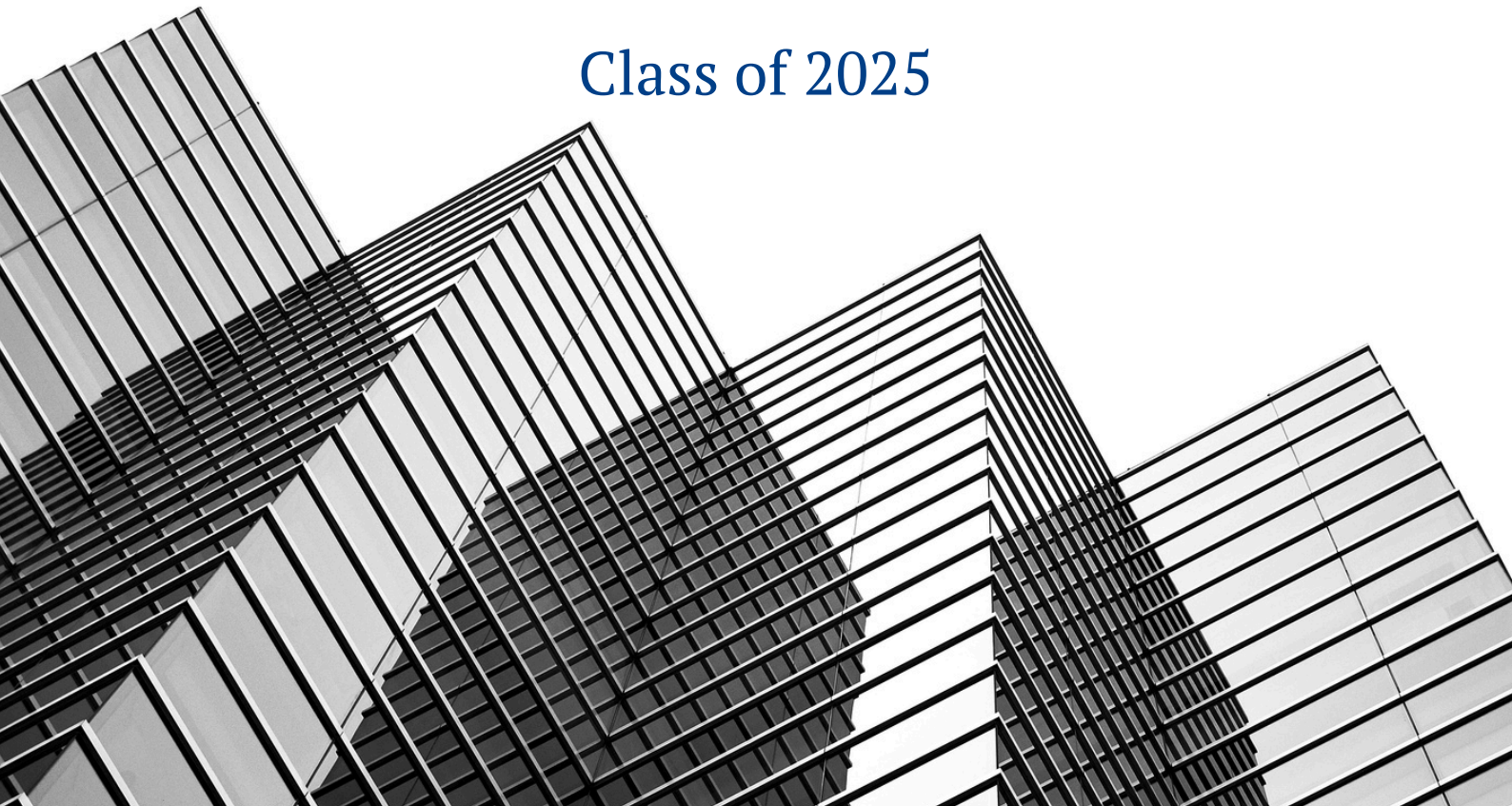
Audiology Doctorate Program

WHITE COAT CEREMONY
&
CAPSTONE
POSTER PRESENTATIONS

Class of 2025



Presenters

Jayden Alexander, B.A.

Logan Dempsey, B.A.

Jericho Escoton, B.A.

Emily L. Jernigan, B.A.

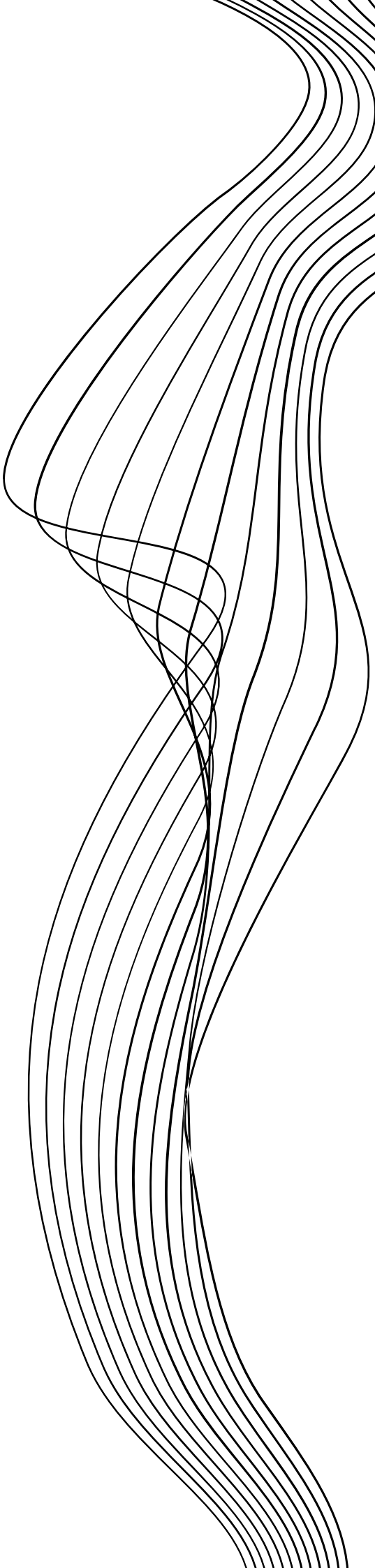
Sophia Parsons, B.A.

Juliet Stanwood, B.A.

Cora Swindale, B.A.

Sierra Tibbetts, B.A.

Irene Wright, B.S.



Evaluating the feasibility of the Portable Automated Rapid Testing (PART) for individuals with single-sided deafness and cochlear implants

By Jayden Alexander

Single-sided deafness (SSD) is a type of hearing loss where one ear has severe-to-profound sensorineural hearing loss (SNHL) while the other ear has normal or near-normal hearing. In the United States, SSD affects 12 to 27 per 100,000 people, with about 60,000 new cases annually. SSD impairs binaural function, affecting skills like sound localization and speech understanding in noise. The Portable Automated Rapid Testing (PART) application offers a comprehensive tool for evaluating auditory processing abilities via an iPad and headphones, allowing remote and convenient testing. Recent studies suggest adding binaural hearing subtests to standard audiologic evaluations to better understand patients' hearing and auditory processing. For SSD patients, cochlear implants in the affected ear can improve localization and speech understanding in noise. The FDA has approved cochlear implants for SSD, and their use is expected to increase. This study aims to assess binaural function in SSD patients using the PART battery before and after auditory training. Results will help develop personalized intervention strategies for SSD patients, like aural rehabilitation.

Voice Emotion Perception in Three- to Five-Year-Old Children

By Logan Dempsey

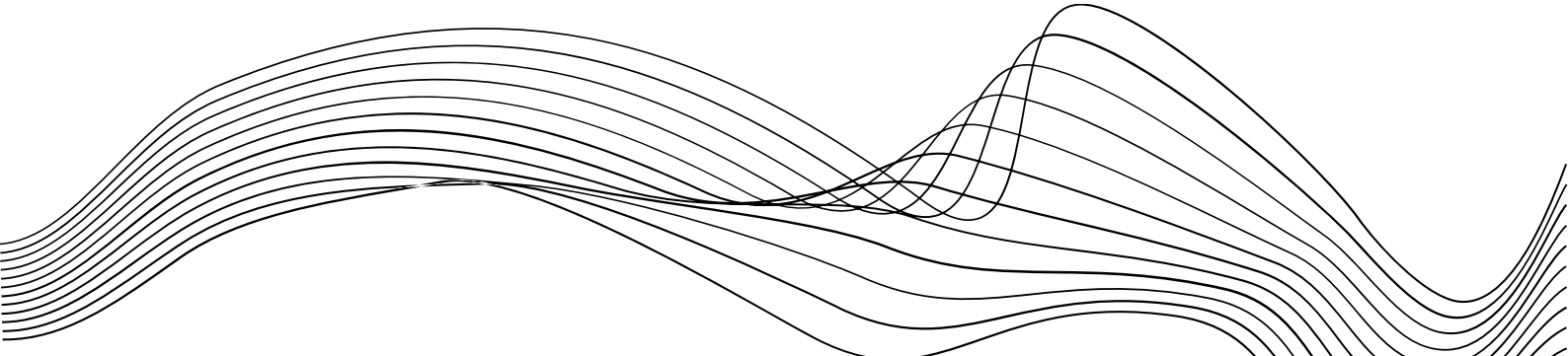
This capstone project assessed typically hearing children's ability to discriminate and identify voice emotion with only auditory cues. Our goal was to determine if children with higher language and cognitive scores performed better. This data is part of the control group for a larger study, ran by Dr. Oster, that will compare voice emotion perception abilities between typical hearing children and children who use cochlear implants and hearing aids.

The Effect of Increased Cognitive Load on Speech Recognition and Localization Performance in Normal Hearing Individuals Using a Virtual Reality Test Environment

By Jericho Escoton

My capstone is a research study that looks at the effects of increased cognitive load on speech recognition and sound localization performance in normal-hearing individuals in a virtual reality (VR) environment. This study is important as it explores the challenges of realistic listening situations requiring both speech recognition and localization and the importance of using VR technology to increase the ecological validity of hearing research.

This research looks at how well people with normal hearing can understand speech and locate sounds when doing multiple listening tasks at the same time in a VR environment. By learning more about this, we can come up with ways to make it easier for people to communicate and navigate in noisy, real-world listening environments. This research also explores Virtual Reality as a feasible method of testing auditory performance. Study results highlight the complexity and increased difficulty of real-world listening situations involving multiple auditory tasks.



High Prevalence Rate of Vestibular Dysfunction and Sensorineural Hearing Loss in Pediatric Patients: Development of a Pediatric Vestibular Screening Protocol for the Western Washington University Hearing Clinic.

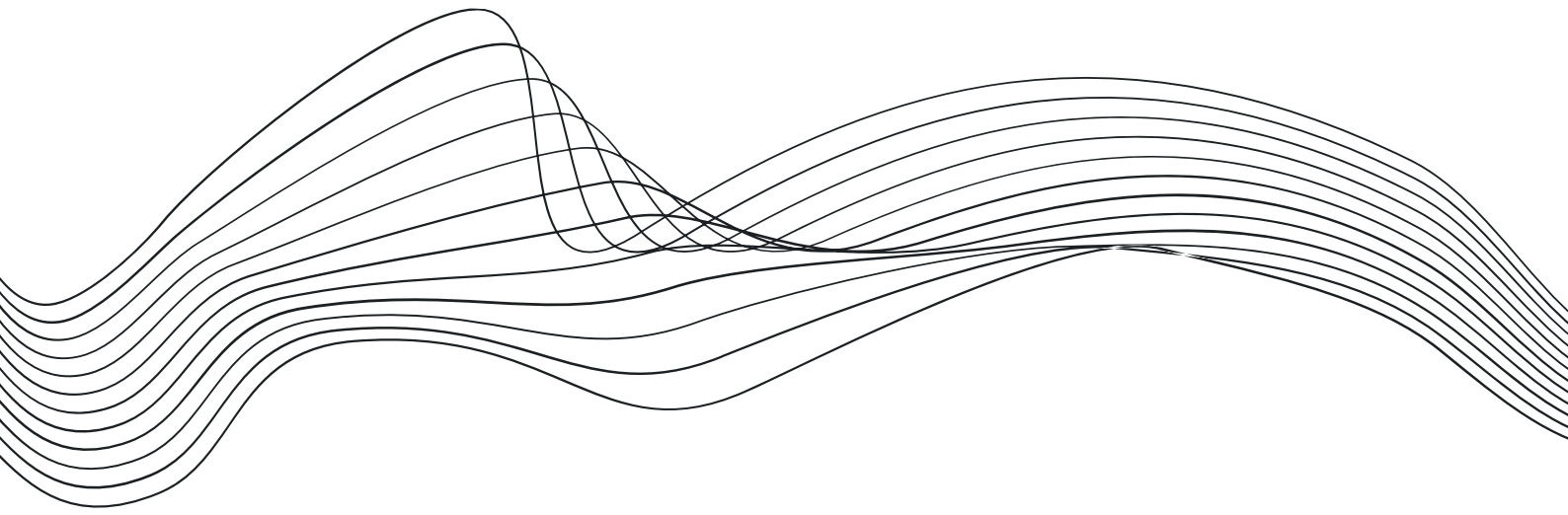
By Emily L. Jernigan

The association between vestibular dysfunction and hearing loss in the pediatric population is significant. In fact, children diagnosed with peripheral vestibular disorder are 43 times more likely to have sensorineural hearing loss (O'Reilly et al., 2010). Yet, vestibular function is unlikely to be assessed for children identified with sensorineural hearing. Through a literature review, data were collected on reliable screening measures, encompassing questionnaires and functional assessments. Utilizing this information, I offered recommendations for screening vestibular dysfunction. I established a pediatric vestibular screening protocol for the Western Washington University Hearing Clinic. This protocol is comprised of a guiding case history form, indicators for vestibular screening, access to questionnaires, detailed instructions for functional screening measures, referral criteria, and information on local resources. Through this project, I aimed to address a gap in pediatric care and provide a standard of care for vestibular dysfunction in the pediatric population.

Hear and Now: An Online Course on Tinnitus Education and Mindfulness Practice

By Sophia Parsons

Tinnitus is the perception of sound in the absence of an auditory stimuli. Treatment for this phenomenon can be expensive, ineffective, and falsely advertised. A promising behavioral therapy gaining momentum for treating tinnitus and its debilitating effects is called mindfulness. The mechanism behind mindfulness teaches people to focus on what is happening in the present moment and not be controlled by destructive thoughts, nor judge them as they come. I created the online course Hear and Now to provide people with an accessible resource to learn more about tinnitus and practice mindfulness in hopes of alleviating co-occurring symptoms of stress and anxiety. The course is designed to be completed in 3 weeks but is self-paced in nature, consisting of six modules altogether with an introduction module. Each module consists of one lesson on a tinnitus-related topic, one mini-lesson on mindfulness, and a guided meditation, with the sixth module being a slightly longer guided meditation. All lessons and guided meditations were recorded using a professional-grade microphone and are accompanied by downloadable power point slides, meditation scripts, and research.



Western Community Outreach: Hearing Screening Day for Western's Veterans

By Juliet Stanwood, B.A.

My Capstone focused on designing and implementing a hearing screening program for Military Veterans on the WWU campus. Noise induced hearing loss and tinnitus are two of the most common disabilities reported by Veterans. Veterans receive their hearing healthcare through the Veteran Affairs (VA) health system. However, for Veterans in the Bellingham community, the nearest veteran hospital is 27.4 miles from Western Washington University, and even further for those in the surrounding rural areas of Whatcom County. As a first step, this screening could identify veterans with hearing difficulties who may seek entrance into the Veteran hearing health care system. For the screening that I conducted, I created educational materials, hearing screening specific audiograms, and advertisement materials for the event that took place in March 2024. Following the screening, participants were provided with educational materials. My goal for this project was to establish a screening that can be held annually on campus, with hopes to include other Veterans in Whatcom County and possibly provide access to hearing aid services for these veterans at WWU as well.

Fatigue and Functional Listening Evaluation

By Cora Swindale

This study sought to investigate literacy and speech in noise word recognition accuracy levels as predictors of self-reported fatigue. We hypothesized that poorer word recognition accuracy and poorer language comprehension abilities will be linked to higher levels of self-reported fatigue in children with hearing loss. This investigation was conducted as a part of the ongoing ELLA Study; Emergent Language and Literacy Development in Children with Hearing Loss, (RO1 DC17173 to Werfel and Lund). Data from 50 participants have been analyzed to date, from children with and without hearing loss, aged 7 to 12 years. The Functional Listening Evaluation was used to measure speech perception in background noise. Subjective listening fatigue was measured using two validated self-report surveys administered to both children and their parents. Literacy was measured using the Clinical Evaluation of Language Function 5 (CELF-5) and Woodcock Reading Mastery Test 3(WRMT-3). Regardless of hearing status, a relationship was observed between literacy, speech in noise understanding and self-reported mental fatigue induced by effortful listening. Speech in noise understanding and language comprehension could potentially be used to identify children at higher risk of listening induced fatigue.

Audiological Symptoms Following Head Trauma Educational Video and Screening Questionnaire

By Sierra Tibbetts

There are between 1.7 and 3 million concussions that happen every year and hearing loss or other auditory processing deficits can happen in over half of those and often get overlooked. For my Capstone, I created an educational presentation to be shared with medical professionals regarding the audiological symptoms that can accompany a head injury including hearing loss, auditory processing disorder, tinnitus, hypersensitivity, and balance disorders. In addition to this, I created a screening questionnaire to be implemented to those who have experienced a head injury to detect if there are any audiological symptoms present. The goal of this project is to give providers the tools needed to know when they should refer their patient to an audiologist to receive further testing and treatment.

A Retrospective Review of Aural Rehabilitation in Adults with Cochlear Implant(s) at Western Washington University Aural Rehabilitation Clinic

By Irene Wright

This capstone was based out of the Western Washington University's Aural Rehabilitation clinic, specifically in adults who received a Cochlear Implant (CI). Formal aural rehabilitation (AR) is not a reimbursable clinical service for audiologists, and not routinely offered to adults following a cochlear implant. My capstone analyzes how much of a benefit (%) patients who pursue cochlear implant(s) could expect following 1-2 academic quarters of formal AR, in person or remotely. Receiving formal AR after surgery has shown benefits in improved speech understanding, and hearing-related quality of life. Speech perception scores and self-perceived hearing-related quality of life assessments were used to measure and further investigate what areas of AR are most beneficial and impactful to patients during their post-surgery rehabilitation. Overall, patients can expect to show improvement in at least one measurable outcome of AR, with several patients demonstrating improvements across multiple outcome measures.