahr J, Graf Ancochea P, Hoeschele M, Canoine V, Fusani L, & Fitch WT. (2022). Endogenous Oxytocin, Cortisol, and Testosterone in Response to Group Singing. *Hormones and Behavior*, 139:105105.
 5. Lesch R*, Schwaha T, Orozco A, Shilling M, Brunelli S, Hofer M, **Bowling DL**, Zimmerberg B, & Fitch WT. (2021). Selection on Vocal Output Affects Laryngeal Morphology in Rats. *Journal of Anatomy*, 00:1-12.
 6. **Bowling DL†***, Dunn JC†, Smaers JB, Garcia M, Sato A, Hantke G, Handschuh S, Dengg S, Kerney M, & Kitchener AC, Gumpenberger M, & Fitch WT. (2020). Rapid Evolution of the Primate Larynx? *PLoS Biology*, 18:e30000764
 7. Wagner B*, **Bowling DL**, & Hoeschele M. (2020) Is Consonance Attractive to Budgerigars? No Evidence From a Place Preference Study. *Animal Cognition*, 23:973-987.
 8. **Bowling DL†***, Graf Ancochea P†, Hove MJ, & Fitch WT. (2019). Pupillometry of Groove: Evidence for Noradrenergic Arousal in the Link Between Music and Movement. *Frontiers in Neuroscience*, 12:1039.
 9. Congdon JV*, Hahn, AH, Filippi P, Campbell KA, Hoang J, Scully EN, **Bowling DL**, Reber SA, Sturdy CB. (2019) Hear Them Roar: A Comparison of Black-capped Chickadee and Human Perception of Arousal in Vocalizations Across All Classes of Terrestrial Vertebrates. *Journal of Comparative Psychology*, 133:520-541.
 10. Fritz TH*, **Bowling DL**, Contier O, Grant J, Schneider L, Lederer A, Höer F, Busch E & Villringer A. (2018). Musical Agency During Physical Exercise Decreases Pain During Sports Exercise. *Frontiers in Psychology*, 8:2312.
 11. **Bowling DL***, Purves D, & Gill KZ. (2018). Vocal Similarity Predicts the Relative Attraction of Musical Chords. *Proceedings of the National Academy of Sciences USA*, 115:216-221.
 12. Garcia M*, Herbst CT, **Bowling DL**, Dunn JC & Fitch WT*. (2017). Acoustic Allometry Revisited: Morphological Determinates of Fundamental Frequency in Primate Vocal Production. *Scientific Reports*, 7:10450.
 13. Filippi P*, Congdon JV, Hoang J, **Bowling DL**, Reber SA, Pašukonis A, Hoeschele M, Ocklenburg S., de Boer B, Sturdy CB, Newen A & Güntürkün O. (2017). Humans Recognize Emotional Arousal in Vocalizations Across All Classes of Terrestrial Vertebrates: Evidence for Acoustic Universals. *Proceedings of the Royal Society B*, 284: 20170990.
 14. **Bowling DL***, Garcia M, Dunn J, Ruprecht A, A Stewart, Frommolt K & Fitch WT. (2017). Body Size and Vocalization in Primates and Carnivores. *Scientific Reports*, 41070.

15. Herbst CT*, Schutte HK, **Bowling DL**, & Svec JG. (2017). Comparing Chalk With Cheese-The Electroglottographic Contact Quotient is Only a Limited Surrogate of the Closed Quotient. *Journal of Voice*, 31:401-409.
16. Fillipi P*, Ocklenburg S, **Bowling DL***, Heege L, Güntürkün O, Newen A & de Boer B. (2016). More than Words (and Faces): Evidence for a Stroop Effect of Prosody in Emotion Word Processing. *Cognition and Emotion*, 31:879-891.
17. Garcia M*, Gingras B, **Bowling DL**, Herbst C, Boeckle M, Locatelli Y & Fitch WT*. (2016). Structural Classification of Wild Boar (*Sus scrofa*) Vocalizations. *Ethology*, 122: 329-342.
18. Hoeschele M & **Bowling DL***. (2016). Sex Differences in Rhythmic Preferences in the Budgerigar (*Melopsittacus undulatus*): A Comparative Study with Humans. *Frontiers in Psychology*, 7:1543.
19. **Bowling DL***, Gingras B, Han S, Sundararajan J & Opitz ECL. (2013). Tone of Voice in Emotional Expression: Relevance for the Affective Character of Musical Mode. *Journal of Interdisciplinary Music Studies*, 7:29-44.
20. **Bowling DL***, Herbst CT & Fitch WT. (2013). Social Origins of Rhythm? Synchrony and Temporal Regularity in Human Vocalization. *PLoS ONE*, 8: e80402.
21. Carter RM, **Bowling DL**, Reeck C, & Huettel SA*. (2012). A Distinct Role of the Temporal-Parietal Junction in Predicting Socially Guided Decisions. *Science*, 337: 109-111.
22. **Bowling DL***, Sundararajan J, Han S, & Purves D. (2012). Expression of Emotion in Eastern and Western Music Mirrors Vocalization. *PLoS ONE*, 7: e31942.
23. Han S, Sundararajan J, **Bowling DL**, Lake J, & Purves D*. (2011). Co-Variation of Tonality in the Music and Speech of Different Cultures. *PLoS ONE*, 6: e20160.
24. **Bowling DL***, Gill K, Choi J, Prinz J, & Purves D. (2010). Major and Minor Music Compared to Excited and Subdued Speech. *Journal of the Acoustical Society of America*, 127: 491-503.

C. Published Peer-Reviewed Reviews Articles:

1. **Bowling DL***. Biological Principles for Music and Mental Health. (2023). *Translational Psychiatry*, 13:374.
2. Itskovitch E[†], **Bowling DL^{†*}**, Garner JP, & Parker KJ. (2022). Oxytocin and the Social Facilitation of Placebo Effects. *Molecular Psychiatry*, 27:2640-2649.
3. Filippi P*, Hoeschele M, Spierings MJ, & **Bowling DL**. (2019). Temporal Modulation in Speech, Music, and Animal Vocal Communication: Evidence of Conserved Function. *Annals of the New York Academy of Science*, 1453:99-113.

4. **Bowling DL*** & Purves D. (2015). A Biological Rationale for Musical Consonance. *Proceedings of the National Academy of Sciences USA*, 112: 11155-60.
5. Ravnani A*, **Bowling DL**, & Fitch WT*. (2014). Chorusing, Synchrony, and the Evolutionary Functions of Rhythm. *Frontiers in Psychology*, 5:1118.
6. **Bowling DL***. (2013). A Vocal Basis for the Affective Character of Musical Mode in Melody. *Frontiers in Psychology*, 4:464.

D. Published Peer-Reviewed Commentaries

1. Wagner B, **Bowling DL**, Hoeschele M (2023). Defining Octave Equivalence and a Comparative Approach to Understanding its Biological Foundations. *Current Anthropology*, 65, 518-520.
2. **Bowling DL*** (2023). Vocal Similarity and the Biology of Musical Tonality. *Physics of Life Reviews*, 46, 46-51.
3. **Bowling DL***, Hoeschele M, & Dunn JC. (2021). Progress Without Exclusion in the Search for an Evolutionary Basis of Music. *Brain and Behavioral Sciences*, 44, E97.
4. **Bowling DL***. (2021). Harmonicity and Roughness in the Biology of Tonal Aesthetics. *Music Perception*, 38:331:334.
5. **Bowling DL***. (2020). Claims of Categorical Primacy for Musical Affect are Confounded by Using Language as a Measure. *Proceedings of the National Academy of Sciences USA*, 117:9692-9693.
6. **Bowling DL***, Hoeschele M, Gill KZ, & Fitch WT. (2017). The Nature and Nurture of Musical Consonance. *Music Perception*, 35:118-121.
7. **Bowling DL***. (2017). The Continuing Legacy of Nature vs. Nurture in Biolinguistics. *Psychonomic Bulletin & Review*, 24:140.
8. **Bowling DL** & Fitch WT*. (2015). Do Animal Communication Systems Have Phonemes? *Trends in Cognitive Sciences*, 19:555-57.
9. **Bowling DL***. (2015). The Problem with Emotion. Comment on "The Quartet Theory of Human Emotions: An Integrative Neurofunctional Model" by S Koelsch et al. *Physics of Life Reviews*, 13:33-35.
10. **Bowling DL***. (2014). Cognitive Theory and Brain Fact: Insights for the Future of Cognitive Neuroscience. Comment on "Toward a Computational Framework for Cognitive Biology: Unifying Approaches from Cognitive Neuroscience and Comparative Cognition" by WT Fitch. *Physics of Life Reviews*, 11:377-9.

E. Published Book Chapters

1. Ravnani A, **Bowling DL**, Kirby S. (2014). The Psychology of Biological Clocks: A New Framework for the Evolution of Rhythm. In E. Cartmill, S. Roberts, H. Lyn, & H. Cornish (Eds.), *The Evolution of Language* (pp. 262–269).
2. **Bowling DL** & Purves D. (2012). A Biological Basis for Musical Tonality. In: B Barth, G Patrizia, H Klein (eds.), *Sensory Perception: Mind and Matter*. Springer Verlag, Heidelberg, DE.

VI. GRANTS

C. Current Funding

“Translating Music Therapy to Music Medicine for Greater Access and Impact”

Role: Principal Investigator

Type: Renée Fleming Neuroarts Investigator Award - Basic Research Grant

Granting Agency: NeuroArts Blueprint

Funding Term: 08/2025 to 08/2026

“Standardized Tunable Music Medicine for Suicide (STAMM-S)”

Role: Principal Investigator

Type: Early Career Research Grant

Granting Agency: American Foundation for Suicide Prevention

Funding Term: 06/2025 to 06/2028

B. Funding Applications Under Review

“Standardized Tunable Music Medicine for Depression (STAMM-D): Development & Feasibility”

Role: Principal Investigator

Type: R34

Granting Agency: NICCH

Funding Term: 03/2025 to 03/2028

Status: Submitted 10/2024 (Impact score = 25)

“Translating Music Therapy to Music Medicine for Increased Impact and Accessibility”

Role: Principal Investigator

Type: R21

Granting Agency: National Institutes of Health

Funding Term: 09/2025 to 09/2027

Status: Submitted 02/2025

“Defining Neural Markers of Musical Treatment Efficacy in Young Adults”

Role: Principal Investigator

Type: Seed Grant

Granting Agency: Wu Tsai Neurosciences Institute; Stanford University

Funding Term: 10/2025 to 10/2027

Status: In preparation for submission 04/2025

C. Past Funding

“Advancing Assessment of Auditory-Vocal Affect in Autism with Speech and Music”

Role: Principal Investigator

Type: K01

Granting Agency: NIMH

Funding Term: 04/2020 to 10/2024

“Quantifying Auditory-Vocal Affect in Human Social Communication”

Role: Lead Investigator

Type: Seed Grant

Granting Agency: Wu Tsai Neurosciences Institute.

Funding Term: 10/2019 to 10/2022

“The Biology of Music: Perceiving and Participating in Synchrony”

Role: Principal Investigator

Type: Lisa Meitner Fellowship

Granting Agency: Austrian Science Fund

Funding Term: 03/2015 to 10/2017

“The Biology of Synchronous Behavior”

Role: Co-Principal Investigator

Type: Emerging Field Award,

Granting Agency: University of Vienna, Faculty of Life Sciences.

Funding Term: 01/2015 to 01/2016

VII. EDITORIAL SERVICE

A. Peer Review Activities

Fifty assignments since 2014. Mean review rate = 4.8 per year.

Journal Name	5-Year Impact Factor	Assignments	
		Reviewer	Guest Editor
<i>Psychological Bulletin</i>	30.3	1	
<i>Nature Communications</i>	16.1	1	
<i>Science Advances</i>	13.7	1	
<i>Artificial Intelligence</i>	11.6	1	
<i>PNAS USA</i>	10.3	13	1
<i>Philosophical Transaction of the Royal Society B</i>	5.4	1	
<i>Psychonomic Bulletin & Review</i>	4.8	2	
<i>Expert Review of Neurotherapeutics</i>	4.6	1	
<i>Journal of Autism and Develop. Disorders</i>	4.2	1	
<i>Evolution and Human Behavior</i>	3.7	1	
<i>Hormones and Behavior</i>	3.4	2	
<i>Frontiers in Neurology</i>	3.4	1	

<i>Biology Letters</i>	3.4	1	
<i>Journal of Experimental Psychology: Human Perception and Performance</i>	3.3	1	
<i>Frontiers in Psychology</i>	3.3	5	
<i>Journal of Experimental Psychology: Learning, Memory, and Cognition</i>	2.9	1	
<i>BMC Neuroscience</i>	2.9	1	
<i>Frontiers in Human Neuroscience</i>	2.9	1	
<i>PLoS ONE</i>	2.9	1	
<i>Behavioral Science: Health Psychology</i>	2.7	1	
<i>PeerJ</i>	2.7	1	
<i>Journal of Nonverbal Behavior</i>	2.7	1	
<i>Speech Communication</i>	2.4	1	
<i>Journal of Cognition</i>	2.4	1	
<i>Journal of Comparative Psychology</i>	2.3	1	
<i>Musicae Scientiae</i>	2.2	1	
<i>Journal of the Acoustical Society of American</i>	2.2	1	
<i>Bioacoustics</i>	1.5	1	
<i>Music perception</i>	1.2	2	
<i>Open Research Europe</i>	not available	1	
<i>Comparative Cognition</i>	not available	1	
<i>Journal of Interdisciplinary Music Studies</i>	not available	1	

VIII. SERVICE TO PROFESSIONAL ORGANIZATIONS

A. Academic Memberships

Center for Precision Medicine, <i>Stanford University S.O.M.</i>	2022-present
Maternal and Children's health Institute, <i>Stanford University S.O.M.</i>	2022-present
Bay Area Autism Consortium, <i>San Francisco Bay Area.</i>	2022-present
The SingWell Project, <i>Toronto Metropolitan University.</i>	2022-present
Center for Computer Research in Music and Acoustics, <i>Stanford University.</i>	2020-present
Sound Health Network, <i>UCSF.</i>	2019-present
Wu Tsai Neuroscience Institute, <i>Stanford University.</i>	2018-present
International Society for Bioacoustics, <i>https://www.ibac.info.</i>	2017-present
Society for Music Perception and Cognition	2015-present

<http://www.musicperception.org>.

IX. PRESENTATIONS

A. Invited Presentations

1. **Bowling DL.** Music for Mental Health: Biological Foundations and Clinical Applications. *Center for Human Behavior, Evolution, and Cognition, University of California Los Angeles, USA.* March 2025.
2. **Bowling DL.** Music for Mental Health: Biological Foundations and Clinical Applications. *Psychophysiology Lab, Stanford University, USA.* February 2025.
3. **Bowling DL.** Rapid Evolution of the Primate Larynx. *Acoustic Communication: An Interdisciplinary Approach.* Federal University of Alfenas. Varginha, BR. November 2020. [Talk]
4. **Bowling DL.** Vocal Affect and the Biology of Music. *Department of Comparative Language Science, University of Zurich.* Zurich, CH. May 2020. [Talk]
5. **Bowling DL.** Vocalization and the Biology of Music. *Department of Psychology, Stanford University.* Stanford, CA. January 2020. [Talk]
6. **Bowling DL.** A Biological Rationale for Musical Consonance. *5th Meeting of the Carl Stumpf Society.* Vienna, AT. October 2015. [Talk]
7. **Bowling DL.** The Problem of Musical Consonance. *Duke-NUS Neurobiology and Behavioral Disorders Annual Retreat.* Singapore. August 2011. [Talk]
8. **Bowling DL.** The Affective Impact of Major and Minor Music. *Duke-NUS Early Career Scientists Symposium.* Singapore. October 2009. [Talk]

B. National and Regional Meetings

1. **Bowling DL,** Noufi, C., Frank, J, Berger, J. & Parker, K. Defining Individual Variation in the Reception of Auditory-Vocal Affect in Autism. *Bay Area Autism Consortium Annual Symposium.* Stanford, CA. November, 2022. [Poster]
2. **Bowling DL.** Oxytocin and Group Singing. *Society for Music Perception and Cognition 2022 Conference.* Portland, OR. August 2022. [Talk]
3. **Bowling DL,** Noufi, C., Frank, J, Berger, J. & Parker, K. Evaluating Affect Perception with Speech and Speech-Derived "Music". *Society for Music Perception and Cognition 2022 Conference.* Portland, OR. August 2022. [Poster]
4. Fillipi P, Ocklenburg S, **Bowling DL,** ... de boar B. Multimodal Processing of Emotion: Prosody and Facial Expression. *Evolution of Language 11.* New Orleans, LA. March 2016. [Talk]

5. **Bowling DL** & Purves D. A Biological Rationale for Musical Consonance. *Society for Music Perception and Cognition Conference*. Nashville, TN. July 2015. [Talk]
6. **Bowling DL** & Fritz TH. Musical Agency Modulates Pain. *Society for Music Perception and Cognition Conference*. Nashville, TN. July 2015. [Talk]

C. International Meetings

1. Noufi C*, Berger J, Parker KJ, **Bowling DL**. Acoustically-Driven Phoneme Removal that Preserves Vocal Affective Cues. *ICASSP 2023 – 2023 IEEE International Conference on Acoustic, Speech and Signal Processing*, Rhodes Island, Greece. June, 2023. [Talk]
7. **Bowling DL**, Purves D, & Gill, KZ. Vocal Similarity Predicts the Relative Attraction of Musical Chords. *15th International Conference on Music Perception and Cognition*. Graz, AT. July 2018. [Talk]
8. **Bowling DL**, Graf Ancochea P, & Fitch T. Pupillometry of Groove. *15th International Conference on Music Perception and Cognition*. Graz, AT. July 2018. [Talk]
9. **Bowling DL**. Body size and Vocalization Frequencies in Mammals. *8th European Conference on Behavioural Biology*. Vienna, AT. July 2016. [Talk]
10. **Bowling DL**, Garcia M, & Fitch WT. Primate Vocalization in Phylogenetic Context. *International Bioacoustics Conference*. Murnau, DE. September 2015. [Poster]
11. Horn L, Hungerländer N, Scheer C, & **Bowling DL**. Work Together, Move Together: Cooperation Promotes Interpersonal Synchrony in Human Dyads. *Behaviour*. Cairns, AU. August 2015. [Poster]
12. **Bowling DL** & Fritz TH. Musical Agency During Joint Exercise. *Joint Action Meeting 6*. Budapest, HU. July 2015. [Poster]
13. **Bowling DL** & Fitch WT. Social Origins of Rhythm? *Evolution of Language Conference 10*. Vienna, AT. April 2014. [Talk]
14. **Bowling DL** & Fitch WT. Synchrony and Temporal Regularity in Human Vocalization. *Syntax of the Mind International Conference*. Vienna, AT. April 2014. [Talk]
15. **Bowling DL** & Fitch WT. Social Origins of Rhythm? *3rd Transfer of Knowledge Conference on Comparative Cognition*. Vienna, AT. July 2013. [Poster]
16. **Bowling DL**, Sundararajan J, Han S, & Purves D. Emotional Expression in Music Mirrors Vocalization. *Duke-NUS Neurobiology and Behavioral Disorders Annual Retreat*, Singapore. August 2011. [Poster]

VI. Training & Teaching

A. Training

Thirty one students trained to date, including 1 postdoctoral researcher, 5 doctoral students, 5 masters students, 6 graduate research assistants, 14 undergraduate students.

D. Teaching

Psychophysics and Music Cognition [Guest lecturer]. Winter 2022 & 2023
Stanford University.

Methods in Cognitive Biology [Co-Instructor]. Winter 2016 & 2017
University of Vienna.

Neuroanatomy Lab [Teaching Assistant]. Winter 2009 & 2010
Duke University Medical School