

**30th Annual Einhellig
Graduate Interdisciplinary Forum
Saturday, April 29, 2023**

Outstanding Poster Presentations (by first author):

- Alexander Babel, Chemistry
- Jeffery Darko, Chemistry
- Amy Donaldson, Audiology
- Cora Dyslin, Biology
- Brianne Edwards, Biology
- Elson Eguasoa, Chemistry
- Elandé Engelbrecht, Geography
- Madison Gregory, Cell and Molecular Biology
- Katie Grong, Geography and Geology
- Valentina Hurtando Uribe, Project Management
- Rejeena Jha, Materials Science
- Rebecca Lage, Speech-Language Pathology
- Nhi Le, Biology
- Olamide Ogundele, Chemistry
- Onyinye Okafor, Biology
- Whitney Rawhouser, Audiology
- Nathan Sines, Geography
- Dhruv Sitapara, Chemistry
- Makenna Thompson, Environmental Plant Science
- Audrey Williams, Nutrition and Dietetics

Outstanding Virtual Presentations (by first author):

- Haley Womach, Audiology
- Claire Zuch, Applied Behavior Analysis

Outstanding Art Exhibitions:

- Teddy Osei, Visual Studies
- Shauna Smith, Visual Studies

Abstracts from Award Winners (alphabetical order)

Alexander Babel

Chemistry

Comparative study on peptide synthesis protocols towards more sustainable practices and improved efficiency

Peptides are the building blocks of proteins – the molecular machines that drive the biochemical processes of the body. Despite their importance, it has been less than 60 years since chemists have realized the methods to synthesize them. Today, a quarter of all newly approved FDA drugs are peptide-based. Meanwhile, current synthetic methods require a large amount of chemicals which increases the environmental burden of peptide synthesis. This provides a substantial hurdle to the large-scale production of these compounds. Therefore, there is increasing interest in developing new synthesis protocols that allow for the synthesis of peptides in a more efficient and sustainable manner. In this study, we investigated several peptide synthesis methods and evaluated them in terms of their environmental burden as well as their efficiency. We found that our approaches allowed for reduced chemical consumption as well as, in some cases, the ability to add unnatural amino acids to peptides – thereby expanding the tools available to the field of peptide chemistry and biopharmaceutics while simultaneously mitigating the overall environmental impact.

Jeffery Darko

Chemistry

SYNTHESIS, CHARACTERIZATION, AND PHASE BEHAVIOR IN AQUEOUS SOLUTION OF COPOLYMERS CONTAINING POLY (N-VINYLCAPROLACTAM)

Random diblock copolymers are comprised of two different monomeric precursors that show an irregular repeat pattern. Due to this immiscibility, the polymers can self-assemble into ordered nanostructures such as spheres or cylinders depending on the chemical nature and relative lengths of the polymeric chains. These diblock copolymers can also be thermoresponsive, meaning they undergo a change in physical properties in response to change in temperature. An increase in temperature to above its lower critical solution temperature (LCST) or decrease to below its upper critical solution temperature (UCST), can cause a change in polymer solubility which leads to the polymer undergoing a phase transition. These unique properties make diblock copolymers useful in multiple applications such as drug delivery, tissue engineering, and nanotechnology. This project aims to synthesize random diblock polymers of N-vinylcaprolactam and vinyl acetate by employing AIBN as a reaction initiator. The polymers are synthesized at different monomeric ratios and characterized using NMR, cloud point, and gel point analyses. Further analyses using FTIR, and crystallography may be employed in the future to further characterize the polymer and gain information.

Amy Donaldson

Audiology

Changes in Auditory Brainstem Response in Model of Chronic Migraine

Objectives: The goal of this study was to use an established preclinical model of chronic migraine to investigate changes in hearing sensitivity and auditory brainstem integrity by measuring neural activity of the auditory brainstem before and post migraine. Little is known about the link between migraine and phonophobia and hearing loss. We wanted to test the hypothesis that migraine pathology would cause hearing loss and hyperexcitability of the auditory brainstem. **Design:** To induce a chronic migraine state, male and female Sprague Dawley rats were subjected to three human risk factors including neck muscle tension and REM sleep deprivation that promote latent sensitization, and exposure to a pungent odor, which acts as a trigger to stimulate trigeminal activation and pain signaling. **Results:** At baseline, rats had low levels of mechanical nociception. Exposure of sensitized caused a significant increase in the average number of nocifensive responses to mechanical stimuli, which persisted for the duration of the study. ABR suprathreshold measurements indicated hypersensitivity in just male rats. **Conclusions.** Our findings in a chronic migraine model provide evidence of mild hearing loss and hyperacusis in only male rats.

Cora Dyslin

Biology

*Activity Cycles of Central American River Turtles (*Dermatemys mawii*) in Belize*

The Central American River Turtle (*Dermatemys mawii*) is a Critically Endangered species native to Atlantic drainages in southern Mexico, Guatemala, and Belize. Previous studies have inferred patterns in activity from trapping and visual surveys, both of which suggest that the species is chiefly nocturnal. However, the data on which this conclusion is based may be biased by unevenly distributed survey efforts and may also fail to identify seasonal variation in activity patterns. We set out to quantify the daily and seasonal activity patterns of 24 *D. mawii* in a natural river system in Belize. Using archival dataloggers, we collected acceleration data from 8 male, 8 female, and 8 juveniles from June 2021 to July 2022. Males, females, and juveniles exhibit bimodal daily activity patterns with peaks corresponding with dawn and dusk. Males were active more often than juveniles, which in turn were more active than females. Males exhibited higher rates of daytime activity, whereas females and juveniles were most active during crepuscular periods. Based on these results, *D. mawii* may be more appropriately categorized as crepuscular rather than nocturnal, and important differences in activity occur among demographic groups.

Brianne Edwards

Biology

Role of Soil pH in Driving Selection of Rhizobial Endophytes within Soybean Root Nodules

Soybean plants fulfill most of their nitrogen requirement by developing symbiotic associations with four different rhizobial genera, including *Bradyrhizobium*, *Sinorhizobium*, *Mesorhizobium*, and genus *Rhizobium*. Members of *Bradyrhizobium* and *Sinorhizobium* have been reported as root nodule endophytes under acidic soils and alkaline soil conditions, respectively. So far, it is unknown whether the selection of rhizobial endophytes is regulated by their ability to survive under different soil pH or primarily driven by host plants regardless of their relative abundance in soil. This study assessed the potential role of soil pH in selecting rhizobial endophytes and determining whether the selection of rhizobial endophytes is controlled by their relative abundance in rhizosphere soil. In a greenhouse study, we inoculated soybean plants with

different cell densities of *Bradyrhizobium japonicum* and *Sinorhizobium fredii* cultures. Plants were grown under three soil pH conditions. We assessed the distribution of rhizobial endophytes within root nodules and rhizosphere using DNA sequencing of 16S rRNA amplicons. We observed significant differences in plant growth and selection of rhizobial endophytes across different soil conditions.

Elson Eguaosa

Chemistry

Searching for Sustainable Substitutes for Petroleum: Theoretical Studies on the Pyrolysis of Methyl Linoleate

As the world's fossil fuel supply, specifically petroleum products, rapidly diminishes, prices have risen and are projected to rise even further due to population growth and increased energy consumption. While biodiesel is a renewable alternative, it has high production costs and performs poorly at low temperatures. Our objective is to improve conventional biodiesel by using pyrolysis to generate low molecular-weight compounds with high energy densities. To achieve this, it is crucial to comprehend the pyrolysis process at the atomic level to engineer the necessary reactants that will maximize the yield of desired energy-producing molecules. To accomplish this, we analyzed 100 ab initio trajectories of methyl linoleate, monitoring significant bond-breaking and bond-forming events, their times, and their positions in the molecule. We also used quantum chemical techniques to calculate the thermodynamic properties of the resulting fragments. Additionally, we are developing a computer-automated analysis method and have found interesting similarities in the results compared to those obtained from analyzing the 100 trajectories. This suggests that the development of this method is promising.

Elandé Engelbrecht

Geography

Beach Erosion and Recovery since Hurricane Ivan in 2004 along a Headland-Bay Coast in Treasure Beach, Jamaica

Anthropogenic climate change is causing sea level rise and shoreline changes that threaten the environment and economy of coastal communities in Caribbean Island nations. To assess this risk, this study quantifies shoreline changes at Treasure Beach on the south coast of Jamaica from 2001 to 2021. The effects of storm events on erosion will also be assessed. Over 11 km of shoreline are assessed with about half being sandy pocket beaches separated by rocky headlands and beach rock outcrops. Sand beach erosion trends since 2001 are assessed for seven sand beaches including Great Bay, Old Wharf, Calabash Bay, Frenchman's Bay, Billy's Bay, Mahoe Bay and Black Bay. Seven years of satellite imagery and field surveys are used to evaluate beach erosion rates at annual scales. Average shoreline erosion rates ranged from 0.04 to 7 m/yr from 2001 to 2021. Local shoreline changes from 2001 ranged from 50 m seawards (deposition) and 48 m landward (erosion). Both sand deposition and erosion occurred during storm events. Overall, Treasure Beach lost about 22% of its beach area due to the passage of Hurricane Ivan in 2004. Beach recovery has occurred locally, however from 2005 to 2021, Treasure Beach lost another 5% of its sand beach area.

Madison Gregory

Cell and Molecular Biology

HYPOCHLOROUS ACID AS AN ANTIMICROBIAL TREATMENT PREVENTING INFECTION IN COMPOUND FRACTURES

Compound fractures are susceptible to bacterial infection due to environmental exposure. Irrigation of the fracture is a common method to prevent infection. There is not yet a clinical practice guideline in terms of the type of irrigation solution to be used. The goal of this work is to explore if hypochlorous acid irrigation solution is effective at killing bacteria, while being non-toxic to human cells. Hypochlorous acid is commonly used in cleaning solutions, would treatment, and is naturally produced by the human body as part of a natural immune response. Research done on hypochlorous acid has also found that it may cause cellular damage and change the way in which the cell functions. First, we generated cultured osteoblast cells, which will serve as the model for exposed cells in compound fractures. Next, we introduced hypochlorous acid in various concentrations to cultures of bone cells to determine the maximum concentration that is non-toxic. Finally, we identified the concentration (ppm) at which hypochlorous acid inhibits the growth of opportunistic pathogens. This information will be used by medical professionals to determine the therapeutic window for use of hypochlorous acid in irrigation of compound fractures.

Katie Grong

Geography and Geology

Land use change and hydrological impacts on historical and present-day channel and floodplain form, Blue River watershed

Channel form can respond to changes in flood regime and sediment load caused by land use and climate disturbances. If conditions are severe enough, hydrological connections between the channel and its floodplain can be altered leading to geomorphic adjustments across the valley floor. Investigating the historical evolution of a stream channel system including its floodplains can help to advance geomorphological theory and benefit environmental managers. This study documents the influence of human impacts on historical changes in channel and floodplain widths since the early to middle 1800s in the Blue River in Kansas City, Missouri. The Blue River watershed is situated in the transitional area between the Ozark Plateaus in Missouri and Central Lowlands in Kansas. It has been affected by a long agricultural history as well as more recent but significant urban-industrial growth. Historical channel changes will be assessed by: (i) General Land Office (GLO) surveys from 1826 that describe pre-settlement channel conditions; (ii) Bank-line changes over time using aerial photography since the 1950s; and (iii) Locations, dates, and types of bank stabilization structures and channel modifications.

Valentina Hurtado Uribe

Project Management

AUTOMATION IN TRUCKING INDUSTRY: INTEGRATING HUMAN DRIVING CAPABILITIES AND ARTIFICIAL INTELLIGENCE

The trucking industry occupies a unique position in the U.S. economy. About 71% of the country's tangible goods are transported by truck. The trucking sector has lately been forced to

turn to technological solutions to solve problems such as labor shortages, increased competition, deregulation, fuel prices, costs, and safety. Companies are turning to innovative automated transportation technology and artificial intelligence (AI) to transform the entire transportation industry. Logistics companies, for example, have started adopting automated trucks that combine AI and human capabilities at different levels to mainly compensate for labor shortages and improve road safety. Currently there are different option levels of automation in motorized vehicles gradually transfers responsibility to the vehicle, to the point of not needing a human on board. This current study investigates the trucking industry with automation in mind to better understand the emerging industry and the potential options it provides. Additionally, this paper proposes a model of technology-based trucking options involving automation, AI, and driver components. The proposed model includes traditional trucking options, pending options, as well as future options.

Rejeena Jha

Materials Science

Synthesis and Characterization of Chitosan Nanoparticles Loaded with PEO

Chitosan nanoparticles (CNPs) used as scaffolding for gel polymer electrolytes have recently received attention for potential use in lithium ion batteries as this may be a safer alternative to liquid electrolytes. The ionic gelation synthesis method was used to prepare the CNPs. CNP samples were prepared using 0.5% (A sample) and 1.0% W/V (B sample) of chitosan. The B sample CNPs were loaded with polyethylene oxide (PEO) and PEO + polyglycolic oxide (PPG). The size of the CNPs ranges between 7-51nm and the zeta potential ranges between 6-21 mV. XRD and TEM results show that the size and the aggregation of nanoparticles can be modulated by varying the chitosan:polymer ratio. Structural analysis confirms the semi-crystalline structure of the A sample, which has a greater degree of crystallinity than the B sample CNPs. However, incorporating the PEO-PPG polymer mixture results in a significant increase in the crystallinity of the CNPs.

Rebecca Lage

Speech-Language Pathology

How can Speech-Language Pathologists Address Mental Health Issues of Clients Suffering from Dementia?

Dementia is a life changing disease that around 14% of adults aged 71 or older are diagnosed with (Cacchione, Pike, Spaeth-Rublee, and Pincus, 2018). This disease can give way to many burdens for those living with it and their family and/or caregivers. With the diagnosis of dementia, many adults' mental health can be impacted as well. As speech-language pathologists, we do not receive in-depth training to help guide these clients through the challenges that come with their mental health decline. Those with dementia should be provided resources and appropriate referrals to specialized healthcare providers that treat mental health. This paper aims to promote an increase in awareness for speech-language pathologists in making appropriate referrals to other professionals for clients with dementia and co-occurring mental health disorders. Quality of life and speech language therapy outcomes for clients with dementia can presumably be improved by effectively addressing co-occurring declines in mental health. The need for additional research regarding mental health and dementia clients is apparent,

especially in relation to improving therapy outcomes and overall quality of life throughout the process of evaluation and treatment.

Nhi Le

Biology

The assessment of quantum dots' intracellular trafficking and their interactions with yeast proteins

Quantum dots (QDs) are semiconductor nanocrystals with a broad emission range. Due to their unique optical properties, quantum dots are sought after for various biomedical applications. However, many studies have demonstrated the cytotoxic impact of quantum dots. Yet, the mechanism of QDs' toxicity and their interaction in the cellular system remained unclear. Therefore, our study used *Saccharomyces cerevisiae* as a model organism to study the trafficking of QDs in budding yeast, as well as their interaction with yeast protein. Our results showed that quantum dots enter yeast cells using clathrin-mediated endocytosis and distribute to the late Golgi/trans-Golgi network. Furthermore, we used Shotgun Proteomics to identify quantum dots binding proteins. Our data revealed several proteins that bind to quantum dots, including proteins associated with translation, mitochondria, vesicular trafficking, and the actin cytoskeleton. Next, we confirmed the binding of actin protein with quantum dots using native polyacrylamide gel electrophoresis. We found a slight band retardation in actin-quantum dots mixture samples. In the future, we will examine the form of actin that binds quantum dots, as well as how this binding affects actin dynamics.

Olamide Ogundele

Chemistry

Does Prior Exposure of plants to perfluorooctanesulfonic acid (PFOS) affect the next generation?

The generational exposures of plants to contaminants are real in the environment, however there is limited understanding of the pattern of the effects. In this study, harvested seeds of wheat and soybeans planted in soil amended with PFOS at 0 and 25 mg/kg were cultivated in a clean soil to produce daughter plants. Plant stress and responses including plant growth and biomass, chlorophyll content, lipid peroxidation, and enzyme activity were measured at short and long exposure period (25 and 92 days, respectively). Furthermore, the metabolomics of the daughter grains (wheat & soybean) were investigated. Results from this study aim to provide insights on the effects of generational exposures to PFOS on cereals and legumes.

Onyinye Okafor

Biology

Quantum Dots on membrane organization and endocytosis of budding yeast.

Our recent RNA sequencing analysis of yeast treated with red CdSe/ZnS-COOH QDs identified several differentially expressed genes, including DID2, SEG1, SEG2, COS10, and APS2. Based on our findings, we hypothesized QDs may affect cargo sorting at the late endosome and vacuole formation. Although mRFP-Cps1, a fiduciary marker assessing integrity of the cargo sorting process at the late endosome, was targeted to the vacuole, we found a severe fragmentation of

vacuole in the QD-treated yeast cells. Our second working hypothesis is that eisosomes will be increased in size by recruiting more eisosome markers including Pil1, we observed increased recruitment of Pil1-GFP to the eisosome both at pH 5 and pH 7. Thirdly, we hypothesized QDs will negatively impact endocytic vesicle maturation at the membrane. Our data showed Sac6-GFP, an actin-binding protein at the endocytic site, exhibits a slow turnover rate in the presence of QDs compared to that of the early and intermediate markers of endocytosis. In conclusion, this study provides novel insights into the cellular and molecular mechanisms behind QD-mediated cytotoxicity in yeast cells.

Teddy Osei

Visual Studies

In Between Lines: An Investigation of The Ghanaian Migration Experience

As my socio-cultural experiences continue to evolve, so does my interest in contemporary border discourses. The question of "who qualifies to be where and how," lingers in my mind daily as I reflect on my migration experience as a Ghanaian living in the United States of America. Another area of interest is the social and physical challenges endured by individuals transitioning from one geographic location to another. In reflecting upon these experiences, I make ceramic sculptural vessels associated with sojourning. In my ceramic sculptures, I use specific elements, such as ropes and "Ghana must go" bags, which honor Africa's past and its people in an attempt to recognize its migration history. The rope also serves as a metaphor that reflects the interconnectedness of our collective history, while its strong materiality speaks to the resilience of African people. These elements represent the displacement of Africans from their homeland and their journey to different parts of the world. Throughout my work, I explore the complex relationship between people and their environment, the impact of cultural diversity, and the challenges of living in a multicultural society.

Whitney Rawhouser

Audiology

Novel Frequency-Modulated Multiple-Tone Distortion Product Otoacoustic Emissions In Young Children With Normal Hearing

Distortion-product otoacoustic emission (DPOAE) is a non-invasive, standard objective test for newborn hearing screening that has been used clinically for decades to diagnose hearing loss. Standard DPOAE test provides frequency-specific hearing results to a pair of tonal stimuli presented in the ear canal. However, the response accuracy can be affected by a large variation in the response amplitude due to inner ear fine structure variations, resulting in a high false positive referral rate. These drawbacks of standard DPOAE for hearing screening may be reduced with the use of different stimulus parameters. This study evaluated the efficacy of a new, frequency-modulated (FM) stimulus with multiple-tone pair DPOAEs (FM mDPOAEs) to determine whether FM responses will be comparable yet less variable than the standard DPOAE responses. Normative data for this novel test protocol was obtained in 16 normal-hearing children aged 3-6. Paired Samples T-Test revealed no significant differences in response amplitude between mDPOAE with and without FM stimulus except at 4000 Hz, and both are strongly correlated. As hypothesized, results showed that mDPOAEs with FM are less variable.

Nathan Sines

Geography

Channel shifting and bank erosion pattern in response to land use and climate change in the Cuivre River Watershed of MO

Bank erosion is a major challenge for watersheds, largely driven by direct human activities and climate change in conjunction with the natural flow regime. Human activities are reshaping Earth's surface - some triggering channel instability- leading to questions about their effects on bank erosion. The Cuivre River and its two tributaries located within the Cuivre River watershed, northwest of St. Louis, Missouri has a limited pool of knowledge on bank erosion with its most recent study carried out in the early 1990s. This research aims to explore the lateral extent of bank erosion along with channel shifting pattern over the course of 1972- 2015. It hypothesizes that, while channel process-form relationships dictate bank erosion, human activities, particularly land use and climate change, have largely deteriorated this fluvial system. The preliminary analysis of the aerial photograph and streamflow data shows that bank erosion rate has noticeably increased over the last 30 years, compared to the pre-1990 period. Furthermore, agriculture and urban dominated sub-watersheds exhibit a larger bank erosion rate than those dominated by forest covers.

Dhruv Sitapara

Chemistry

Characterization and crystallization of the canine p53 protein

The structure of canine p53 protein is not well understood. The p53 protein regulates many cell processes in humans and other animals, including dogs. This research aims to understand the structure of canine p53 protein using various techniques and compare it with its human counterpart. Understanding the structure of the protein is a multi-step process starting with the development of the p53 DNA binding domain that can be expressed in E. Coli, and then purified using techniques like affinity and ion-exchange chromatography. The purified protein is then assayed to verify the binding of canine p53 to target DNA using a DNA binding assay and visualized using gel electrophoresis. Additionally, once protein crystals are formed, the protein's three-dimensional structure can be studied using X-ray diffraction and compared with the human form. This should allow for more robust comparative oncology studies and increase our understanding of the origins and progression of both canine and human cancers.

Shauna Smith

Visual Studies

Continuing

Taking something whole, breaking it apart, and making it into another form of wholeness is the essence of both papermaking and grief. The papermaking process involves separation, maceration, and forming of new life; the grieving process involves a similar evolution. Creating this body of work has been a pursuit of continuation—a part of me forming new life. Using papermaking processes, I create work that is visually quiet. The details, which exist in the fiber qualities of the paper and in the subtle imagery that is embossed or poked into the sheet, are only noticeable through sustained attention and close proximity. The quiet visual qualities are

intended to create a viewing experience that is meditative and slow. The lack of details of the material world is meant to encourage viewers to look within rather than focus on what is on the surface, just as I do when creating them. As viewers linger with my work they are basked with a warm, gentle glow that illuminates through the paper. I use light to symbolize hope and offer a form of reciprocation for those who choose to slow down with the work. The quiet qualities stand as antithetical to the contemporary visual culture and consumption habits.

Makenna Thompson

Environmental Plant Science

INTRASPECIFIC HYBRID IDENTIFICATION OF BLACK WALNUTS VIA MARKER ASSISTED SELECTION

The improvement of Eastern black walnut (*Juglans nigra* L.) could increase market expansion. Improved cultivars with superior qualities would increase profitability for both the seller and the buyer. Agronomically and economically important traits such as heavier nut weight, disease resistance, tree structure integrity, and yearly nut production can be efficiently improved by breeding black walnuts via marker-assisted selection. Microsatellite/simple sequence repeat markers were used in this research to determine potential intraspecific hybrids between 'Football' and 'Sparrow' cultivars. Intraspecific is defined as of the same genus and species. This quality makes it more difficult to identify hybrids because the parent plants DNA have similar base pair sizes. The two main goals for this research are to identify hybrid plants for the expansion of an existing mapping population and to optimize annealing temperatures of public primer sets for the identification of additional polymorphic markers'. 40 new genotypes were added to the F1 mapping population to a total of 180 plants at the Missouri State Fruit Experiment Station, Mountain Grove, MO 65711. 568 markers were tested for polymorphism and 55 were polymorphic for 'Ft x Sp'.

Audrey Williams

Nutrition & Dietetics

Nudging Workplace Health in the Right Direction: Utilizing Behavioral Design to Improve Diet Quality and Perceived QOL

Food choices available to employees have been studied to determine if implementing behavioral design techniques change food choices from less nutritious to more nutritious. Behavioral design techniques, such as nudging, may help subconsciously alter food and beverage choices that employees make. The goal of this study is to determine what behavioral design (BD) strategies within a Missouri company most successfully influences overall health and overall perceived quality of life (QOL) via choosing healthier options in the workplace. Changes within the Missouri-based company Prime Trucking have been determined and are in the preliminary stages for completion. These changes include moving more nutritious foods to the front coolers and moving less nutritious foods to the back coolers, changing the current hot deli menu to more nutritious options, adding a free water bottle filling station, and adding appealing pictures and LED lights above the salad bar. Pre-surveys were administered to Prime Trucking employees to survey their current food habits and choices as well as what they would like to see implemented in the future. This study will continue in the future to determine if BD changes affect perceived QOL or healthful food choices.

Haley Womack

Audiology

The effect of noise exposure in band members on the Cervical Evoked Myogenic Potential Response Amplitude and Latency

The cervical evoked myogenic potential (cVEMP) is used to measure the electrical potential of the sternocleidomastoid muscle (SCM) in response to a loud stimulus. This test is used to assess the function of the saccule within the vestibular system. Previous research has shown some evidence to a relationship between excessive noise exposure and saccular function. The goal of this study was to investigate whether a history of noise exposure affected the cVEMP response amplitude and/or latency. We investigated the relationship of the cVEMP response in those with a history of noise exposure from being in school band, and those with no significant noise exposure. We used 500, 750, 1000, and 1500 Hz tone burst stimuli to the response from both SCM. Results found no significant difference in the cVEMP amplitude or latency between those with a history of noise exposure and those without. In conclusion, this research did not show a significant relationship between a history of noise exposure and an affected saccular function.

Claire Zuch

Applied Behavior Analysis

Research on Sexism and Racism in Major Behavior Analytic Journals: A Model Dependent Scoping Review

Behavior analysts are becoming increasingly aware of and involved in the study of issues related to sex, gender, and racial bias, prejudice, and discrimination. A noteworthy quantity of research appeared in the special issue on racism and police brutality in Behavior Analysis and Practice that built on previous work appearing in behavior analytic journals. We sought to evaluate the current state of conceptual and empirical research appearing in major behavior analytic journals based on Dixon et al.'s (2018) theory-to-impact model and Belisle et al. (2022) nested model of racism extended to related challenges of sexism. Our review scoped research from 2000 to 2022. Of the 8 journals, 5 contained research related to racism or sexism. Most of the literature was conceptual or correlation and not experimental or applied. Moreover, inconsistencies were evident in common areas of conceptual discourse and experimental work focusing almost exclusively on implicit bias. Only 10 studies met the criteria for applied implementation research, suggesting that significantly more application is needed to develop effective technologies to address these sociocultural challenges of our time.