

SCHOLAR Day Formal Presentations 2024

Julie Haines	Psychology and Criminal Justice	Dr. Tamara Daily
Elyssa Dean	Psychology	
Ziv Marco	Psychology	
Mya Garlock	Psychology	
Leah Costello	Psychology	
Abigail Lindsay	Psychology	

Session A1 Giese 107 8:30 AM

The Association Between Personality Traits and Friendship Quantity and Quality in College Students

In this study we are investigating the relationship between eight personality traits and the quality and quantity of same and cross-gender friendships. We plan to recruit 80 participants between the ages of 18 to 24 to complete an online survey. The survey involves personality assessments including the Big Five Inventory-2 as well as the traits included in the Short Dark Triad scale. Participants will also be asked to report their quantity and quality of the friendships. We expect to find that there is a strong positive correlation between high scores of openness, conscientiousness, extraversion, and agreeability, and the quality and quantity of friendship. We also expect to find that higher scores on neuroticism will be negatively correlated with friendship quality and quantity. Along with this, we expect that higher scores on dark triad traits will be negatively correlated with friendship quality and quantity. Lastly, we expect the findings to show that openness and extraversion will have stronger correlations in cross-gender friendships rather than same gender friendships. If our hypotheses are confirmed, we can conclude that individuals exhibiting greater openness, conscientiousness, extraversion, and agreeability tend to enjoy richer and more abundant friendships, while higher levels of neuroticism and dark triad traits are associated with diminished friendship quality and quantity. Moreover, the study will highlight the specific influence of openness and extraversion on the dynamics of cross-gender friendships compared to same-gender friendships.

Caileigh Seskey	Physician Assistant Studies	Prof. Vanessa Worley
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Session A1 Giese 107 8:50 AM

The Mediterranean Diet: Could Long-Term Adoption Help Prevent Early-Onset Colorectal Cancer?

“Colorectal cancer?!? That’s something only older people get, right?” Unfortunately, no. Early-onset colorectal cancer (eoCRC), defined as colorectal cancer diagnosed in those under age 50, is on the rise globally, with many individuals in their twenties and thirties shocked by this ugly truth. Chadwick Boseman, the original Black Panther, was only 43 when he died from eoCRC. Medical professionals are not sure why this relatively new phenomenon is occurring, so there is a knowledge gap about how to prevent it or lower risk. Careful evaluation of numerous systematic reviews, meta-analyses, and cohort

studies reveals that diet is a potential target. This systematic review of literature found that diets high in fiber and nutrients, and low in processed foods, sugars, and red meats are proving to be protective against eoCRC. The Mediterranean diet (MD), a well-known and widely praised dietary lifestyle, fits this description. Though not a complete solution, the MD may be realistic, achievable, and vital for all young people.

Gracyn Sage **Nursing** **Prof. Karen Towne**

Collin Schumm **Nursing**

CJ McCroy **Nursing**

Session A1 Giese 107 9:10 AM

The Experience of Men in Nursing

Male nurses have several experiences throughout their time working in healthcare settings that differ from their female co-workers. This can be evidenced by role confusion, varying ways that nurses care for patients, pay differences, incidences of sexual harassment, and contrasting expectations. Male nurses can be seen as less able to communicate emotions in the healthcare setting and the perception of male nurses can be unlike those of female nurses. Prejudices towards male nurses can lead to feelings of alienation, differences in opportunities within a job setting, harassment from patients, and increases in workplace-related injuries. By exploring the dynamics of men in nursing, there can be more research on how these differences affect the attraction to nursing as a career, job turnover in men, and differences in the average retirement ages of men compared to women.

Faith Brown **Mechanical Engineering** **Dr. Chad Korach**

Chance Coultrip **Mechanical Engineering**

Omar Najjar **Mechanical Engineering**

Session A2 Giese 114 8:30 AM

Mobile Welding Table

The new labs at the University of Mount Union contain state of the art equipment, however, one important component missing is a welding table that can be moved around and stationed throughout the labs. There are several different types of welding tables that are on the market, but a goal of this design project is to design a welding table that brings all the different qualities together. For the project a multivariable-height mobile modular welding table will be built according to the design requirements given. It will need to be able to move up and down by a single person and hold projects that weight up to 800lbs, have a structural capacity of 1000lbs and be able to hold up to 200lbs on each corner. The size the overall size of the table to need to be 60" wide and 72" long including the extendable sides. Another requirement is the height will have to range anywhere from 24" to 48". The purpose of the Mobile Welding Table is to provide The School of Engineering at The University of Mount Union with a new component for their lab. Although there is a current welding table, it is not mobile nor used a lot or at all. This Mobile

Welding Table will allow for more projects to be completed by incoming engineering students that could not be done before.

Carrigan Pahanish

Psychology

Dr. Kristine Turko

Erin Smith

Psychology

Megan Houvig

Psychology

Amelia Holt-Hoskins

Human Development & Family Science and Public Relations

Session A2 Giese 114 8:50 AM

The Relationship between Parenting Style and Personality Development and Family Dynamics

In this study, we are investigating the correlation between personality, parenting styles, and family dynamics. Our participants complete an online survey that includes the big-five personality questionnaire, student self-reporting parenting style questionnaire, and family dynamic questionnaire. We expect to find a significant positive correlation between positive parenting styles (i.e., authoritarian), positive personality traits such as agreeableness, conscientiousness, and openness, and positive family dynamics. We also expect to find a significant positive correlation between negative parenting styles (i.e., permissive and uninvolved), negative personality traits like neuroticism, and negative family dynamics. Based on these findings, we can better understand the relationships between personality, parenting styles, and family dynamics. This information is important because it can lead to further research on developing positive family dynamics.

Rae Carruthers

Writing, Spanish, and Sociology

Dr. Jamie Capuzza

Session A2 Giese 114 9:10 AM

The Language of Lesbian Feminism: How Sally Miller Gearhart's Message-Making Impacted the Gay Rights Movement

The progression of the gay rights movement, specifically the rhetorical functions of communicators within it, is part of a relatively contemporary and underexplored area of research. As a major aspect of US history, characterized by a diverse community of revolutionary message-makers, it's vital to study the way activists changed the world with their words. Through a linguistic analysis, my research delves into the language strategies and tactics of Sally Miller Gearhart, a prominent lesbian feminist figure in the gay rights movement. To determine the effectiveness of her rhetoric, I analyzed three key artifacts of her communication: her speech "The Lesbian and God-the-Father: All the Church Needs is a Good Lay—On its Side," her chapter "The Miracle of Lesbianism" in *Loving Women/Loving Men: Gay Liberation and the Church*, and her interview in the documentary "Word is Out: Some Stories of Some of Our Lives." Through this research, I found that Gearhart utilizes the language tactics of content adaptation, a reflection of moral symbols or revered documents, and a link to another established movement, to achieve the strategy of identification. She also accomplishes polarization by employing label-making and a radical call to action. Gearhart's political rhetoric proves influential in solidifying her as a well-educated, woman-

loving, and change-demanding activist. Her approach effectively advances the gay rights movement by engaging diverse audiences, establishing a new vocabulary, and calling for systemic change. Future implications from my evaluation of Gearhart can be applied to the perpetual struggle for LGBTQ+ individuals to gain equal rights today.

Samuel Montgomery

Exercise Science

Dr. Ronald Mendel

Bryce Weaver

Exercise Science

Brooke Jacobs

Exercise Science

Session A3 Giese Brush Hall 8:30 AM

Comparing the Effectiveness of Caffeine and Multi-Ingredient Pre-Workout Supplementation on Enhancing Lower Body Power Production

The ability to effectively produce considerable amounts of power is essential for explosive athletes; however, achieving perceivable improvements in power production requires consistent plyometric, ballistic, or high velocity training (Fouré et al. 2010). The use of ergogenic aid supplementation such as caffeine or multi-ingredient pre-workout supplementation (MIPS) has been shown to provide improved power performance for a single session (Fisone et al. 2004). Caffeine has been shown to enhance a wide array of subjective and motor function performance enhancements (Smit et al. 2000. Sokmen et al. 2008). The majority of MIPS include caffeine, taurine, beta-alanine, and nitric oxide boosters (Iraki et al. 2019. Stratton et al. 2022). While each individual MIPS component has been shown to potentially enhance power performance on its own; MIPS attempts to elicit a synergistic effect between the supplements that may provide greater positive training effects than caffeine alone (Suzuki et al. 2019. Sweeny et al. 2010. Lim et al. 2018). This study's purpose was to compare the effects that caffeine supplementation and caffeine-matched MIPS have on anaerobic power production and fatigue in recreationally active individuals during a single training session. Twelve recreationally active college-aged individuals were recruited for this study (7 male). Each subject received all four treatments, control, placebo, 200 mg caffeine, and MIPS, for data collection in a double-blind crossover manner. Testing days consisted of the treatment, a 30-minute digestion period, a 5-minute standardized treadmill warm-up, a three repeated arms free countermovement jump test (CMJ), a 30-second Wingate test, followed by the same CMJ test. Data Collection was not complete at the time of abstract submission.

Kaleigh Richmond

Spanish and Biology

Dr. Gregg Courtad

Session A3 Giese Brush Hall 8:50 AM

Español en el campo biológico y medico- An informative Spanish piece

Tasked with a 15-page independent research study on a topic of the student's choice, Spanish met science. As a biology student wanting to enter the medical field, as well as a Spanish student, the paper presented is about medical translation. Using some common and some scholarly sources in Spanish, research was compiled into an informative piece about the necessities and regulations of medical translators in hospitals. This information was then used to create an essay in Spanish. Medical translation is an

overlooked aspect of the healthcare field and an overlooked career. Incorrect translations can lead to errors in treatment and there is no better case than: "His family had told the doctors in Spanish that Willie was intoxicated. This was interpreted strictly in English as "intoxicated," while in Spanish "intoxicado" can refer to the adverse effects of anything ingested. When they tried to communicate that he had eaten something that had an adverse effect, the hospital understood that he had drunk too much alcohol. The misdiagnosis caused a brain hemorrhage that left Willie quadriplegic for life. As for the hospital, since they had been asked to hire a professional interpreter and did not do so, they were responsible for a settlement of approximately \$71 million." (Edson Valdez). While AI and translating services have improved, the best method is still a well-trained individual that can provide comfort and accuracy.

Alexis Daugherty **History** **Dr. Mary-Beth Henning**

Session A3 Giese Brush Hall 9:10 AM

LGBTQ Issues in Social Studies Curriculum & Instruction

In middle and high school history classrooms, there are certain topics that teachers will avoid. One of these topics is LGBTQ+ history. With LGBTQ+ history not included in classrooms, people who are a part of the community do not learn their history in schools. For my research, current news and academic journal articles were analyzed. These articles showed why LGBTQ+ history is not taught in classrooms, the benefits of teaching LGBTQ+ curriculum, and how social studies teachers can include LGBTQ+ curriculum in their classes. LGBTQ+ history is not taught in classrooms since it is missing from both the textbooks and curriculum, viewed as controversial, often forbidden, and teachers are afraid to teach it since they are currently being fired for teaching this topic. Teaching LGBTQ+ history is beneficial since it makes classrooms more inclusive and can reduce homophobia in schools. Erasing LGBTQ+ history from the curriculum will have consequences for historical accuracy and will neglect students' identities in the classroom. Teaching LGBTQ+ curriculum will help start "creating a more accurate reading of the world in which students live their lives today" (Maguth & Taylor, 2019). LGBTQ+ topics exist in all history courses, so teachers can teach them regardless of their class. This presentation will suggest ways teachers and schools can better incorporate LGBTQ+ issues and topics in education.

Alaina Metzler **Chemistry** **Dr. Ryan Dwyer and Dr. Colin Campbell**

Session A4 Giese Choral Hall 8:30 AM

"I Will Survive": Applications of Computational Chemistry in Overcoming Antibiotic Resistance

By 2050, antibiotic resistance could cause 10 million deaths annually, making it deadlier than cancer unless researchers can develop new ways to combat it. In particular, Methicillin-resistant *Staphylococcus aureus* (MRSA) synthesize bacillithiol, which interferes with antibiotics. Current research is working towards interfering with bacillithiol production to shut down the mechanism that MRSA use to become antibiotic resistant. To understand how bacillithiol confers antibiotic resistance and combat it, bacillithiol and its derivatives have been synthesized and analyzed.

To identify these derivatives and verify their structures, Nuclear Magnetic Resonance (NMR) chemical shift data is crucial, but interpreting the data correctly is challenging. Computational NMR predictions can help, but have not been tested on similar complex molecules. In response, this research utilized three distinct NMR prediction techniques—NMRdb, CASCADE, and Tantillo’s linear model—to assign Carbon and Hydrogen NMR shifts for derivatives in the bacillithiol synthesis pathway. CASCADE was found to be the most accurate model and synthesis of these new derivatives was verified.

In addition to the assignment of the bacillithiol derivatives, a website (<https://js.munano.org/nmr/>) was coded in order to simplify the process of assigning future molecules by integrating all three computational models. The results will be beneficial to future research involving n-methyl-bacillithiol as NMR assignments help confirm successful synthesis. This will aid in understanding n-methyl-bacillithiol’s role in antibiotic resistance and detoxification methods for bacteria to help reduce projected public health threats.

Lily Sweeney **Psychology** **Dr. Kristine Turko**

Nicholas Benson **Psychology**

Ian Dennison **Psychology**

Session A4 Giese Choral Hall 8:50 AM

Cannabis’s Role in the Mental Health and Athletic Performance Satisfaction of College Students

There is limited and inconclusive research on the effects of cannabis use on athletic performance and one’s mental health. Due to the recent change in cannabis legislation and NCAA rules, we are researching how cannabis use can affect college student’s mental health (stress, anxiety, and depression) and athletic performance satisfaction. Participants are a combination of student athletes and non-athletes. This study is a correlational design that examines how cannabis use can affect college student’s mental health (specifically stress, anxiety, and depression) and athletic performance satisfaction. Participants complete five online questionnaires. We expect to find a significant positive correlation between cannabis use and mental health. In addition, we expect to find that athletes who are satisfied with their athletic performance have greater/positive mental health. We suggest based on expected findings that cannabis use can have beneficial properties that help foster positive mental health and one’s satisfaction with their sport can determine the state of their mental health.

Isabelle Puleo **Exercise Science** **Dr. Colin Campbell**

Session A4 Giese Choral Hall 9:10 AM

Determining Force-Time Characteristics of a Countermovement Jump Using Python

In Mount Union’s Motion Lab, athletes can perform actions on the force plates, such as a countermovement jump, and the raw data generated can be analyzed in different ways. Chavda et al. (2018) generated formulas for an Excel file that would provide characteristics of the force-time curve of a countermovement jump. These formulas could be run in an Excel file for each individual; however, the

formulas could only be run on one Excel file at a time. Since this is not time efficient, it can delay returning feedback to the individuals. The goal of this project was to create a program in the coding language Python that could run the formulas on multiple Excel files at once, simply by loading in a folder with the intended files. The information collected from the raw data can determine different aspects of an individual's jump, such as jump height and peak power. In a paper by Bishop et al. (2018), the asymmetries between an individual's limbs, called bilateral asymmetry, can be determined from components of the Excel files. The number calculated from the bilateral asymmetry can give information about which limb an individual favors. Incorporating this into the Python program allows for more information about an individual's jump to be generated. Having a time efficient and effective way of analyzing the countermovement jump of an individual has the potential to make feedback available quicker, help catch signs of injuries before they become an issue, and be modified for variations of the countermovement jump.

Emily Prestage **Nursing** **Prof. Karen Towne**

Gianna DeFranco **Nursing**

Camryn Ailes **Nursing**

Session A5 Giese 180 8:30 AM

Effects of COVID-19 Vaccination on Pregnancy Outcome: A review of literature for evidence-based practice

Women who contract COVID-19 during pregnancy experience high risk for complications affecting their pregnancy and baby (CDC, 2022). The COVID-19 vaccination is recommended for people who are pregnant, breastfeeding, or may become pregnant; however, many people of reproductive age remain unvaccinated against COVID-19 due to concerns about adverse effects on fertility (CDC, 2022; Wesselink et al., 2022). A brief review and critical appraisal of the literature was conducted to determine if the COVID-19 vaccination had impacted pregnancy outcomes. A literature search identified five articles on pregnancy outcomes for women vaccinated and unvaccinated against COVID-19. An outcomes synthesis included preterm birth, small for gestational age, fetal death, cesarean deliveries, postpartum hemorrhages, low Apgar scores, NICU admissions, chorioamnionitis, and fetal anomalies. Lack of consistent and statistically significant findings limit concerns. Physicians and nurses may use these findings to educate their patients on potential vaccination risks and benefits to support informed decision-making. Healthcare professionals should advocate for continued research regarding short-term and long-term standards for quality, safety, and effectiveness of the COVID-19 vaccination during pregnancy.

Kaela Turle **Exercise Science** **Dr. Ronald Mendel**

Lauren Amodio **Exercise Science**

Emma Thornton **Exercise Science**

Session A5 Giese 180 8:50 AM

Do Caffeinated Energy Drinks or Music Have a Greater Effect on a Two-Mile Run Time in Recreationally Active Individuals and Anaerobic Athletes?

Caffeine is one of the most commonly consumed substances prior to exercise for both recreationally active and athletes. The literature consistently demonstrates that caffeine can mitigate exercise-induced pain levels, lower rate of perceived exertion (RPE) and ease workout difficulty (Bridge & Jones, 2006; Green et al. 2016), leading to enhanced workout capacity. These benefits, however, can be accompanied by many side effects, including headaches, anxiety and insomnia, along with dangerous increases in heart rate (Chen et al. 2013; de Souza et al. 2022). Music, however, has been shown to have similar benefits as caffeine, such as easing pain and workout difficulty, without the adverse side effects (Hutchinson & Tenenbaum 2007; Lim et al. 2014).

The purpose of this study was to compare the ergogenic benefits of caffeine to those of music to determine if music could replace caffeine when exercising. Fifteen untrained runners with low caffeine intake (<150 mg no more than 3 times a week) were recruited. Each participant submitted personal music taste via survey and individual playlists were curated for each subject. Participants were required to run two miles under each of the four treatments: energy drink, placebo, music, control. Heart rate monitors were used to track heart rate while participants indicated RPE (1-10) every 400m. A One-way ANOVA was performed on run time, heart rate and RPE to determine significance between treatments. Subjective feedback on each run was also recorded. No results are currently available because data collection was not complete at time of abstract submission.

Brianna Rapp **Physics** **Dr. Steven Cederbloom**

Session A5 Giese 180 9:10 AM

Patient in a Box - Exploration of Radiation Exposure

Originally patient in a box was a one-dimensional analysis done in PHY 211 lab, however, this work expands the project to involve a three-dimensional model paired with two-dimensional experimental data. The purpose of this project is to determine the location of a radioactive source in the "body" modeled as a box with an unknown location of the source strontium, Sr-90. It is meant to replicate, on a small scale, a nuclear medicine study, where a radioactive substance is injected into a person and used to identify the location of cancerous tumors. The initial computation modeling is done in Python with Gaussian fits (statistical model that displays the how the radiation decreases the further you are from the source). After the modeling is complete, it is confirmed with seven prior years of the experimental data. The experimental analysis uses a PASCO Geiger-Müller Counter, Science Workshop Interface, and the computer to locate the radioactive material that can be found in the patient in the x, y coordinate system and a prediction of its height. The peaks indicate where the radioactive material is located and will compare to computational analysis. In addition to the patient in the box analysis, the radiation of everyday common objects was also measured (electronics, lead containing items etc). The goal of this final portion of the experiment is to expand the model beyond basic medical imaging and to further understand the relative radiation risks of everyday items.

Alexis Dupont	Biology and Neuroscience	Dr. Tamara Daily
Taylor Boschini	Psychology	
Teresa Payne	Psychology and Sociology	
Kaitlynn Haas	Psychology	
Shiori Sone	Psychology	

Session B1 Bracy 02 9:45 AM

A Study of Childhood Experiences, Social Support, and Mental Health in College Students

In this study, we are investigating the relationship between childhood adverse experiences and mental health outcomes in undergraduate students, as well as the mediating role of social support. We hope to recruit 100 participants (50 females and 50 males) between the ages of 18 and 24 to complete an online survey. All participants will be undergraduate students at the University of Mount Union. The survey includes measures of demographic variables (age, gender, and ethnicity), early adverse experiences, perceived social support, overall mental health status, and the presence of symptoms of four distinct mental health disorders (anxiety, depression, PTSD, and bipolar disorder). We expect to find that there is a significant positive correlation between total ACEs score and negative mental health outcomes (anxiety, depression, PTSD, and bipolar disorder). Additionally, we expect to find that there is a significant negative correlation between perceived social support and mental health outcomes (anxiety, depression, PTSD, and bipolar disorder). If the findings support our hypotheses, we can conclude that undergraduate students who have experienced childhood adversities will show higher levels of mental illnesses. These levels of mental illnesses are expected to decrease the better the social support system of the individual. Demonstrating the connections between childhood adverse experiences, perceived social support, and mental health outcomes could allow colleges/universities to develop programs to provide additional support for students with a history of trauma.

Caleb Dorris	Writing	Prof. Frank Tascone
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Session B1 Bracy 02 10:05 AM

How to Fight with a Book

Writing is a struggle. That is what most people tell me when I mention that I'm a Writing Major. And though I'll admit writing can be difficult, it didn't stop me from attempting to write a near 200 page book for my senior project. As a Writing Major, your senior project is to either have 15 pages of poetry or 30 pages of prose, but I wanted to go above and beyond. I tried to write an entire book entirely based on a story that I had started developing when I was in high school. In my presentation, I will discuss what my book is about and how it came to the state it is now. I will give a timeline of how the story progressed over the year of writing and give some insight on my writing process. I will also talk about a few tips I had to learn to make some of my scenes more compelling to read, while also commenting about the overall experience and struggles I faced while I fought with my book.

Kate Kueter National Security & Foreign Intelligence Analysis and French Dr. Theresa Davis

Session B1 Bracy 02 10:25 AM

Female Spies in the World Wars

Women's participation in espionage efforts during World War I and World War II went beyond gender stereotypes and roles of the time, benefiting cotemporary intelligence-gathering efforts and laying foundations for further involvement for women in spy craft. Demographics and gender expectations of the time gave women the ability to complete missions that their male counterparts could not. The methodologies developed created unique technological advancements tailored to women, such as audio and visual technology hidden within women's makeup products.

This project addresses a gap in research on women's participation in espionage and the methods they employed during the World Wars. Media portrayals of the femme fatale, women that would use sex and sexuality for espionage, colors our understandings of the contributions made. Previous research focuses on the relationship between media representations and female spies' actions along with expected gender roles and female spies' societal value. The methodologies used by female spies are overlooked. During this project, I reviewed biographies and official government reports to categorize methods they used and assess the reasoning behind use of the varying methodologies. Due to demographics and psychographics, women's participation in espionage, though office work and field work, was crucial to the war effort and success of intelligence networks which went beyond the gender stereotypes of the period which push for more inclusion of women in the intelligence field. Female efforts during the World Wars allowed for the establishment and continuation of intelligence networks and office management.

Colton Mace Mechanical Engineering Dr. Chad Korach

Vincent Giumentì Mechanical Engineering

Nicholas Wardrop Mechanical Engineering

Session B2 Bracy 04 9:45 AM

TimkenSteel Chain Tensioner Project

TimkenSteel is a large steel alloy producer in Canton, Ohio that produces over 500 unique grades of high-quality steel. To achieve high-quality standards over multiple applications, specialized production methods are used.

A specialized process used at TimkenSteel is the bottom pour solidification process. Here, liquid steel is poured vertically into ingot molds, filling them from the bottom up, allowing impurities and inclusions to float to the surface where they are removed once the ingot has cooled. To begin the process, a sideboard setting deck raises and lowers employees on a platform, allowing them to pour refractory material down into the molds.

This platform is driven by two motors with sprockets that have lifting chains connecting to the deck at four corners. Over time, the chains stretch, creating slack, which causes failures of the connecting turnbuckles due to high impact forces. Currently, turnbuckle-style tensioners are in use, but are unreliable

and inefficient. A newly developed chain tensioner must be designed to mitigate failures and keep constant tension on the chains.

The TimkenSteel capstone team designed an optimized chain tensioner by utilizing a spring and coupler system, allowing for a responsive and constant tension on the chains. Detailed engineering drawings were constructed and sent back to TimkenSteel where the system was fabricated. With a composed installation procedure, the system was installed in all four corners of the sideboard setting deck. Final testing confirmed a constant chain tension, absorbed spring displacement, and a successfully engineered failure, proving the new system to flourish.

Hannah Mitchell Environmental Science Dr. Jason Smith

Session B2 Bracy 04 10:05 AM

Can beech leaf disease be transmitted through seed dispersal?

Beech leaf disease (BLD) was discovered in Lake County Ohio by Lake Metroparks naturalist John Pogacnik in 2012. BLD is caused by the nematode, *Litylenchus crenatae mccannii* (LCM), which is originally from Japan where it naturally occurs as a parasite on beech trees. BLD causes tree mortality and has spread very quickly though northeast Ohio to neighboring states and Canada. Although the modes of transmission remain poorly understood, nematodes travel though the soil and groundwater typically, so BLD movement may be aided by a vector. My research focuses on potential BLD transmission via seed dispersal. The methods I carried out began by collecting seeds in the fall from BLD-affected trees at 7 sites in northeast Ohio (6 symptomatic trees + 1 negative/asymptomatic control). The seeds were then examined microscopically to determine if any LCM nematodes were present. Real time PCR was used to confirm LCM presence. Nematodes were observed under the microscope for all 6 BLD-symptomatic trees as well as the negative control. Real-time PCR amplification results confirmed the microscopy results. These results suggest there are nematodes present in the beech nuts, and that there is a possibility of seed transmission. Further work is needed to determine how the nematodes affect seed germination and if BLD can be transmitted from seeds to new plants in the field. These results are important for BLD management and may lead to further strategies including quarantines on seed to prevent movement of this pest to new locations in the future.

Emily Denney History Dr. Susan Haddox

Session B2 Bracy 04 10:25 AM

The Bloody Legacy of Political Martyrdom

The act of sacrificing one's life for a cause or belief has left a lasting impact on human history, shaping societies and inspiring movements worldwide. By analyzing the motivations, consequences, and posthumous interpretations of martyrdom, my research aims to shed light on its historical significance, societal implications, and enduring legacies. The significance lies in understanding how martyrdom has been utilized as a form of political expression and the power it holds in shaping collective memory and social narratives. I utilize a qualitative approach in my research, drawing from historical analysis and case

studies of prominent martyr figures such as Dr. Martin Luther King Jr. and Joan of Arc. By synthesizing scholarly literature and primary sources, I hope to provide a comprehensive understanding of political martyrdom across cultures and contexts. Despite the noble intentions behind sacrificing one's life for a cause, I argue that political deaths often yield negative social consequences, generating division and conflict rather than fostering constructive change. I highlight the challenges of preserving and interpreting the legacies of martyrs amidst shifting social and political landscapes. The research allows for policymakers, scholars, and society at large to engage with the complexities of political martyrdom and its relevance in contemporary discourse. Ultimately, I emphasize the necessity of honoring these legacies responsibly while navigating the complexities of political martyrdom in our pursuit of a better world.

Emily Krizner **Spanish and Biology** **Dr. Gregg Courtad**

Session B3 Bracy 06 9:45 AM

Bilingualism: A study of Bilingual Education in the Autonomous Communities of Spain and the United States

Today, more than ever, the importance of bilingualism is being realized in society. It is becoming increasingly prevalent for employers to preference or provide incentives for bilingual applicants. The levels of open-mindedness and interpersonal skills provided by bilingualism are unmatched. In many countries, specifically in Spain, a country in which there are many spoken languages, bilingualism is thriving. Most people speak two or more languages at least conversationally. In fact, in most developed countries, bilingualism is a staple of society, allowing for numerous personal, professional and cognitive benefits. However, in the United States, bilingualism is something not commonly seen in a widespread fashion. Why is that? Why is there such a discrepancy in the levels of bilingualism in the U.S. compared with other developed nations? The cause of this “gap” is simple, as other countries enforce bilingualism from a young age through bilingual education.

Bilingual education, a system in which students receive instruction in more than one language, allows for students to be exposed to and develop proficiency in more than one language from a formative age. This presentation will focus on successful systems of bilingual education across the Autonomous Communities of Spain and how these systems have been used to not only enforce bilingualism, but also to preserve languages. It will serve to analyze the pros and cons of each system, the levels of bilingualism in the associated areas, as well as ways the United States could improve on or implement similar systems.

Avery Wengerter **Criminal Justice and Psychology** **Dr. Tamara Daily**

Alexandra Hill **Human Development & Family Sciences**

Aaliyah Kinnard **Psychology**

Kayla Kilgore **Psychology**

Session B3 Bracy 06 10:05 AM

The Association Between Substance Use and Intimate Partner Violence in College Aged Individuals

College students are at an increased risk of substance abuse and are more likely to experience Intimate Partner Violence than any other age group (Center for Disease Control and Prevention, 2022). Type and level of substance use may be associated with the frequency of intimate partner violence (IPV). There may also be sex differences in level, type, and frequency of perpetration and victimization rates of IPV. In our research, participants completed an online survey which includes measures of alcohol, tobacco, prescription drugs, other substances, and physical, emotional, and sexual intimate partner violence. We expect to find that substance use will be positively correlated with the frequency of IPV, and that alcohol use will be more strongly associated with increased frequency of IPV, as opposed to other substances. We also expect to find that the association between cocaine use and other stimulant drugs and IPV will be stronger than the use of marijuana and other depressants or hallucinogenic drugs; we expect that the level of violence in IPV will be positively correlated with the level of substance use. Finally, we expect to find that males will be more likely to perpetrate physical IPV than females, but females will be more likely to perpetrate psychological IPV than males.

Hunter Miller

Art - Graphic Design

Prof. Margo Miller

Session B3 Bracy 06 10:25 AM

Ridge Energy: Fueling Your Outdoor Adventures

I'm thrilled to introduce you to "Ridge Energy Drink," a combination of all my studies in art classes at the University of Mount Union. Inspired by my love for the outdoors, Ridge Energy is all about nature, offering a healthy energy drink for outdoor lovers who enjoy activities in nature. Using what I've learned in all my classes, I made this entire brand identity with nature in mind. Its name, packaging, and flavors are all about the great outdoors, with natural ingredients to match. I wanted to create something that not only looked good but also fit seamlessly into the outdoor lifestyle. The journey began with the creation of the logo using Adobe Photoshop, I combined the letter "R" and mountains. Using the lowercase "r," I employed the pen tool to fashion a mountain ridge along its leg, symbolizing our connection to nature's heights. After lots of research and design tweaks, I came up with eye-catching cans featuring mountains, trees, and a sky map texture. Each flavor and design choice reflects the brand's love for nature. Ridge is more than just a drink—it's about connecting people with nature. By showcasing it through posters, ads, and a website creating an entire brand.

Kara Williams

Biology & Studio Art

Margo Miller

Session B4 Gallaher 122 9:45 AM

Bigfoot Is My Muse: A Visual Exploration of Appalachian Cryptozoology

Appalachia is a portion of the United States with a rich and storied culture, formed from generations of overlapping customs. This unique coalescence is, sadly, overlooked. To reconcile this oversight, this presentation focuses on the depiction and research of cryptids in the Northeastern United States, specifically those with in Ohio and its neighboring locales. The project is split into two portions, culminating into a series of eight, with four studio paintings and four large-scale, digitally painted, hand-designed posters. The posters are mimics of the classic "creature features" of the mid-20th century, such

as The Creature from the Black Lagoon, Frankenstein, or The Wolfman. This depiction of the mythoi allows viewers to form a connection back to pop culture, fostering an interest rooted in nostalgia. The studio paintings are landscapes featuring the cryptid, meant to imitate the “found footage” film genre. This project is research heavy, given its content. While cryptids are by no means a uniquely American phenomenon, the presenter of this project is born and raised in rural Ohio. As such, the forest fostered a love of nature, prompting consideration of biology and ecology. From a scientific approach, the ecological and zoological implication of these creatures’ existence is intriguing, given their outlandishness. The opportunity to explore this while creating unique and captivating designs is a wonderful display of skills learned at Mount Union. This inquiry into one of the most niche subcultures of America analyzes history, culture, art, and design principles to paint a thrilling picture.

Curtis Joppeck **Exercise Science** **Dr. Ronald Mendel**

Jonah McCartney **Exercise Science**

Katie Clark **Exercise Science**

Session B4 Gallaher 122 10:05 AM

Maximal voluntary isometric contraction versus standard back squat: A comparison of which will elicit better post activation performance enhancement effects in female NCAA Division 3 volleyball players

Current literature suggests that the performance of skeletal muscle is largely based on its contractile history (Esformes et al. 2010). A phenomenon known as post-activation potentiation (PAP) has been observed in which there is an acute enhancement of skeletal muscle performance following resistance exercises. Athletes who frequently utilize powerful movements during competition could capitalize on PAP during their training by performing a plyometric exercise after a resistance exercise, which would help them improve those movements. While the weighted back squat is the most common conditioning activity (CA) used to induce PAP, investigation of more efficient and less risky CAs is worthwhile. One exercise that has shown to produce significant improvements in skeletal muscle activity is a maximal voluntary isometric contraction (MVIC) (Palmer et al. 2018). The purpose of our study was to determine if an MVIC was capable of producing greater PAP effects than a standard back squat. Twenty female division III volleyball players completed two separate testing days which consisted of a warm-up, three baseline vertical jump heights, the CA (five seconds of MVIC at a knee angle of 120° or three squat reps @ 80% 1RM), a six minute rest, and three post-exercise vertical jump heights. No significant differences were found between the CAs ($p = 0.456$), nor were any significant improvements found in vertical jump following either CA. This data aligns with ongoing studies that suggest PAP may not be as effective in women due to their generally low strength to body mass ratios (Rixon et al. 2007).

Diya Patel **Physician Assistant Studies** **Prof. Vanessa Worley**

Session B4 Gallaher 122 10:25 AM

The Light at the End of the Tunnel: Can Bright Light Therapy Be Used for Perinatal Depression?

The opportunity to welcome a child into the world is a joyous occasion, but for many women across the world, the joy can be elusive. Perinatal depression (PND), formerly postpartum depression, causes suffering and can have significant adverse outcomes related to child development. Many fear the impact antidepressants may have on a fetus and/or a breastfed infant, deterring them from these treatment options. Non-pharmacological treatments exist, but few medical professionals are knowledgeable of them, and some are difficult for mothers to fit into their hectic schedules. Since bright light therapy (BLT) has been proven effective in other forms of depression, a systematic review of literature was conducted to investigate whether BLT can be used to treat PND. Although the results are mixed, current research has shown a tendency toward the reduction of depression symptoms and the improvement of sleep issues. Understanding the use of BLT may offer providers another tool to help their patients with or at risk for PND.

Cam Hough

Neuroscience

Dr. Kristine Turko

Michael Shields

Psychology and Computer Science

Jodex Soldevilla

Neuroscience and German

Session B5 Gallaher 226 9:45 AM

Novel Language Learning and Recall

In this study, we are examining the link between language experience and the ability to learn a new language. We are also examining if learning via auditory or visual format affects recall ability differently. Our participants, novice and experienced language learners, complete a language study in which they learn a word list comprised of 20 Greek words and their English definitions. All participants are exposed to two, two-minute learning sessions in either visual or auditory learning format. After completing the training period participants are assessed using FAS testing before completing the Greek word test. FAS testing is a measure of linguistic fluency. We expect that the participants who have prior language learning experience will have higher accuracy on the Greek word test across both groups and will be able to list more words during FAS testing. We also expect that participants in the auditory training will have a higher accuracy on the Greek word test. In summary, we expect that those who have prior language learning experience performed better overall on FAS testing as well as Greek language recall, thus reflecting higher performance capacity and fluency in learning an unfamiliar language.

Nick Anna

Biology and Environmental Science

Mike Greiner

Session B5 Gallaher 226 10:05 AM

Floristic Quality Assessment of the North Woods Section of the Huston-Brumbaugh Nature Center

When planning and completing a habitat restoration project, the species of plants living in the area is just as important as the intended goal of the restoration. When topsoil is moved or disturbed, seeds left by self-sowing annuals can begin to grow, causing the previous plants to remain in the new habitat. When the University of Mount Union Huston-Brumbaugh Nature Center began planning their habitat restoration of the north woods section, a list of current inhabitants became vital to the success of the project.

Throughout this survey, I developed meandering methods designed to maximize species discovery while avoiding surveying the same areas. The research area was divided into 3 distinct sections by habitat type, field, meadow, and forest. When discovered plants were “graded” based on how beneficial they are to this habitat (floristic quality assessment, FQA) and how related they are to high-quality habitats (coefficient of conservation, CoC). Additionally, plants were given a wet score, indicating whether they are found in wetlands. During the survey, over 84 species were found, giving the habitat an average CoC score of 1.57 and an FQA of 8.23. These scores indicate that the habitat is poor and would significantly benefit from restoration. This study can help guide current habitat restoration in the area by giving insight into what lives there now as well as guide choices on new plant species to introduce and seed mixtures to apply. Additionally, this survey can show how the habitat has improved through restoration and provide a baseline.

Cameron Kamlowsky **Exercise Science** **Dr. Ronald Mendel**

Anthony Andreski **Exercise Science**

Maddie Wentz **Exercise Science**

Session B5 Gallaher 226 10:25 AM

How do Division III Collegiate Athletes Respond Mentally and Physically to Various Coaching Styles While Performing a Repeated Sprint Test?

Coaches have a great influence on an athlete’s overall enjoyment, skill development, and success in their sport (Cote & Hay, 2022). However, not all coaches go about this in the same way. Some may be more motivational, more instructive, a bit demeaning, or just hands off and let the athletes figure it out. The purpose of this study was to uncover which style of coaching elicits the best mental and physical performance in athletes at the University of Mount Union. To test this, athletes from several sports, both male and female completed a series of repeated sprint tests on a basketball court (commonly referred to as “suicides”). Athlete times were recorded using laser timing gates, as to remove the human error that comes with hand timing. Three sprints were completed during each session and the average was used for comparison to the times of the other 3 sessions. In each trial, the researchers used one of four different coaching styles to encourage the athlete: Laissez-faire, Autocratic, Democratic, and Critical. The athletes also filled out a survey at the end of each session, ranking how they felt they did on a scale from 1-10, as well as how they felt the coaching style affected their overall performance. Data collection was not complete at the time of abstract submission.

Austin Maurer **History** **Dr. Theresa Davis**

Session C1 Oak Hall 203 3:15 PM

The Abolitionist Ideas Surrounding George Washington

George Washington has historically held a unique and important place in our history, culture and identity as Americans. His cultural significance cannot be overstated. As a founder of our nation and first president, he was often and sometimes still is considered a “Great Man”. We today look back in confusion and

disgust at the hypocrisy of men like Washington for not standing up against and even participating in the system of American slavery. His influence, massive as it was, could surely have done so much to undermine that institution. As it turns out, Washington had many contemporaries who understood this. I would like to share some of the heroic men and women who used whatever influence their station would permit them to try and sway the “Great Man” Washington to support the cause of African Americans and discuss the impact they had on his thoughts on race and slavery.

Ashton Knappenberger

Public Relations, English, and Spanish

Dr. Andrea Ferraro

Session C1 Oak Hall 203 3:35 PM

Ditch the Honors Stigma: Increasing Academic, Racial, and Gender Diversity Among Honors Students with Public Relations

What do prospective college students who do not consider themselves academically exceptional think when they hear the words “Honors Program?” Brainy? Exclusive? Pretentious?

These perceptions may prevent prospective first-year students from seeking admission into the University of Mount Union’s Honors Program. This is critical as the Honors Program is actively trying to engage diverse students. Currently, the program is lacking in representation of non-White students, male students, and students with high school GPAs below 3.9.

I hypothesized that this lack of representation was due to a lack of communication of the program’s key values with diverse students before they arrive on campus. So, I conducted secondary research on recruitment and Honors decisions. My key findings revealed that Honors Programs which focus primarily on rigor or prestige are intimidating to prospective students and that many of the criteria for acceptance exclude some types of creative thinkers.

I set out to design an event that invites diverse students from local high schools to campus. The event will be engaging while dispelling misperceptions and encouraging students to see the Honors Program as a viable opportunity. My event is composed of six parts that follow the public relations event planning process: preliminary research, designing the event, mapping the event, planning the event, implementation, and evaluation. The event aligns with our Honors Program’s mission to engage diverse perspectives to foster a learning environment of inclusivity. Diversity representation is a consistent, collaborative dedication to making our academic spaces welcoming, accessible, and enticing for all students.

Avery Wengerter

Criminal Justice and Psychology

Dr. David Thiele

Session C1 Oak Hall 203 3:55 PM

The American View of Terrorists

Terrorism is incredibly difficult to define due to a variety of cultural and governmental factors and the September 11th, 2001 attacks on the Twin Towers and World Trade Center changed how American's view terrorism. 9/11 became the trigger for foreign policy changes, the abandonment of laws and processes,

and shaped how the U.S. manages warfare. This paper focuses on creating the most encompassing and concise definition of terrorism possible and examines terrorist attacks from around the world and throughout history. Furthermore, this paper examines how the view of what a terrorist is from an American citizen's perspective has shifted throughout history. It also examines what caused these perspective shifts and the projected future of domestic and international terrorism.

Abigail Stack **Exercise Science & Biology** **Dr. Ronald Mendel**

Rebekah Seamans **Exercise Science**

Jessica Roberts **Exercise Science**

Session C2 Oak Hall 206 3:15 PM

Exogenous Ketones: An Innovative Approach to Reduce Systemic Inflammation

National mortality data suggests 50% of deaths in the USA are attributable to inflammatory conditions (Roth et al., 2018). A simple finger prick can detect levels of systemic inflammation via the measurement of C reactive protein (CRP). It has been demonstrated that elevated ketones, whether exogenous or endogenous, reduce inflammation. However, getting the body to produce enough endogenous ketones to obtain their anti-inflammatory benefits is challenging without supplementation. The administration of exogenous ketones can increase ketone body concentrations quickly, safely, and effectively. This study examined whether exogenous ketone ester supplementation decreases baseline CRP. Twelve sedentary adults, 35 to 65 years old were randomly assigned to the supplementation or placebo group. The subjects consumed either ketone ester drinks or placebo drinks three times a day for seven days. Pre- and post-supplementation CRP measurements were taken. Data collection was not complete at the time of abstract submission.

Roth, G. A., Abate, D., Abate, K. H., Abay, S. M., Abbafati, C., Abbasi, N., Abastabar, H., Abd-Allah, F., Abdela, J., Abdelalim, A., Abdollahpour, I., Abdulkader, R. S., Abebe, H. T., Abebe, M., Abebe, Z., Abejie, A. N., Abera, S. F., Abil, O. Z., Abraha, H. N., ... Murray, C. J. L. (2018). Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, 392(10159), 1736–1788. "

Marissa Scott **English** **Dr. Andrew Price**

Session C2 Oak Hall 206 3:35 PM

Voices on Silence: The Value of Holocaust Literature in the Classroom

Nearly 80 years after the horrors of the Holocaust, their stories remain as relevant as ever. Using Elie Wiesel's *Night*, Art Spiegelman's *Maus*, and Markus Zusak's *The Book Thief* as representatives of Holocaust literature, this project explored what the stories of the Holocaust can add to the secondary classroom. With an interdisciplinary approach, research included historical, cultural, literary, and educational scholarship paired with close reading of each book. As research progressed, it became evident that *Night*, *Maus*, and *The Book Thief* taught together in a unit could effectively facilitate student

discussion about perspective, genre, theme, and intertextual connections. Meanwhile, each book also explores key issues of complacency, violence, greed, and power, which students will unfortunately often encounter in their lives. With lessons on English and life intertwined, Holocaust literature can create meaningful and lasting learning for students.

Courtney Kenworthy **Psychology** **Dr. Kristine Turko**

Rylee Russo **Psychology**

Liz Abahazi **Psychology**

Anthony Lonsway **Neuroscience**

Allie Darragh **Neuroscience**

Session C3 T&H 200A 3:15 PM

Examining the Relationship between Phobias and their Comorbid Diagnoses, Physiological Responses, and Quality of Life in Undergraduate Students

In this study, we investigated the relationship between Generalized Anxiety Disorder (GAD), phobias, misophonia, and quality of life (QOL) in college undergraduate students. Additionally, we assessed the physiological responses to a Virtual reality (VR) experience. We recruited 34 participants (9 males and 25 females) to complete online surveys administered in person. Out of the total participant group, 32 participants completed a physiological assessment during VR exposure. Study surveys assessed GAD, phobias, misophonia, and QOL. The physiological assessment used electrodes to measure electrodermal activity of the sympathetic nervous system in response to a VR phobia experience. We found a significant positive relationship between GAD symptoms and phobia symptoms, but no correlation to misophonia. We found no correlation between higher scores on the GAD, Phobia, and misophonia questionnaires and higher physiological response of the sympathetic nervous system. However, there was a higher physiological response of the sympathetic nervous system during VR exposure. This was relative to activation before and after the exposure. Activation after exposure was still higher compared to initial activation prior to exposure. We found that there is a significant negative correlation between GAD and QOL, but no significant relationship between misophonia, phobias, and quality of life. Based on these findings we can conclude that college students with GAD have a lower QOL, and Universities should support student mental health services.

Elias Holm **Mechanical Engineering** **Dr. Chad Korach**

Tim Sams **Mechanical Engineering**

Brady Graham **Mechanical Engineering**

Session C3 T&H 200A 3:35 PM

Baja Suspension Redesign Capstone Project

The menstrual cycle is a process that prepares the female body for a potential pregnancy each month, consisting of four phases: early follicular phase (menstruation), late follicular phase, ovulatory period, and luteal phase (2,3). Yim et al. (2018) found that an increase in estrogen during certain phases (like the ovulatory period) decreases the synthesis and density of collagen in connective tissues, which may decrease soft tissue (muscle/tendon) stiffness and increase laxity. Wojtys et al. (2002) found greater anterior cruciate ligament (ACL) injuries during the ovulatory period, reasoning the high level of estrogen causes soft tissue laxity, which is linked to an increase in soft tissue injuries. Soft tissue stiffness has been found to benefit jumping performance; the greater the stiffness, the better utilization of elastic energy, and thus, the better the jump (1). Therefore, fluctuations in soft tissue stiffness could be a potential factor in jump performance changes throughout the menstrual cycle. The purpose of the present study was to examine the effects the different phases of the menstrual cycle have on broad jump, countermovement jump, and repeated countermovement jump performances. It secondarily examined the athletes' feelings and perceptions of performance throughout the cycle. It was found that there was significance to the psychological aspect of this study between the different phases of the menstrual cycle ($p=.00000$), but no significance to the performance metrics, with more statistics in the process of being run. The findings may be beneficial when programming for female athletes to maximize performance and decrease injury risk.

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