

# Zhiying Shen

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**research interests:** auditory processing, neurobiology of language, cognitive development

## EDUCATION

Aug 2024 - Present	<b>Creighton University</b> <i>current graduate student</i> Y2 Pharmacology and Neuroscience Ph.D. Program	📍 Omaha, NE
Aug 2016 - May 2020	<b>University of Arizona</b> <i>graduated with honors and summa cum laude</i> B.S. Neuroscience and Cognitive Science B.A. Linguistics	📍 Tucson, AZ

## PUBLICATIONS



published manuscripts organized from newest to oldest

3. Arif, Y., Heinrichs-Graham E, Wildy, A.M., Ward, T.W., Diedrich A., Embury, C.M., Rempe, M.P., Glesinger, R.J., **Shen, Z.**, McDonald, K.M., Huang, P.J., Bashford S., Taylor, B.K., Kurz, M.J., Wilson, T.W. Oscillatory and evoked neural responses underlying gating in the primary somatosensory cortices: Evidence from optically-pumped magnetometry. *NeuroImage*, 121393. [doi](#) [a](#)
2. **Shen, Z.**, Lee, W.H., Eastman, J.A., Frenzel, M.R., Wiesman, A.I., Wilson, T.W., Walker, E.A., McCreery, R.W., Heinrichs-Graham, E. (2025). Alterations in cortical 40-Hz auditory steady-state response dynamics in children with mild-to-severe hearing loss are related to hearing aid use. *Cerebral Cortex*, 35(7), bhaf178. [doi](#)
1. Diedrich, A., Arif, Y., Taylor, B. K., **Shen, Z.**, Astorino, P. M., Lee, W. H., McCreery, R. W., & Heinrichs-Graham, E. (2025). Distinct age-related alterations in alpha-beta neural oscillatory activity during verbal working memory encoding in children and adolescents. *The Journal of Physiology*, 603(8), 2387-2408. [doi](#).

under review	<b>Cross-modal impact of auditory experience on visual cortical entrainment in children who are hard-of-hearing.</b> Heinrichs-Graham, E., Shen, Z., Lee, W.H., Benavente, A.A., Eastman, J.A., Frenzel, M.R., Wiesman, A.I., Wilson, T.W., Walker, E.A., McCreery, R.W. <i>Imaging Neuroscience</i>
in prep	<b>Neural mechanisms underlying speech-in-noise recognition in children and adolescents.</b> Hong, J., Shen, Z., Lee, W.H., Diedrich, A., Bashford, S., Leibold, L.J., McCreery, R.W., Walker, E.A., Heinrichs-Graham, E.
in prep	<b>Age-related changes in multi-spectral oscillatory activity underlying semantic judgement in youth.</b> Shen, Z., Zhussubali, A., Diedrich, A., Petro, N.M., Spooner, R.K., Astorino, P.M., Lee, W.H., Heinrichs-Graham, E.





## PRESENTATIONS (selected)

Mar 29 - Apr 1	<b>CNS 2025</b>	📍 Boston, MA
Shen, Z., Zhussubali, A., Diedrich, A., Lee, W.-H., Heinrichs-Graham, E. (2025, March). <i>Age-related changes in alpha and beta oscillatory dynamics during semantic processing in children and adolescents</i> <a href="#">a</a> Poster E91.		

Sep 28-30	<b>Flux Congress 2024</b>	📍 Baltimore, MD
	Shen, Z., Lee, W.-H., Benavente, A. A., McCreery, R., Heinrichs-Graham, E. (2024, September). <a href="#">Altered neural dynamics serving visual entrainment in children with hearing loss</a>  . Poster S25.	
Sep 6-9	<b>Flux Congress 2023</b>	📍 Santa Rosa, CA
	Shen, Z., Lee, W.-H., Benavente, A. A., McCreery, R., Heinrichs-Graham, E. (2023, September). <a href="#">Characterizing the Effects of Hearing Loss on Auditory Entrainment in Children</a>  . Poster 3-C-17.	

## RESEARCH EXPERIENCE (*selected*)

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	<b>Cognitive and Sensory Imaging Lab</b> 	📍 Boys Town, NE
	<i>Graduate Student, Research Assistant   P.I.: Elizabeth Heinrichs-Graham, Ph.D.</i>	
Dec 2021 - Jul 2024	<p><b>As an RA:</b> Run studies involving children 7 to 15 years old using neuroimaging technologies such as magnetoencephalography (MEG) and magnetic resonance imaging (MRI) to investigate the relationship between neural oscillations and cognitive capabilities, with a focus on the impact of hearing loss during development.</p> <p>Perform administrative tasks in support of successfully running studies (e.g., recruitment, outreach, cross-site collaboration, etc.).</p>	
Aug 2024 - Present	<p><b>As a GS:</b> Analyze data for multiple projects and present data in occasions casual and formal. Partake in co-mentoring fellow RAs.</p> <ol style="list-style-type: none"> <li>1. Sensory Entrainment (auditory, visual)</li> <li>2. Neural Underpinnings of Language Processing (semantics, speech-in-noise)</li> </ol>	
Jun 2019 - May 2020	<b>Language and Neuroimaging Research Lab</b> 	📍 Tucson, AZ
	<i>Research Assistant   P.I.: Aneta Kielar, Ph.D.</i>	
	<p>Helped run participants for studies involving electroencephalogram (EEG), functional magnetic resonance imaging (fMRI), and transcranial magnetic stimulation (TMS), and design stimuli for new fMRI-TMS study.</p> <p>Completed honors thesis by creating and piloting new experimental tasks used in a fMRI-TMS study investigating the effects of TMS on speech recovery in aphasia patients. Thesis title: <i>fMRI Localizer Task for Cortical Responses to Phonology, Semantics, and Orthography: A Pilot Study</i>.</p>	
Jan 2019 - May 2020	<b>Douglass Phonetics Lab</b> 	📍 Tucson, AZ
	<i>Research Member   P.I.: Natasha Warner, Ph.D.</i>	
	<p>Extracted, sliced, re-synthesized raw acoustic materials in Praat and ran participants for phonemic detection studies in sound booths using created stimuli.</p> <p>Completed honors thesis by designing novel tasks and creating stimuli in order to test individuals' perception of the English word "just" in reduced speech. Thesis title: <i>An Experimental Design to Delineate the Effect of Reduction in Recognizing "Just" in Spontaneous Speech</i>.</p>	
May 2018 - May 2019	<b>Tigger Child Cognition Lab</b> 	📍 Tucson, AZ
	<i>Research Assistant   P.I.: Rebecca Gomez, Ph.D.</i>	
	<p>Recruited participants and collected data for the study on the effects of nap on memory formation in kids (6-month-old to 6-year-old); fulfilled supportive duties along other lab members to ensure successful execution of research.</p>	