Yonghee Oh, Ph.D.

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EDUCATION

Sep/09 – Dec/13	**The Ohio State University** Ph.D. in Speech and Hearing Science - Dissertation: An Enhanced Channel Model for Spectrotemporal Integration and Masker Phase Effects, Advisor: Lawrence L. Feth	Columbus, OH
Sep/07 – Jun/09	**The Ohio State University** M.S. in Electrical and Computer Engineering - Signal Estimation and Detection, Advisor: Ashok Krishnamurthy	Columbus, OH
Mar/98 – Feb/02	**Korea Aerospace University** B.S. in Electrical and Computer Engineering - Radar Signal Processing, Advisor: Young K. Kwag	Seoul, Korea

POSITIONS

Nov/18 – Present	- **Assistant Professor**, Department of Speech, Language, and Hearing Sciences, University of Florida	Gainesville, FL
Dec/14 – Present	- **Research Associate (WOC)**, National Center for Rehabilitative Auditory Research (NCRAR), VA Portland Health Care	Portland, OR
Dec/14 – Oct/18	- **Postdoctoral Research Fellow** with Lina A. Reiss, Ph.D. Cochlear Implant and Hearing Aid Research Lab, Oregon Health & Science University - **Research Associate** with Timothy Hullar, M.D. Vestibular Psychophysics Lab, Oregon Health & Science University	Portland, OR
Dec/13 – Oct/14	- **Postdoctoral Research Fellow** with Lawrence L. Feth, Ph.D. *Psychoacoustics Lab, The Ohio State University*	Columbus, OH
Sep/09 – Dec/13	- **Research Assistant** Speech and Hearing Science, *The Ohio State University*	Columbus, OH

RESEARCH INTERESTS

- Computational Models of Binaural Auditory Signal Processing
- Cochlear Implant and Hearing Aid Signal Processing
- Psychoacoustics/Psychophysics
- Speech Perception and Recognition in noise
- Computational Models of Multisensory Integration
- Artificial Intelligence

HONORS & AWARDS

Merit-Based Scholarship
- Awarded by the Korea Science Foundation for undergraduate students (1st semester 1999, 2nd semester 1999, 2nd semester 2000)
- Awarded by Air Force for ROTC students (1st semester 2001, 2nd semester 2001)

Highest Honor Student Award (2nd semester 1999)

GRANTS

October/21-Present — *Contributions of auditory and somatosensory feedback to speech motor control in congenitally deaf 9-to-10-year-olds and adults,*
Emerging Research Grant from the Hearing Health Foundation
Role: Co-PI PI: Matthew Masapollo $50,000

June/21-Present — *Demystifying perceptual evaluations of parkinsonism sub-categorizations using machine learning,*
2021 Research Opportunity Seed Fund, Funded by University Florida Research
Role: Co-PI PI: Karen Hegland $85,000

December/20-Present — *Effects of steady background noise on segregation of speech based on voice pitch differences in hearing impaired listeners,*
2020 New Century Scholars Research Grant, Funded by American Speech-Language-Hearing Foundation,
Role: PI $25,000

October/20-Present — *Spectrotemporal Characterization of Misophonia Using Multimodal Brain Imaging,*
Funded by Misophonia Research Fund, REAM Foundation,
Role: Co-I PI: Andreas Keil $370,962

December/18-November/23 — *Temporal Synthesis of Vestibular and Extra-Vestibular Sensory Signals,*
R01 Research Project Grant, Funded by National Institute of Health (NIDCD),
Role: Consultant PI: Richard Lewis $3,177,572

March/17-Oct/18 — *Effects of temporal cues on binaural pitch fusion in hearing impaired listeners,*
F32 Ruth L. Kirschstein National Research Service Award for Individual Postdoctoral Fellows, Funded by National Institute of Health (NIDCD),
Role: PI Sponsors: Reiss, L. A. and Gallun, F. $120,156

PROFESSIONAL MEMBERSHIPS

2010 – Present Associate member, *Acoustical Society of America*
2016 – ~~Present~~ Associate member, *Association for Research in Otolaryngology*
2016 – Present Full memeber, *Sigma Xi*
2017 – Present Associate member, Society for Neuroscience

Reviewer for journals: *Journal of Acoustical Society of America*
Trends in Hearing
Frontiers in Psychology
Frontiers in Neuroscience
PLoS ONE
Journal of Speech Language and Hearing Research
Ear and Hearing
Journal of Phonetics
Clinical Archives of Communication Disorder
International Journal of Audiology
American Journal of Audiology
Journal of American Academy of Audiology
Public Health Reports
Journal of Medical internet Research mHealth & uHealth
Scientific Reports
Perception

PEER-REVIEWED PUBLICATIONS

Asterisk (*) indicates author is student working with Dr. Y. Oh

1. Walsh, H.*, Zuwala, J.*, Hunter, J.*, and Oh, Y. "Congenital Cytomegalovirus and Human Immunodeficiency Virus: Effects on Hearing, Speech & Language Development, and Clinical Outcomes in Children", (in press). *Front. Pediatr.*

2. Masapollo, M., Nittrouer, S. Goel, J., and **Oh, Y.** "Electromagnetic articulography appears feasible for assessment of speech motor skills in cochlear implant users", (2021). *JASA Express Lett.* 1(10), 105202.

3. Kim, S., Yu, S., Sohn, M. E., Han, W., Seo, J., and **Oh, Y.** "A comparison between the Korean Digits-in-noise test and the Korean Speech perception-in-noise test in normal-hearing and hearing-impaired listeners", (2021). *J. Audiol. Otol.* 25(4) 171-177.

4. **Oh, Y.**, Bridges, S. E.*, Schoenfeld, H.*, Layne, A. O.*, and Eddins, D. "Interaction between voice-gender difference and spatial separation in release from masking in multi-talker listening environments", (2021). *JASA Express Lett.* 1(8), 084404.

5. Yuan, Y.*, Meyers, K.*, Borges, K.*, Lleo, Y.*, Fiorentino, K.*, and **Oh, Y.** "Effects of visual speech envelope on audiovisual speech perception in multi-talker listening environments", (2021). *J. Speech Lang. Hear.* 64(7) 2845-2853.

6. Yuan, Y.*, Lleo, Y.*, Daniel, R.*, White, A.*, and **Oh, Y.** "The impact of temporally coherent visual cues on speech perception in complex auditory environments", (2021). *Front. Neurosci.* 15:678029.

7. **Oh, Y.** and Lee, S.* "Low-intensity steady background noise enhances pitch fusion across the ears in normal-hearing listeners", (2021). *Front. Psychol.* 12:626762.

8. Yuan, Y.*, Wayland, R., **Oh, Y.** "Visual analog of the acoustic amplitude envelope benefits speech perception in noise", (2020). *J. Acoust. Soc. Am.* 147(3), EL246-EL251.

9. **Oh, Y.** and Reiss, L. A. "Binaural pitch fusion: Binaural pitch averaging in cochlear implant users with broad binaural fusion", (2020). *Ear Hear.* 41(6), 1450-1460.

10. Hartling, C. L., Fowler, J. R., Stark, G. N., Glickman, B., Eddolls, M., **Oh, Y.**, Ramsey, K., and Reiss, L. A. "Binaural Pitch Fusion in Children with Normal Hearing, Hearing Aids, and Cochlear Implants", (2020). *Ear Hear.* 41(6), 1545-1559.

11. Lee, T. L., Shayman, C. S., **Oh, Y.**, Peterka, R. J., and Hullar, T. E. "Reliability of vestibular perceptual testing about the yaw axis", (2020). *Ear Hear.* 41(6), 1772-1774.

12. Anderson, S. R., Glickman, B., **Oh, Y.**, and Reiss, L. A. J. "Binaural pitch fusion: Effects of sound level in listeners with normal hearing", (2020). *Hear. Res.* 396 108067.

13. Shayman, C. S., Peterka, R., Gallun, F., **Oh, Y.**, Change, N., and Hullar, T. "Frequency-dependent integration of auditory and vestibular cues for self-motion perception", (2020). *J. Neurophysiol.* 123(3), 936-944.

14. **Oh, Y.** and Reiss, L. A. "Binaural pitch fusion: Effects of amplitude modulation", (2018). *Trends in Hearing*. 22, 1-12.

15. Shayman, C. S., Seo, J., **Oh, Y.**, Peterka, R., Lewis, R. F., and Hullar, T. E. "Relationship between vestibular sensitivity and multisensory temporal integration", (2018). *J Neurophysiol.* 120(4), 1572-1577.

16. Reiss, L. A., Fowler, J. R., Hartling, C. L., and **Oh, Y.** "Binaural pitch fusion in bilateral cochlear implant users", (2018). *Ear Hear.* 39(2), 390-397.

17. **Oh, Y.** and Reiss, L. A. "Binaural pitch fusion: Pitch averaging and dominance in hearing-impaired listeners with broad binaural pitch fusion", (2017). *J. Acoust. Soc. Am.* 142(2) 780-791.

18. Reiss, L. A., Shayman, C. S., Walker, E. P., Bennett, K. O., Fowler, J. R., Hartling, C. L., Glickman, B., Lasarev, M., and **Oh, Y.**. "Binaural pitch fusion: Comparison of normal-hearing and hearing-impaired listeners", (2017). *J. Acoust. Soc. Am.* 143(3), 1909-1920.

19. Reiss L. A., Eggleston J. L., Walker, E. P., and **Oh, Y.** "Two ears are not always better than one: Mandatory vowel fusion across spectrally mismatched ears in hearing-impaired listeners", (2016). *J Assoc Res Otolaryngol.* 17(4), 341-356.

20. **Oh, Y.**, Feth, L. L., and Hoglund, E. M. "An enhanced channel model for auditory spectrotemporal integration", (2015). *J. Acoust. Soc. Am.* 138(5), 2848-2859.

PUBLICATIONS SUBMITTED & IN REVISION & IN PREPARATION

Asterisk (*) indicates author is student working with Dr. Y. Oh

1. **Oh, Y.**, Gallun, F. J., and Reiss, L. A. "Binaural pitch fusion: Comparison of isolated and temporally flanked dichotic stimuli", (in revision).

2. **Oh, Y.**, Srinivasan, N. K., Hartling, C. L., Gallun, F. J., and Reiss, L. A. "'Differential effects of binaural pitch fusion range on the benefits of voice gender differences in a 'cocktail party' environment for bimodal and bilateral cochlear implant users", (in revision).

3. Kwak, C., Seo, J., **Oh, Y.**, and Han, W. "Efficacy of the digit-in-noise test: A systematic review and meta-analysis", (in revision)

4. **Oh, Y.**, Salvagno, C.*, Zuwala, J.*, and Tilbrook, G. * "The impact of pitch and timbre cues on auditory grouping and stream segregation", (in revision)

INVITED PRESENTATIONS

"Interaction between voice-gender difference and spatial separation in release from masking in multi-talker listening environments", Boston University Hearing Research Center Seminar, October 2021.

"Impacts of age and hearing loss on voice-gender release and spatial release in a complex auditory environment", University of Florida Hearing Research Center Seminar, February 2021.

"Broad binaural fusion impairs segregation of speech based on voice pitch differences in a 'cocktail party' environment", University of Florida Rehabilitation Science Seminar, November 2019

"Multisensory Temporal Integration: Temporal Binding Window and its Clinical Application", University of Florida Movement Rounds, August 2019.

"Indiscriminate binaural fusion predicts difficulty with understanding speech in a 'cocktail party' environment", University of Florida Audiology Grand Rounds, January 2019.

"Difficulty with understanding speech in background noise in predicted by broad binaural pitch fusion in bimodal cochlear implant users", ASA 175th meeting Special Session: Consequences of Asymmetrical Hearing, May 2018.

"Human psychoacoustics and model-based approaches for clinical applications", Otology Research Seminar, Seoul, South Korea, June 2016.

PRESENTATIONS PROCEEDINGS

Asterisk (*) indicates author is student working with Dr. Y. Oh

1. **Oh, Y.**, Eddins, D., Gallun, F., and Reiss, L. (2021). "Interaction between Voice-Gender Difference and Spatial Separation in Release from Masking in Multi-Talker Listening Environments", to be presented in ARO 45th meeting.

2. **Oh, Y.**, Schoenfeld, H.*, Layne, A. O.*, and Bridges, S. E.* (2021). "Effects of target level on release from masking by voice-gender difference and spatial separation between talkers", to be presented in ASA 181st meeting.

3. Bridges, S.* and **Oh, Y.** (2021). "Interaction between Voice-Gender Difference and Spatial Separation in Release of Masking in Multi-Talker Listening Environments", to be presented in ASHA Convention.

4. Salvagno, C.* and **Oh, Y.** (2021). "Interaction between Pitch and Timber in Auditory Grouping and Stream Segregation Performance", to be presented in ASHA Convention.

5. Lleo, Y.*, Yuan, Y.* and **Oh, Y.** (2021). "Effects of Sound Level on Audiovisual Speech Perception in Multi-Talker Listening Environments", to be presented in ASHA Convention.

6. Yuan, Y.* and **Oh, Y.** (2021). "Lip-aiding or lip-reading? – Visually-presented acoustic temporal envelope enhances speech perception in noise", ARO 44th meeting.

7. **Oh, Y.**, David, B.*, Husney, L.*, and Lee, S.* (2020). "Effects of steady background noise on benefits from voice pitch differences in a "Cocktail Party" environment", *J. Acoust. Soc. Am.* 148, 2465.

8. Yuan, Y.* and **Oh, Y.** (2020). "Importance of temporal cues in audiovisual integration in speech perception in noise", *J. Acoust. Soc. Am.* 148, 2465.

9. **Oh, Y.** and Reiss, L. A. (2020). "Effects of amplitude modulation on binaural pitch fusion in cochlear implant users", ARO 43rd meeting.

10. **Oh, Y.**, Hartling, C., Srinivasan, N. K., Eddolls, M., Diedesch, A., Gallun, F., and Reiss, L. A. (2020). "Effects of binaural fusion on benefits from voice pitch differences and spatial separation in a 'Cocktail party' environment", ARO 43rd meeting.

11. Eddolls, M., Hartling, C., Fowler, J., Stark, G., **Oh, Y.**, Alicia, J., Sanders, H., and Reiss, L. (2020). "Development of binaural pitch fusion and discrimination in children with normal hearing, hearing aids, and cochlear implants", ARO 43rd meeting.

12. Lee, S.*, Yuan, Y.*, and **Oh, Y.** (2019). "Effects of steady background noise on binaural pitch fusion", *J. Acoust. Soc. Am.* 146, 2834.

13. Yuan, Y.*, Lotto, A. J., and **Oh, Y.** (2019). "Temporal cues from visual information benefit speech perception in noise", *J. Acoust. Soc. Am.* 146, 3056.

14. **Oh, Y.**, Reiss, L., and Gallun, F. (2019). "Binaural pitch fusion: Comparison of isolated and temporally flanked dichotic stimuli", CIAP meeting.

15. Eddolls, M., Reiss, L., **Oh, Y.** Hartling, C., Johnson, A., Glickman, B., Stark, G., Ruiz, J. (2019). "Interaural pitch discrimination in children with normal hearing, hearing aids, and cochlear implants", CIAP meeting.

16. Shayman, C., Gallun, F., Peterka, R., **Oh, Y.**, Hullar, T. (2019). "Auditory-vestibular integration for motion perception: A psychophysical study", American Balance Society meeting.

17. **Oh, Y.**, Gallun, F., and Reiss, L. A. (2018). "Effect of auditory stream segregation cues on binaural pitch fusion", *J. Acoust. Soc. Am.* 143, 1815.

18. Glickman, B., **Oh, Y.**, and Reiss, L. A. (2018). "The effects of interaural level differences on binaural fusion in normal-hearing listeners", *J. Acoust. Soc. Am.* 143, 1815.

19. **Oh, Y.** and Reiss, L. A. (2018). "Relationship of within-ear frequency tuning to binaural pitch fusion", ARO 41st meeting.

20. **Oh, Y.** and Reiss, L. A. (2017). "Computational model approach to understand mechanism for binaural pitch fusion", APAN meeting & SFN meeting.

21. **Oh, Y.**, Shayman, C., and Hullar, T. (2017). "The effect of Parkinson's disease on multisensory temporal binding", SFN meeting.

22. **Oh, Y.**, Hartling, C., Reiss, L. A., Srinivasan, N. K., Jakien, K., Diedesch, A., and Gallun, F. (2017). "Voice gender release from masking in cochlear implant users is correlated with binaural pitch fusion", CIAP meeting.

23. Glickman, B., **Oh, Y.**, and Reiss, L. A. (2017). "The effects of interaural level differences on fusion in adults with normal-hearing and bilateral cochlear implants", CIAP meeting.

24. Hartling, C., Glickman, B., Fowler, J., Stark, G., Richardson, L., Montejano, M., **Oh, Y.**, and Reiss, L. A. (2017). "Binaural pitch fusion in children with normal-hearing, hearing-aids, and cochlear implants", CIAP meeting

25. **Oh, Y.**, Hartling, C., Reiss, L. A., Srinivasan, N. K., Jakien, K., Diedesch, A., and Gallun, F. (2017). "Voice gender release from masking in cochlear implant users is correlated with binaural pitch fusion", *J. Acoust. Soc. Am.* 141, 3816.

26. Reiss, L. A., Hartling, C., Glickman, B., Fowler, J., Stark, G., and **Oh, Y.** (2017). "Factors associated with broad binaural pitch fusion in children and adults with hearing aids and cochlear implants", *J. Acoust. Soc. Am.* 141, 3818.

27. **Oh, Y.** and Reiss, L. A. (2017). "Effect of amplitude modulation on binaural pitch fusion", ARO 40th meeting.

28. Hoglund, E. M., Klyn, N. A., Feth, L. L., **Oh, Y.**, Lerud, K., and Large, E. (2016). "Testing a computational model for detection of "real-world" sounds", *J. Acoust. Soc. Am.* 140, 3273.

29. **Oh, Y.** and Reiss, L. A. (2016). "Binaural pitch averaging and dominance trends in cochlear implant users", *J. Acoust. Soc. Am.* 139, 1991.

30. **Oh, Y.** and Reiss, L. A. (2016). "Toward a systematic analysis of binaural pitch averaging trends in hearing impaired listeners", ARO 39th meeting.

31. Anderson, S. R., **Oh, Y.**, and Reiss, L. A. (2016). "Binaural pitch fusion in normal-hearing listeners varies as a function of sound level", ARO 39th meeting.

32. **Oh, Y.**, Hoglund, E. M., and Feth, L. L. (2014). "Testing a nonlinear computational channel model for masker phase effects", *J. Acoust. Soc. Am.* 135, 2164.

33. Hoglund, E. M., Feth, L. L., **Oh, Y.**, and Klyn, N. A. (2014). "Optimizing masker phase effects for use in a portable hearing screening tool", *J. Acoust. Soc. Am.* 135, 2412.

34. Klyn, N. A., **Oh, Y.**, Hoglund, E. M., and Feth, L. L. (2014). "Phase effects using chirp maskers", *J. Acoust. Soc. Am.* 135, 2413.

35. Hoglund, E. M., **Oh, Y.**, Hribar, J. F., Wittum, K. J., Strang, M. L., and Feth, L. L. (2013). "Extending Schroeder-phase masking: Influence of direction and shape of masker instantaneous frequency", *J. Acoust. Soc. Am.* 133, 3285.

36. Stewart, A. E., Hoglund, E. M., **Oh, Y.**, and Feth, L. L. (2012). "Modulation difference limen for spectral center-of-gravity signals", *J. Acoust. Soc. Am.* 132, 2050.

37. **Oh, Y.**, Hoglund, E. M., and Feth, L. L. (2012). "A modified channel model for the auditory peripheral system", *J. Acoust. Soc. Am.* 131, 3518.

38. **Oh, Y.** and Feth, L. L. (2012). "Optimal linear quadratic detector for the weighted channel model", Air Force Research meeting, Dayton, OH, February 2012.

39. **Oh, Y.** (2011). "A model of spectrotemporal integration based on fixed-variable weight hypotheses", Air Force Research meeting, Columbus, OH, October 2011.

40. Hoglund, E. M., **Oh, Y.**, and Feth, L. L. (2011). "Spectrotemporal integration in listeners with normal hearing and those with noise induced hearing loss", *J. Acoust. Soc. Am.* 129, 2590.

41. Hoglund, E. M., Feth, L. L., and **Oh, Y.** (2011). "Integration of brief tones in quiet and noise", AAS 38th meeting.

42. Feth, L. L., Hoglund, E. M., **Oh, Y.**, and Meddis, R. (2010). "Spectrotemporal integration in listeners with normal hearing and those with noise induced hearing loss: An application of the Meddis Matlab Auditory Periphery (MAP) model", *J. Acoust. Soc. Am.* 127, 1746.

TEACHING

2019-present: University of Florida

Term	Course #	Title	Enrollment
Summer 2021	SPA 6805	Introduction to Graduate Research	12
	SPA 4931	Honors in Communication Science & Disorders	3
Spring 2021	SPA 7980	Doctoral Research	2
	SPA 6581	Cochlear Implant 1	12
	SPA 6581	AuD Research Project	5
	SPA 4931	Honors in Communication Science & Disorders	3
	SPA 4904	Individual Study	3
	SPA 6564	Communication and Aging (Guest Lecture)	11

	GMS 6070	Sensory Biology (Guest Lecture)	7
	EGN 4912	Engineering Undergraduate Research	2
Fall 2020	SPA 7980	Doctoral Research	1
	SPA 6010	Basic Auditory Sciences	12
	SPA 6581	AuD Research Project	5
	SPA 4931	Honors in Communication Science & Disorders	3
	SPA 4904	Individual Study	4
	SPA 3032	Fundamental of Hearing (Guest Lecture)	97
	BMS6020	Clinical Neuroscience (Guest Lecture)	34
	EGN 4912	Engineering Undergraduate Research	1
Summer 2020	SPA 4931	Honors in Communication Science & Disorders	3
	SPA 4904	Individual Study	3
Spring 2020	SPA 7980	Doctoral Research	1
	SPA 6581	Cochlear Implant 1	9
	SPA 3800	Critical Thinking (Guest Lecture)	21
	SPA 6564	Communication and Aging (Guest Lecture)	10
Fall 2019	SPA 6010	Basic Auditory Sciences	9
	BMS6020	Clinical Neuroscience (Guest Lecture)	25
Summer 2019	GMS 6705	Functional Human Neuroanatomy (Guest Lecture)	24
Spring 2019	SPA 6581	Cochlear Implant 1	11
	SPA 3800	Critical Thinking (Guest Lecture)	28

RESEARCH MENTORING

2019-present: University of Florida

	Name	Department	Period
PhD Students (PhD Dissertation)	Minjae Woo	Linguistics	2019-present
	Mihoko Wheeler		2019-present
	Tristan Czarnecki-Verner		2019-present
	Pamir Gogoi		2019-present
	Raele Robinson		2019-present
	Yi Yuan	SLHS	2019-2021
	Jayoung Kim		2019-2020
MA Students (MA Thesis)	Suk-il Choi	ECE	2021-present
AuD Students (AuD Research Project)	Hannah Walsh	SLHS	2021-present
	Nicole Kalpin		2021-present
	Meg Schwalm		2021-present
	Grace Tilbrook		2021-present
	Kelli Meyers		2020-present
	Kayla Borges		2020-present
	Allison Layne		2020-present
	Alexandra White		2020-2021
	Sabrina Lee		2019-2021
	Lauren Husney		2019-2020
	Anna David		2019-2020
Undergraduate Students (Honors Project/Thesis)	Jessica Hunter	SLHS	2021-present
	Natalie Ducut		2021-present
	Jillian Zuwala		2020-present
	Sarah Bridges		2020-2021
	Caitlin Salvagno		2020-2021
	Yasneli Lleo		2020-2021
	Kathryn McAllister		2019
Undergraduate Research Assistants	Christel Zimmer	SLHS	2021-present
	Elizabeth Fisch		2021-present
	Shelbey Spratlin		2021-present
	Jenniffer (Arti) Lopez		2020-present
	Brian Ramos	CSE	2020-present
	Tito Salvador Ruiz Jandrez		2020-present

	Leonardo Maicelo Yuber		2020-present
	Andrew Nordlund	BE	2020-present
	Rebecca Daniel	SLHS	2020-2021
	Katarina Fiorentino		2020-2021
	Genevieve Cosentino		2020-2021
	Hannah Schoenfeld		2020-2021
	Shreya Shivan		2019-2020
	Garrett Brown	BP	2019-2020

BE: Biomedical Engineering; BP: Biology and Psychology; CSE: Computer Science Engineering; ECE: Electrical & Computer Engineering; SLHS: Speech, Language, and Hearing Sciences

TEACHING STATEMENT

Teaching Philosophy and Classroom Accomplishments

Learning with an understanding of the new concepts and principles is difficult for all students. For clinical students who might want to focus more on clinical practice rather than fundamental background knowledge, they especially may experience difficulty. My philosophy of teaching is based on the American Speech and Hearing Association (ASHA) Audiology Standards of understanding foundations of practices and demonstrating knowledge and skills outcomes. Since I joined University of Florida in 2018, I have been assigned three graduate courses (6000 levels), especially for 1st year Au.D. students. My teaching responsibility in our department is to help 1st-year Au.D. students understand both fundamental and applied principles in hearing devices such as hearing aids and cochlear implants (auditory prostheses). Here, a cochlear implant is an implantable device used to restore the auditory function in people with severe to profound hearing loss by direct electrical stimulation of the auditory neural pathway. A key factor to decide the performance outcome of the cochlear implant devices is the optimization of programming parameters by the Audiologist. All three courses are designed to assist students in understanding the fundamental knowledge of cochlear implantation.

In my classes, I always emphasize the importance of understanding why these concepts and principles exist and how they can be applied to actual clinical devices and programs. In particular, my research experiences have primarily been in the areas of auditory processing using human behavioral measurements and computational modeling approaches. I use many visual examples and/or computer-based model simulations to explain core concepts such as auditory functions/pathways and the transition from acoustic to electrical signals in cochlear implant devices. I also utilize clear and consistent communication of expected learning outcomes for every class with weekly learning checkpoints. I review learning objectives for every class that function as student study guides. Across those classes, I have received student evaluations well above department and college means with an average course mean student rating of 4.78 (out of 5.0) for the last two years.

Mentorship

Mentoring students at the graduate and undergraduate levels is something I devote a lot of time to and enjoy. Since starting my assistant professorship at UF, I have chaired 5 student research theses (1 Ph.D. dissertation and 4 senior honors theses) with the completion of their studies and directed 7 senior-year undergraduate individual research projects. All undergraduate students have been successfully accepted to graduate programs (1 from USF MD/PhD program; 1 from UCF MD program; 3 from UF Au.D. program; 3 from UF SLP program; 1 from USF Au.D. program; 2 from FSU SLP program). Additionally, I am also currently a member of 14 student research committees. I have worked closely with each student to ensure completion of their projects leading to student author publications and presentations. Since 2018, I have overseen 8 UF co-author student manuscripts for publication to high-impact journals in the auditory perception field such as Frontiers in Neuroscience and 12 student presentations at well-known national- and regional-level conferences such as the Association for Research in Otolaryngology and the UF undergraduate research symposium, respectively.

RESEARCH STATEMENT

Over the past 10 years, I have been involved in human clinical studies in individuals with hearing aids (HAs) and cochlear implants (CIs) as well as computational modeling studies with auditory signal processing. My research program focuses on fundamental questions about how hearing loss affects auditory processing and developing a computational model to answer those questions.

Graduate Career

My academic training and my research background have been enhanced by my interdisciplinary studies in the areas of auditory perception. While working on an M.S. degree in Electrical and Computer Engineering, at the Ohio State University, I focused on studying signal processing (signal detection and neural networks). This gave me a broad perspective for understanding sensory processing and in-depth knowledge of how to analyze signals in the auditory system. During my Ph.D. training as a research assistant, I was involved in a project with the Office of Naval Research called, "Spectrotemporal integration and noise-induced hearing loss". As part of this project, I developed a rapid assessment tool, for sub-clinical noise-induced hearing loss.

Those research experiences motivated me to start an in-depth study of the model-based interpretation of the optimum listening strategies in various auditory stimulations for human listeners. Specifically, my research focuses on quantifying a transformation between the physical and psychophysical variables and developing a computational algorithm of the auditory pathway from the cochlea to the brain. As one study from this line of work, my doctoral dissertation was designed to enhance previous signal detection-based models (e.g., Durlach's channel model) by considering more realistic parameter conditions such as the nonlinearity of cochlear mechanics and an optimum nonlinear decision criterion. The model results for this study were published in *the Journal of the Acoustical Society of America, JASA* (Oh et al., 2015).

Post-doctoral Career

As an R01-supported postdoctoral fellow at Oregon Health and Science University, I was involved in a clinical research project, "Binaural spectral integration with hearing loss and hearing devices". This research focuses on investigating how hearing-impaired (HI) listeners, including hearing aid and/or cochlear implant users, integrate information between two ears. Since there is significant variability in the speech perception benefit in HI listeners, some individuals experience useful improvements, but others receive little additional benefit or experience poorer performance (interference) with the two hearing devices. Recent studies suggest that this binaural benefit variation might be caused by abnormal binaural integration in HI listeners.

My major contribution in this project was to systematically investigate these binaural integration phenomena in HI listeners and develop a computational model for binaural auditory processing. My research findings indicated that two dichotically presented stimuli yield a fused pitch that is a weighted average of the different pitches perceived in the two ears. In HI listener groups, this weighting showed two distinct trends: 1) *Dominance of the lower pitch*, in which the perceived binaural pitch of the fused tone was determined by the component with the lower pitch. 2) *Pitch averaging*, in which the fusion pitch was a weighted average of the pitches of the two components. These findings were published in *JASA* (Oh and Reiss, 2017) and *Ear and Hearing* (Oh and Reiss, 2020).

As an F32-supported postdoctoral fellow, my research focused on further investigation of how binaural integration can be influenced by temporal properties of the stimuli. Since speech sounds vary in both spectral and temporal domains, measurements of binaural fusion with stimuli having both spectral and temporal characteristics may yield more realistic estimates of binaural fusion, and provide a better understanding of how fusion affects binaural benefits in speech perception for HI listeners. This finding was published in *Trends in Hearing* (Oh and Reiss, 2018). Another experiment conducted at the National Center for Rehabilitative Auditory Research showed that the ability to benefit from voice pitch differences for speech perception in background talkers improved with different genders and is strongly correlated with binaural pitch fusion. In other words, listeners with sharp binaural pitch fusion, which implies a better voice pitch separation ability across ears, had greater gender difference benefit. Conversely, this gender difference benefit was reduced in listeners with broad fusion, which implies poor binaural voice pitch separation ability. This finding is currently under review in *Ear and Hearing* (Oh et al.).

Current Research

My current research goal is to explore, explain, and provide clinical tools relevant to addressing the difficulties associated with communicating in multi-talker environments. With the long-term goal of understanding binaural auditory processing in the human hearing/auditory system, my research focuses on developing a binaural computational model. This would incorporate my published work on the enhanced multichannel model (Oh et al., *JASA* 2015) with the binaural fusion and averaging phenomena and other psychophysical phenomena like voice characteristics and localization that are not currently accounted for in established models. One modeling approach from this line of work was recently introduced at the *Society for Neuroscience Meeting* and the *meeting of the Association for Research in Otolaryngology*.

In particular, the current project develops algorithms to enhance speech-in-noise performance for HI listeners by using artificial intelligence techniques (e.g., blind source separation). The line of research has recently been funded by a **New Century Scholars Research Grant** from the **American Speech-Language-Hearing Foundation**. This work will provide improvement of speech perception abilities for cochlear implant users by developing new hearing device programming strategies. Further, these model-based approaches will be extended to other research areas (e.g., multisensory fusion) to understand other perceptual phenomena and their mechanisms. A grant application for this project is currently in preparation for a **NIH R01 Research Grant**.

My research also focuses on the field of multisensory integration such as perceptual fusion across different sensory modalities: visual, auditory, and tactile systems. The findings from multiple projects in my lab show that multi-sensory stimuli such as visual and tactile signals can be efficiently integrated during speech perception processing in noisy environments. Those findings were recently introduced in the conferences (*Meeting for Acoustical Society of America* and *the meeting of the Association for Research in Otolaryngology)* and successfully published in the journals (*Journal of Acoustical Society of America; Frontiers in Neuroscience; Frontiers in Pediatrics; Journal of Speech, Language, and Hearing Research*).

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