



April 14, 2023

Table of Contents

Welcome and History of the Conference..... 2

Agenda..... 3

About the Keynote Speaker..... 4

Posters at a Glance 4

Sessions at a Glance..... 6

Poster Abstracts 7

Session Abstracts..... 15

Welcome and History of the Conference

The abstracts included in this publication were presented on April 14, 2023, at the Twenty-Ninth Annual Blue Ridge Undergraduate Research Conference at King University in Bristol, Tennessee. Originally called the Southeastern Undergraduate Research Conference, the Blue Ridge Undergraduate Research Conference has attracted widespread regional interest and is committed to providing a forum for southern Appalachian students to present the results of their research in a convenient and interesting setting.

1993, 1994	King College
1995	Milligan College
1996	UNC-Asheville (10th National Conference on Undergraduate Research)
1997	Carson Newman College
1998	King College
1999	Lee University
2000	Carson Newman College
2001, 2002	Maryville College
2003, 2004	Milligan College
2005, 2006	King College
2007, 2008	Tusculum College
2009, 2010	Lindsey Wilson College
2011, 2012	Maryville College
2013, 2014	Lincoln Memorial University
2015, 2016	King University
2017, 2018	Union College
2019	Lincoln Memorial University
2021	Lincoln Memorial University (virtual)
2022	King University

King University, on behalf of the member colleges, expresses thanks to all those whose research, advisement of the student researchers, and academic and structural input have made this conference a permanent part of the southern Appalachian education experience.

Agenda

All BRURC conference sessions occur in the Student Center Complex (SCC)

10:00 – 10:30	Registration	Foyer (1 st floor)
10:30 – 11:15	Plenary Session: Demisha Porter, Ph.D candidate <i>Journey to Research: Is There a Right or Wrong Choice?</i>	Board Room (202)
11:30 – 12:15	Lunch Pick up boxed lunch in foyer. There will be staff members on hand to help you remember which lunch option you ordered when you registered for the conference. You may choose one of several locations within the SCC to gather with colleagues: foyer, SCC first floor rooms 107 or 117, or SCC second floor rooms 201 or 211.	Foyer (1 st floor)
12:15 – 1:00	Poster Session See pages 4-5 for detailed list of posters and presenters.	Mezzanine (2 nd floor)
1:00 – 2:00	Session 1 Session 1A (Board Room – 202) Slime Molds, Bacteria, and Neurotoxins Session 1B (Hall of Fame Room – 201) Pesticides, Pollution, and Renewable Energy Session 1C (SCC Classroom 107) Personality Studies	
2:15 – 3:00	Session 2 Session 2A (Board Room – 202) Examining Diversity in Political Leadership, Political Movements, and the Church Session 2B (Hall of Fame Room – 201) Folk Science and Folksy Predictions Session 2C (SCC Classroom 107) Medieval Literature and Modern Folklore	
3:00 – 3:15	Refreshment Break	Foyer (1 st floor)
3:15 – 4:00	Session 3 Session 3A (Board Room – 202) Mental Wellbeing Session 3B (Hall of Fame Room – 201) Be Afraid: The Role of Fear in the Arts, Propaganda, and Public Policy	
4:00 – 4:30	Closing Remarks and Gift Card Drawings	Board Room (202)

About the Keynote Speaker



Demisha Porter is currently investigating the mysteries of the human brain! As an undergraduate student, she contributed towards a study that utilized RNAi to determine novel genes linked to nicotine and Parkinson's disease. She was also a scholar in the VCU Postbaccalaureate Research Education Program, focusing on traumatic brain injury (TBI) and furthering understanding of secondary insults resulting from TBI for the development of effective therapeutics. Demisha is currently a neuroscience PhD candidate in the

Translational Biology, Medicine, and Health program at Virginia Tech, where her research interests focus on using biomedical microdevices and molecular biology to study neurogenesis.

During her first year of graduate school, Demisha developed a strong passion for understanding commercialization, and integrating academic innovations with entrepreneurial spirit. Thus, she participated in the Health, Science, and Technology Commercialization Fellowship at VTCRI as well as a 2019 MedTech Scholar. She has delivered over 10 impactful neurodevelopment research presentations at national and international meetings, and successfully published 3 biomedical research manuscripts and articles.

Posters at a Glance

Poster Session (12:15 – 1:00)

Why Students Fail to Act: An Emphasis on College Student Retention
Noah Anderson, Jeron Stidham, Hannah Crabtree, & Cloey Bailey,
The University of Virginia's College at Wise

Examination Into the Health of Mobile Food Pantry Clients in Micropolitan Area
Parker Avery, Tennessee Wesleyan University

The Potential Effects of Increased BTEX Exposure Following the East Palestine Train Derailment
Allison Chapman, Katie Eggleston, & Erin Peters, King University

The Effects of Acute Moderately Intense Exercise on Mood
Margaret Crisp, Mars Hill University

Short-term Melatonin Administration Alters Aggressive Behaviors in Male Siberian Hamsters
Katie Eggleston, King University

The Role of a Punishing God Perspective, Private Religious Practices, and Age on Perceived Stress
Hope Everheart & Jacqueline d'Entremont, Tusculum University

Patching Democracy: The Slow Drip of Dictatorship
Ammi Green, King University

Use of eDNA to Determine the Presence of *Cryptosporidium spp.* in Freshwater Sources in Harlan, Kentucky
Madison Hall, Lincoln Memorial University

Detection of Exoplanet WASP-104b Using the King University Burke Observatory Telescope
Christian Reeves Jones & Faith Woodson, King University

Synthesis of a Vitamin B12 Conjugate with a Mitochondrial Localization Peptide

Caitlyn Lindell, Lincoln Memorial University

Prevalence of *Clostridioides difficile* Among Wild Birds at Harrogate, Tennessee

Sarah Jessica Long, Lincoln Memorial University

Needle In Haystack: A Hunt for Antibiotic Producing Rhizobacteria in Western North Carolina

Paddington Mbumbgwa, Warren Wilson College

Synthesis and Analysis of Ru(II) Polypyridyl Complexes for Use as Photodynamic Chemotherapeutics

Andrew Medeck, Tusculum University

The Relation Between Social Media Motives, Body Dissatisfaction, and Self-Objectification

Alex Miller, University of the Cumberlands

East Palestine Train Derailment: A Toxicological Review on Vinyl Chloride Release and Burnoff

Kara Miller & Charles Swiggett, King University

The Relationships Between Time Spent on Social Media and GPA in Undergraduate Students

Makynzie Miller, Union College

The Relationship of Club Participation with Overall Life Satisfaction in College Students

Tyler Napier, Union College

Train Derailment Exposes Toxic Chemicals to Aquatic Life in East Palestine, Ohio

Katy Neubert, Liz Medved, Katie Christian, & Lauren Lawson, King University

Utilizing Reverse Genetics to Understand the Functions of Mouse Hepatitis Virus I Gene

Erin Peters, King University

Decreased Subjective Happiness is Associated with Impulsivity

Savannah Price & Alexa Tieto, Tusculum University

Train Derailment Spills Possibly Lethal Chemical Over Ohio: Acrolein
Kacey Roark, Allison Porter, Raine Hobbs, & Mackenzie Gilbert, King University

Ruthenium(II) Complexes as an Alternative to Cisplatin-Based Chemotherapies

Faith Robinette, Tusculum University

Ruthenium-Based Photodynamic Chemotherapeutics
Konrad Sehler, Tusculum University

Effects of Childhood Trauma

Alicia Sikora, Union College

Social Media Effect on Self-Image

Cynthia Stewart, Union College

The Effects of Parent Emotion Socialization on Adolescent Psychological Flexibility

Claire Tasker, East Tennessee State University

Substance Abuse in the Family

Selina Tavarez, Union College

Effects of Operant Conditioning on Children's GPA and Overall Classroom Behavior

Adreanna Wilson, Union College

Sessions at a Glance

Session 1 (1:00 – 2:00)

Session 1A: Slime Molds, Bacteria, and Neurotoxins **Student Center Complex Board Room 202** **Moderator: Dr. Kathryn Purple**

Impact of Variations in Moisture Availability on Myxomycete Moist Chamber Results

Lydia Thurman, Lincoln Memorial University

An Ecological Survey of Tick Species in Determining the Presence of Rickettsiae Bacteria

Jake Stout, Carson-Newman University

Investigation of the Prevalence of the Trichy Protozoan Parasite, Trichomonas gallinae, in Hunter-Harvested Mourning Doves (Zenaida macroura) from East Tennessee

Morgan Simpson, Lincoln Memorial University

The Presence of Aetokthonos hydrillicola at Lake James, North Carolina

Catherine Causby, Warren Wilson College

Session 1B: Pesticides, Pollution, and Renewable Energy **Student Center Complex Hall of Fame Room 201** **Moderator: Dr. Susan Monteleone**

The Effect of Treatment of Pesticides on Hemlock Trees in Western North Carolina

Caroline Hoy, Brevard College

Pre-Treatment of Nicotine as Protection against Neurodegeneration of Parkinson's Disease

Katy Neubert, King University

Microplastic Pollution in East Tennessee Freshwater Streams Surveillance Through Water Sampling

Mirna Jacinto Ramirez, Tusculum University

Screening of Highly Active Hydrogen Evolution Reaction Catalysts: Comparative Analysis of Typical Machine Learning Methods

Jordan Mershimer, Warren Wilson College

Session 1C: Personality Studies **Student Center Complex Classroom 107** **Moderator: Dr. K.C. Clemens**

Parasocial Relationships and Using Social Media to Recruit Participants
Katherine Wilson, Warren Wilson College

Autoethnography: It's So Messy! Why Did I Choose This?! The Process: What Process?

Mira SpiritVoice, Warren Wilson College

The Association Between Adult Attachment Patterns and Personality Traits
Victoria Grant, King University

A Personality Suiting Vocation: A Report on How Personal Inventory Relates with Career Choice

Maria Perkins, King University

Session 2 (2:15 – 3:00)

Session 2A: Examining Diversity in Political Leadership, Political Movements, and the Church **Student Center Complex Board Room 202** **Moderator: Professor Emily Krug**

A Woman's Place in Political Leadership
Rory Church, Tusculum University

The History of Women in Far-Right Movements
Estefania Juarez, Tusculum University

One Neighborhood: Unity and the Character of God in the Intercultural Churches of Baltimore, Maryland

Madeline Manear, Milligan University

Session 2B: Folk Science and Folksy Predictions
Student Center Complex Hall of Fame Room 201
Moderator: Dr. Yuemei Zhang

Astronomy in Appalachia: Soil in the Stars
Trevor Cox, East Tennessee State University

Astronomy in Appalachia: The Lunar Effects on Appalachian Lives
Grace Anderson, East Tennessee State University

Climate Related Disasters and Hindsight Bias
Suzanne Aguirre, Milligan University

Session 2C: Medieval Literature and Modern Folklore
Student Center Complex Classroom 107
Moderator: Dr. Karen Shaw

Psychoanalysis of Medieval Dream Poetry
Amanda Shoemaker, The University of Virginia's College at Wise

Sir Gawain and the Green Knight: The Role of Magic in Arthurian Legend
Jonathan Collier, Bluefield University

Memes as Folklore: A Cataloging of Memes
Erin Achauer, Lincoln Memorial University

Session 3 (3:15 – 4:00)

Session 3A: Mental Wellbeing
Student Center Complex Board Room 202
Moderator: Dr. Sam Henley

The Hidden Opponent: A Quantitative Study of Stress and Support of Injured Collegiate Athletes.
Angela Masiello, Tusculum University

A Comparison of Mental Hardiness and an Athlete's Psychological Response to Injury
Emma Bice, King University

Does Psychological Well-Being Have a Relationship with Hygiene Behaviors and Coping Strategies?
Johanna Palshan, King University

Session 3B: The Role of Fear in the Arts, Propaganda, and Public Policy
Student Center Complex Hall of Fame Room 201
Moderator: Dr. Colette Wilcox

Facing Fear
Johnnie Crawford, Lees-McRae College

Freedom and Fear: Emotional Manipulation of Propaganda in WWI America
Reagan Lane, Brevard College

Policymakers Target LGBTQ+ Youth: Banning LGBTQ+ Books from Schools and Libraries is Posing a Threat to the Survival of LGBTQ+ Youth
Rory Church, Tusculum University

Poster Abstracts

Why Students Fail to Act: An Emphasis on College Student Retention
Noah Anderson, Jeron Stidham, Hannah Crabtree, & Cloey Bailey, The University of Virginia's College at Wise
Faculty Advisor: Dr. Kristina Feeser

This research focuses on why so many students leave college without finishing their degrees. A Triadic System of Inaction diagram is presented that outlines the internal and external factors that affect student retention. Internal factors include mental health factors and family-based factors. External factors include falling out factors (i.e. a job), and perceptions/expectations about college. Ultimately it is believed that these factors lead to anxiety, worry and stress which then overload the system and the student's coping skills.

Examination Into the Health of Mobile Food Pantry Clients in Micropolitan Area
Parker Avery, Tennessee Wesleyan University
Faculty Advisor: Dr. Tara Stewart

Food insecurity causes countless health problems but there is a lack of data regarding the overall health of food pantry clients. Research has shown links between food insecurity and chronic conditions, mental health problems, and poor nutrition. An 18-question survey containing both quantitative and qualitative questions was distributed to clients attending the monthly mobile food pantries. Data collection is ongoing, but preliminary data analysis shows half the participants either has average or poor oral health, 50% report to be mildly to moderately physically impaired, 32% of participants

reported not having to go without medical treatment or struggle with purchase of medicine which is likely due to over 70% having coverage by federal health insurance. Revived stakeholder interest to maintain and increase community garden investment sets a goal to increase the amount of people eating fruits and vegetables on a regular basis by 10%. Despite the 50% of participants on federal insurance, 50% still struggle with maintaining oral health. Medicare does not cover most dental care, this speaks to the importance of increasing awareness of other community dental services for little to no charge to ensure pantry clients can improve or maintain oral health.

The Potential Effects of Increased BTEX Exposure Following the East Palestine Train Derailment

Allison Chapman, Katie Eggleston, & Erin Peters, King University

Faculty Advisor: Dr. Kelly Vaughan

On February 3, 2023, a train derailment in East Palestine caused many hazardous materials and chemicals to be spilled. Three days later, a controlled burn occurred to release the hazardous chemicals from five train cars, to ensure an explosion would not happen. After the derailment, EPA monitoring of chemical levels found nine chemicals with higher than normal levels. Two of the nine, benzene and xylenes, are commonly found alongside ethylbenzene and toluene in a group known as BTEX. These are constituents of petroleum products and can easily evaporate in the air and can contaminate water. This caused major health concerns since these chemicals are influencing the environment, can affect organisms, and may contaminate the food supply. Specifically, the benzene and xylene levels are elevated, causing acute exposure to residents in the area. This poses a health risk to the residents since the chemicals have toxicological effects. The effects differ, but BTEX as a whole is expected to produce neurological impairment. This spill must be monitored for its short term and long-term effects on the environment and organismal health.

The Effects of Acute Moderately Intense Exercise on Mood

Margaret Crisp, Mars Hill University

Faculty Advisor: Dr. Jonna Kwiatkowski

As a valuable tool for physical and mental health, exercise has been proposed as a treatment in many psychological disorders (Davis et al., 2021). However, people who are required to exercise frequently for their jobs or sports may not be good candidates for exercise as a treatment of mental disorders (Meckes et al., 2021). Frequent exercise may reduce endorphins spikes that are associated with positive mood shifts (Harbor & Sutton, 1984). This study assesses mood changes during a single, moderate-intensity session of exercise between groups who are frequent

and infrequent exercisers. The hypothesis was that a session of moderate-intensity exercise will benefit the mood of those who do not regularly exercise more than those who do. Initial results suggest that the hypothesis is not supported by the data. There is no significant change in overall mood based on exercise frequency. There is a significant change in reported anger, but it is the high frequency exercisers who indicated reduced anger after exercising, opposite of the hypothesized direction of change. This may be due to the overall lower frequencies of exercise in the study groups compared to published research.

Short-Term Melatonin Administration Alters Aggressive Behaviors in Male Siberian Hamsters

Katie Eggleston, King University

Faculty Advisor: Dr. Kelly Vaughan

Seasonally breeding animals undergo physiological and behavioral changes across the seasons in response to environmental cues, such as photoperiod and temperature. Furthermore, the pineal gland hormone melatonin serves as the biochemical cue for photoperiod, and as one of the essential hormones in animals that experience day/night shifts. Our lab has previously shown that Siberian hamsters housed in short winter-like photoperiods, or given prolonged, short-day like injections of melatonin, display elevated aggression compared with control hamsters housed in long summer-like days. Although prolonged melatonin injections have been shown to increase aggression, the short-term effects of melatonin remain unknown. To assess the direct effects of melatonin on aggressive behavior, a resident-intruder paradigm was used to compare control hamsters to one-time melatonin injected hamsters. C-fos, a proto-oncogene that is expressed in activated neurons, will be examined by immunohistochemistry to determine the brain regions involved in melatonin's actions on the neuroendocrine circuit. We predicted that because hamsters would not have sufficient time to undergo the seasonal changes, then a single injection of melatonin would not affect aggression. In contrast, it was found that melatonin did increase attack number and duration compared to the control. There was little difference between chase duration and latency to first attack. These findings suggest that melatonin may have immediate effects on aggression, suggesting it may act directly on neural circuits that regulate aggression.

The Role of a Punishing God Perspective, Private Religious Practices, and Age on Perceived Stress

Hope Everheart & Jacqueline d'Entremont, Tusculum University

Faculty Advisor: Dr. Robert Gall

Believing in a punishing God, the idea that God is going to punish through abandonment or through acts of wrath, can cause overarching stress

(Starnino, 2016, Werdel et al., 2013). Additionally, perceived stress can decrease private religious practices as it relates to believing one will be punished by God (Saleam & Moustafa, 2016). The current study collected demographic information and examined several factors including the perception of a punishing God (PG), Private Religious Practice (PRP), and age as they contribute to Perceived Stress (PS). Throughout the course of the survey, it was found that perceived stress and the perception of a punishing God were directly related ($p < .001$). The study also found that perceived stress, private religious practices, and age were inversely related ($p < .001$). The more they perceived a punishing God the more they perceived stress ($p < .001$). Age and PRP were also significantly connected to PG and PS. The older the respondents were, the less likely they were to have perceived stress. In conjunction with this, the higher their PRP was, the less stress the respondent perceived. Finally, the more the respondents perceived a punishing God, the more likely they were to have perceived stress.

Patching Democracy: The Slow Drip of Dictatorship

Ammi Green, King University

Faculty Advisor: Professor Gail Helt

For the past forty years, there has been a slow leak of far-right politics in the Western world that has taken many forms. From claiming that entire elections are rigged unless the person who wins is a certain party's favorite, to the complete dismantling of long-standing human rights, the Western world has been leaning and is now rapidly tumbling, to the right, and into political chaos. The long-held assumption of history is not sufficient to keep a country democratic, shattering a longstanding assumption regarding the understanding of democracy and its hold on governments. The importance of this assumption, being the foundation on which global democratization efforts are and will continue to be based, cannot be understated. There is a potentially catastrophic leak in the ship that is global Western democracy as it seeks to sail around the globe. This presentation using data from Freedom House will tackle the long-held assumption that countries who have democratic histories will stay democratic, the impact of authoritarianism on democracy and democratic-leaning countries, and lastly a looking into the future in what is being deemed the global rise of authoritarianism.

Use of eDNA to determine the presence of *Cryptosporidium spp.* in freshwater sources in Harlan, Kentucky.

Madison Hall, Lincoln Memorial University

Faculty Advisor: Dr. Barbara Shock

Cryptosporidium oocysts are covered by an outer shell which enables them to survive in the environment for long periods of time as well as resist disinfection. *Cryptosporidium* infection occurs via a fecal-oral route involving

contaminated soil, potable or recreational water sources or surfaces. *Cryptosporidiosis* is a leading cause of waterborne disease in the United States and is considered the second leading cause of diarrhea after rotavirus. This study will utilize eDNA methods to determine if *Cryptosporidium* is present in Harlan, Kentucky, a socioeconomically underserved area in Appalachia. We will use a pump-powered system to filter freshwater sources and collect eDNA onto filter paper. Samples will be collected from three rivers in Harlan, Kentucky that are tributaries of the Cumberland River: Martins Fork River, Poor Fork River, and Clover Fork River. A sample from a spring water source in Evarts, Kentucky will also be tested, and local tap water will provide a putative negative control. eDNA will be extracted from the filter paper and a genus specific *Cryptosporidium* polymerase chain reaction will be used to determine the prevalence of *Cryptosporidium spp.* These data may be informative for public health in Appalachia by identifying potential sources of contamination along accessible waterways.

Detection of Exoplanet WASP-104b Using the King University Burke Observatory Telescope

Christian Reeves Jones & Faith Woodson, King University

Faculty Advisor: Professor Tom Rutherford

An exoplanet is a planet orbiting a star other than the Sun, and a transit occurs when an exoplanet crosses the face of the parent star as seen from the Earth, similar to a solar eclipse. This results in a small reduction of the parent star's brightness while the transit is occurring. This drop in brightness is detectable, giving information about the size and orbit of the transiting object. Using data collected in NASA's Exoplanet Archive and with the King University campus telescope, the primary objective will be to observe WASP-104b's transit depth and duration to reduce the published midpoint approximation currently known in NASA's Exoplanet Archive. The collected data will be analyzed and reduced using MaxIm DL, and Exotic, made possible by NASA's JPL (Jet Propulsion Laboratory). Both of these programs are standard software packages for measuring astronomical events. In addition to the objectives mentioned above, the results are anticipated to aid in the understanding of WASP-104b's formation, and its star's formation, as WASP-104b is unique given its immense size and close proximity to its parent star.

Synthesis of a Vitamin B12 Conjugate with a Mitochondrial Localization Peptide

Caitlyn Lindell, Lincoln Memorial University

Faculty Advisor: Dr. Thomas Shell

Free radicals are theorized to cause aging due to the damage they cause to biological molecules, such as DNA. There is interest in studying the role of

radical damage at different locations within cells. Therefore, synthesizing a molecule that would localize radical damage to the mitochondria would be of interest. Hydroxocobalamin is a Vitamin B12 derivative that generates hydroxyl radicals upon exposure to ultraviolet light. This light-controlled reaction allows for spatial and temporal control of radical generation. A mitochondria localization sequence (MLS) peptide was synthesized with a cysteine residue using standard Fmoc-based solid-phase synthesis and was then isolated using reverse-phase chromatography. The cysteine side chain of the MLS was allowed to react with a maleimide-modified Vitamin B12 (B12) via a Michael addition to form a B12-MLS conjugate. The ability of B12-MLS to cause light-mediated damage to mitochondrial enzymes was assessed by incubating B12-MLS with isolated mitochondria stored in the dark and isolated mitochondria illuminated with ultraviolet light. The enzymes that were assessed for impairment resulting from locally produced hydroxyl radicals by B12-MLS were Citrate Synthase, Monoamine Oxidase, and Cytochrome C Oxidase.

Prevalence of *Clostridioides difficile* Among Wild Birds at Harrogate, Tennessee

Sarah Jessica Long, Lincoln Memorial University

Faculty Advisor: Dr. Muthu Dharmasena

Clostridioides difficile is an endospore-forming, anaerobic pathogen that infects both humans and animals. The bacterium is shed or carried by animals or humans. The symptoms of the infection range from mild diarrhea to life-threatening conditions. Endospores of *C. difficile* may spread in the environment and contaminate water and soil. The exact sources of the pathogen in the environment are not clear yet. Wildlife may also be a source and the presence of the bacterium in wild birds is not well explained. The purpose of this study is to isolate *C. difficile* from feces of wild birds associated with parks in Harrogate, TN. Fecal samples (n=16 so far) were collected and enriched using modified *C. difficile* broth to isolate the targeted bacterium. Presumptive colonies were identified using the PRO disc method. DNA was extracted from presumptive positive samples and tested for *tpi* gene by PCR. Isolates will be further tested for toxigenic genes: *tcdA*, *tcdB*, *cdtA*, and *cdtB*, and antimicrobial resistance. The knowledge of this study will expand the knowledge on the environmental reservoirs of *C. difficile*.

Needle In Haystack: A Hunt For Antibiotic Producing Rhizobacteria In Western North Carolina

Paddington Mbumbgwa, Warren Wilson College

Faculty Advisor: Dr. Kim Borges

The need for new antibiotics to treat multidrug-resistant bacterial infections is urgent, and it is one major global health challenge of the 21st century

(Butler et al. 2022). The problem is being attributed to the overuse and misuse of antibiotics. Soils have been the major source of bacteria that produce antibiotics, however, scientists are largely rediscovering already existing antibiotics by constantly looking in soils in general for antibiotics producing microbes. Therefore, there is a need to look at new environments for bacteria that produce novel antibiotics. Only a few studies have sampled the rhizosphere to identify novel bacteria that produce antibiotics. The rhizosphere is a narrow zone of soil that surrounds plant roots, and its biology and chemistry is influenced by the roots. Rhizobacteria are bacteria that live in the rhizosphere of plants. These microbes defend the plant against pathogens, and they are able to function this way through the secretion of antibiotics. The present study focused on investigating the antibacterial activity of the rhizobacteria from western North Carolina. In this study, rhizobacteria from four plant species were cultivated, and then isolates were screened for antibacterial activity against non-pathogenic bacteria that are relatives of antibiotic-resistant human pathogens. These plants were tomatoes (*Solanum lycopersicum* L), pepper (*Capsicum annuum*), indigo (*Indigofera tinctoria*) and American ginseng (*Panax quinquefolius*). The findings indicate that a rhizobacteria that belongs to the *Pseudomonas* genus collected from pepper and indigo plants showed antibacterial activity against *Bacillus subtilis*. Furthermore, *Lysinibacillus* strains isolated from wild American ginseng showed that they have the ability to inhibit the growth of *B. subtilis*, and a *Bacillus* strain from pepper plants prevented the growth of *B. subtilis*. The isolates are being further investigated for antibacterial ability against other tester strains.

Synthesis and Analysis of Ru(II) Polypyridyl Complexes for Use as Photodynamic Chemotherapeutics

Andrew Medeck, Tusculum University

Faculty Advisor: Dr. Dennis Ashford

Cancer affects every one in three people across the United States and remains one of the leading causes of death within the nation and the rest of the world. Treatment for cancer is complex and harsh as many treatments lack specificity for cancerous cells and have a pronounced negative effect on healthy cells. These issues resulting from a lack of specificity by these chemotherapeutics, many of which are platinum-based drugs have led to investigations on improving the mechanism of approach for treating cancer. One such approach is through the use of Photodynamic Chemotherapeutics (PDTs) which allows for a drug to become activated near the cancerous site by illuminating it with light, thus reducing damage to surrounding healthy cells. At Tusculum University three series of compounds have been synthesized and this poster will focus on the characterization of these photodynamic ruthenium-based complexes.

The Relation Between Social Media Motives, Body Dissatisfaction, and Self-Objectification

Alex Miller, University of the Cumberlands

Faculty Advisor: Dr. Jane Whitaker

In recent years, appearance-based social networking sites (SNSs) such as Instagram, Facebook, and TikTok have become ubiquitous among young men and women. Research shows that the motives behind using appearance-based SNSs rather than the amount of time spent on SNSs determine how SNSs affect us mentally, emotionally, and socially. This has led to much research on how male and female body perceptions have been negatively impacted by social comparison. Studies have shown that those who post selfies/appearance-based content to seek peer validation through likes and comments also experience greater body dissatisfaction and self-objectification. This study explored the relationship between the importance of likes and levels of body dissatisfaction, self-objectification, and body surveillance, as well as attention-seeking motivation and levels of body dissatisfaction, self-objectification, and body surveillance among 169 college students. Each factor/motive was assessed using selfie motivation/behavior scales. Results showed significant correlations between the importance of likes and body surveillance. There was also a significant relationship identified between attention-seeking and body surveillance. Although hypotheses were not established predicting the relationship between the importance of likes and attention-seeking motivation, the data also revealed a significant correlation between these two motives. Furthermore, significant correlations were found between body dissatisfaction and body surveillance levels. Lastly, females had significantly higher body surveillance levels than men when using appearance-based social media.

East Palestine Train Derailment: A Toxicological Review on Vinyl Chloride Release and Burnoff

Kara Miller & Charles Swiggett, King University

Faculty Advisor: Dr. Kelly Vaughan

The East Palestine, Ohio train derailment caused the release of a number of flammable and hazardous materials. During the derailment a number of containers caught fire, which created a high risk of explosion for containers that contained flammable liquids and gases. To prevent an explosion, controlled burns were conducted to alleviate pressure within containers. One of the main chemicals being burned off was vinyl chloride. The incomplete burn produced two main toxicants: hydrogen chloride and phosgene. The spread of these three chemicals was severely limited due to an inversion layer, which trapped the air lower in the atmosphere, and hindered the ability for the gases to disperse. This created a major health hazard because of how these chemicals interact with organisms and the environment. Thus, these chemicals entered the environment in higher,

more acute concentrations than previously considered. This posed a severe risk for local inhabitants due to the toxicological effects of these chemicals. These acute exposures can cause possible death, eye, skin, and respiratory issues. Chronic exposure to vinyl chloride can also cause liver damage, neurological effects, and cancer. This has the potential for serious short- and long-term environmental consequences that need to be monitored.

The Relationships Between Time Spent on Social Media and GPA in Undergraduate Students

Makynzie Miller, Union College

Faculty Advisor: Dr. Ilie Vasilescu

Social media has become an integral part of many people's day-to-day lives. This study used a questionnaire to ask undergraduate students at Union College about their use of social media along with their study/homework habits. The hypothesis of this research is that the independent variable (time spent on social media) influences the dependent variable (GPA). Results were collected and compared to determine if time spent on social media had a negative, positive, or no effect at all on student's grade point average. The research also determined if there are other independent variables such as the demographics of the respondents. In total, there were 106 respondents. Those who chose to fill out the anonymous questionnaire were asked questions about their average daily screen time, average daily time on each social media app, how many hours they spend doing homework weekly, and their overall GPA. Undergraduate students were also asked basic demographic questions such as gender, age, and year in school. Many students reported that they mainly used social media to communicate, as a distraction from everyday life, and simply because of boredom. Findings support that study habits and grades can be affected as a result of being active on social media.

The Relationship of Club Participation with Overall Life Satisfaction in College Students

Tyler Napier, Union College

Faculty Advisor: Dr. Ilie Vasilescu

Recent events such as the covid pandemic and social distancing which led to a mass transition to online learning for campuses and a general move away from in person participation, undoubtedly impacted the social institutions of campus clubs. Clubs serve as a social space for like minded people to share in their interests while also serving as an important point of integration for new college students who unfortunately face particular issues when it comes to having their needs met (Tinto, V. [n.d.]). When a student is left unsatisfied by the institution, they are likely to dropout which is especially true for first generation college students (Próspero, M., & Vohra-Gupta, S. [2007]). Social capital is one aspect of many which is vital to the

student, strong social ties result in higher GPA and an increased satisfaction with the school (Schwartz, S. E. O., Kanchewa, S. S., Rhodes, J. E., Gowdy, G., Stark, A. M., Horn, J. P., ... Spencer, R. [2017]). Leading to this present study examining the relationship between club participation and overall life satisfaction in college students. The subjects, all of them 18 years of age or older, will be students at a small liberal arts college in South-Eastern Kentucky. They will be anonymously online answering a 7-point Likert scale named Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, [1985]).

Train Derailment Exposes Toxic Chemicals to Aquatic Life in East Palestine, Ohio

**Katy Neubert, Liz Medved, Katie Christian, & Lauren Lawson,
King University**

Faculty Advisor: Dr. Kelly Vaughan

On February 3, 2023 a Norfolk Southern train carrying hazardous materials derailed in East Palestine, Ohio, igniting a fire and exposing residents in the surrounding area to the toxic chemicals. Three toxins released into the air, soil, and water are of particular concern to both human health and the local environment — vinyl chloride, acrolein, and Btex (a mixture of benzene and xylene). The chemical spill affected 7.5 miles of stream water, killing over 43,000 fish, crustaceans, amphibians, and other aquatic life. The species affected spanned over a 5-mile radius of the 7.5-mile impacted area, and nearly 90% of the estimated deaths consisted of minnows. Although the Environmental Protection Agency has said that contaminants have not reached “levels of concern,” residents have expressed a lack of trust in public officials regarding environmental safety. Chemicals can change forms as they interact with the atmosphere, soil, and water, which can lead to novel problems in the future. When assessing the possible short-term toxicological effects in East Palestine ecosystems, it is critical to consider both the dose of the chemical exposure as well as the passage of time since the train derailment.

Utilizing Reverse Genetics to Understand the Functions of Mouse Hepatitis Virus I Gene

Erin Peters, King University

Faculty Advisor: Dr. Kelly Vaughan

Mouse hepatitis virus (MHV), a betacoronavirus related to SARS-CoV-2, the causative agent of COVID-19, encodes an out-of-frame protein embedded within the nucleocapsid (N) protein, which has been labeled the “I protein.” While its location within N is conserved across betacoronaviruses, the genes are genetically dissimilar and have proposed unique antagonist functions. We analyzed two strains of MHV in this study, A59 and JHM. The JHM I gene contains a premature stop codon in comparison to A59 I gene,

resulting in a protein consisting of 137 amino acids. The MHV-A59 I gene is 208 amino acids. In past research, the A59 I-knockout (IKO) virus had reduced plaque size compared to A59 wild type (WT) but did not show altered in vivo pathogenicity. A JHM IKO virus showed attenuated pathogenicity in vitro and in vivo compared to JHM WT. Research on the corresponding genes of Severe Acute Respiratory Syndrome (SARS) 1 and 2 and Middle East Respiratory Syndrome (MERS) Coronavirus (CoV) showed that the proteins had innate immune antagonism function and enhanced pathogenicity in vivo. These data led us to question the differences between A59 and JHM I genes, and whether MHV I genes are innate immune antagonists.

*Research was done at the University of Iowa; other authors are Shea Lowery, Lok Yin Roy Wong, Abby Odle, and Stanley Perlman.

Decreased Subjective Happiness is Associated with Impulsivity

Savannah Price & Alexa Tieto, Tusculum University

Faculty Advisors: Dr. Hollie Pelloosmaa and Dr. Katherine Smith

Previous literature has been inconsistent in its findings related to impulsiveness and happiness. However, there is evidence of impulsivity having a negative influence on subjective well-being (Emmons & Diener, 1986). Additionally, research has found a connection between impulsivity and mental health disorders (Bakhshani, 2014). This suggests that impulsivity may be linked to lower levels of overall happiness or greater feelings of unhappiness. The current study attempted to identify the nature of the association between impulsivity and the subjective happiness. The researchers hypothesized that higher levels of impulsivity would negatively correlate with subjective happiness. Two hundred and ninety-four participants (Mage = 29.68, SD = 14.67) completed an online survey containing the Barrett Impulsivity Scale and the Subjective Happiness Scale. As expected, a Pearson's r correlation revealed that there was a significant negative correlation between impulsivity and subjective happiness, ($r(293) = -.200, p = .001$). This data indicates that impulsivity may be linked to impaired psychological wellbeing. This suggests that impulsivity may be a factor that mental health care professionals can use to target vulnerable individuals and their overall feelings about their life and happiness. Future studies are needed to further examine why impulsive individuals may be reporting global declines in happiness.

**Train Derailment Spills Possibly Lethal Chemical Over Ohio: Acrolein
Kacey Roark, Allison Porter, Raine Hobbs, & Mackenzie Gilbert,
King University**

Faculty Advisor: Dr. Kelly Vaughan

On February 3rd, 2023, a train derailed near East Palestine, Ohio. It is important to note because there were several chemicals that were being transported on this train, so when it derailed, there was a spillage of these chemicals. Acrolein was a flag for higher exposure because there's so many other ways, we can be exposed to it. It wasn't in the initial report, but it is a byproduct of the accident. Acrolein is highly poisonous and is extremely flammable. It is also present in a liquid and vaporous state. It causes severe irritation to exposed membranes such as the sinuses, eyes, and skin. Acrolein can be used in many ways. It is produced by Cyclophosphamide treatment. This is a source of chemotherapy. It collects in the bladder which can lead to complications. Acrolein is also produced by reuterin in the gut microbiome when glycerol is present. Exposure in a more common way can include an occurrence from smoke inhalation from tobacco cigarettes. Toxicology is extremely useful for the environment and humans as acrolein is seen in many shared places. Toxicology allows us to keep an eye on the environment and helps keep the community safe due to often chances of exposure just like the East Palestine train derailment.

**Ruthenium(II) Complexes as an Alternative to Cisplatin-Based
Chemotherapies**

Faith Robinette, Tusculum University

Faculty Advisor: Dr. Dennis Ashford

Globally, cancer is the second leading cause of death to date. Over 50% of the chemotherapy treatments used today are derived from platinum-based compounds, or platins. Due to the high toxicity levels and cellular resistance of platins, this form of treatment is not ideal. Potentially, photodynamic chemotherapeutics can alleviate these side effects through the utilization of light activation, allowing for controlled toxicity. In this study, a series of ruthenium(II) polypyridyl complexes were synthesized and characterized for photodynamic chemotherapeutic properties. In this series of experiments, changes were made to the bidentate polypyridyl ligand by increasing its conjugation and/or incorporating electronegative heteroatoms. This resulted in a shift of the metal-to-ligand transfer (MLCT) absorptions towards the therapeutic window for PDTs (600 – 1100 nm), while also introducing steric bulk to initiate ligand dissociation upon photoexcitation. As a result, the MLCT absorptions with the lowest energy were shifted from 454 nm to 564 nm, and the emission energies decreased from 620 nm to 850 nm. The energy barriers between the $3MLCT^*$ and $3dd^*$ states varied from 850 cm^{-1} to 2580 cm^{-1} , depending on the specific complexes measured. The

observation of the MLCT manifold and $3dd^*$ state energy levels is crucial to understanding the potential of the therapeutic window absorption and photoinduced ligand dissociation.

Ruthenium Based Photodynamic Chemotherapeutics

Konrad Sehler, Tusculum University

Faculty Advisor: Dr. Dennis Ashford

Worldwide, cancer is the second leading cause of death. Most chemotherapy treatments are platinum-based compounds, platins. These compounds come with many side effects that we all know of as: hair loss, fertility issues, nausea, anemia, loss of appetite. There is even evidence to show that cells have been creating resistance to the platins. Ruthenium based compounds could be a great substitute for eliminating the cancerous cells. In the study, ruthenium(II) polypyridyl complexes are synthesized and characterized for their photodynamic properties. The study includes 3 series, known as series 1, 2, and 3; this characterization focuses on the steric bulk around the ruthenium center, increasing its conjugation by systematically adding Nitrogen to the bidentate ligand and/or adding electronegative heteroatoms. This resulted in a shift of the metal-to-ligand-charge transfer (MLCT) absorption towards the therapeutic window for PDTs of 600-1100nm, while also introducing steric bulk to promote ligand dissociation inducing photoexcitation. This resulted in the MLCT absorptions, with the lowest energy state, shifting from 454nm to 564nm, and emission energies decreased from 620nm to 850nm. The between the $3MLCT^*$ and $3dd^*$ states varied from 850 cm^{-1} to 2580 cm^{-1} , depending on the complexes measured. The observation of the MLCT manifold and $3dd^*$ state energy levels is crucial to understanding the potential of the therapeutic window absorption and photoinduced ligand dissociation.

Effects of Childhood Trauma

Alicia Sikora, Union College

Faculty Advisor: Dr. Ilie Vasilescu

This study focuses on an individual's development due to the trauma of their childhood and how it can affect their mental and physical health later on in life. This study uses the Adverse Childhood Experience (ACE) Test. This test is a set of ten questions relating back to childhood. These questions get a better understanding of how the individual may have been treated and cared for in their more influential years of development and helps understand any trauma they may have endured. The way this test is scored is the higher the individual answered "yes" or the more "ACE's" they have, the more likely they are to have mental and physical health complications as they go on in life. By looking at these questions, it can be more apparent what their past and present life situations may be dealing with. This study uses the ACE test in medical offices to anonymously gather data.

Anonymously collected ACE results and basic medical history of participants over the age of 18. With the use of spreadsheets, the data gets broken down but each participant may better understand whether any childhood trauma could have influenced their current state of their physical or mental health.

Social Media Effect on Self-Image

Cynthia Stewart, Union College

Faculty Advisor: Dr. Ilie Vasilescu

Social media's presence has created some underlying issues for many of its users. Some of these issues include mental health concerns such as depression, anxiety, and body image issues. Many studies have been conducted to research how social media can affect individuals with different mental health issues and self-presentation. This study's objective is to analyze social media's influence on self-image. To evaluate the potential negative influence social media can have on its users a questionnaire was given to undergrad and graduate students at small liberal arts college (60 Students in total) from the SMAPS (Social Media Appearance Preoccupation Scale) developed by Melanie J. Zimmer-Gembeck. In depth, this questionnaire explores how social media can affect its users through three subtopics which are the following: Online self-presentation, appearance activity, and appearance comparison. Online-self presentation is how individuals want to present themselves on social media so questions will ask how they feel they need or want to present themselves. Appearance Activity will ask questions about how they feel individuals feel what they should look like based on social media. Additionally, Appearance Comparison will look at how individuals compare themselves on social media. Data analysis suggested there is no significant difference between the genders on the scores of the three subscales. However, it has shown, that for females, social media has a significant effect on their scores for Online Self-Presentation and Appearance Activity in which both deviated from the "neutral" point but in different directions: for the Online Self-Presentation the scores are significantly higher than the neutral one, while for the Appearance Activity the females' scores a significantly negative. On males, no such an effect was found on any scale.

The Effects of Parent Emotion Socialization on Adolescent Psychological Flexibility

Claire Tasker, East Tennessee State University

Faculty Advisors: Dr. Rachel Miller-Slough & Dr. Daryl Parungao

Developmental changes and new environments bring unique demands in adolescence. At the time of development, parents act as a crucial influence for emotional understanding through the process of emotion socialization.

Reward responses are used to recognize and validate their child's emotions. Alternatively, parents can magnify the situation by emulating the emotion expressed by their child. Parents can promote psychological flexibility by discussing emotions, as this helps their child consider alternative explanations to emotional situations. This research will examine the effects of parent emotion socialization on adolescent psychological flexibility. Data was collected from 163 parents and adolescents. A simple linear regression was used to test the effects of parent emotion socialization (magnify and reward; EAC) on adolescent psychological flexibility (AAQ). Analysis revealed that parents' magnifying responses were significantly linked with lower psychological flexibility. If the child is met with a reflection of their emotional state, they may not have the opportunity to practice alternative emotional regulation strategies, which negatively affects psychological flexibility. There was no significant effect of reward responses, perhaps due to the social normativity of discussing and validating emotions. Taken together, these results are important towards the development of parenting interventions and teachings in regard to emotion coaching.

Substance Abuse in the Family

Selina Tavarez, Union College

Faculty Advisor: Dr. Ilie Vasilescu

Substance abuse takes a toll on not only the substance abuser but also their family members. Studies show that 46% of Americans have a friend or family member who has been addicted to drugs (John Gramlich, 2017). There are so many families that have a substance abuser in it, and it can affect the way that the family works. "About 1 in 8 children aged 17 or younger lived in households with a least one parent who had a past year substance use disorder" (SAMHSA). When children are around drug addiction, they are more likely to fall into the addiction when they are older because they are around it and they do not know any better. 1 in 10 children lived in a household with at least one parent who had a past year alcohol use disorder and 1 in 35 children lived in a house with at least one parent who had a drug problem in the past year (SAMHSA). When people grow up around alcohol and drugs, they tend to either stay away because they do not want to fall into the same footsteps as a person in their family who is considered a failure. Others go down with the people who have problems because they think it is normal or they want to get away from their problems.

Effects of Operant Conditioning on Children's GPA and Overall Classroom Behavior

Adreanna Wilson, Union College

Faculty Advisor: Dr. Ilie Vasilescu

Skinner's theory of operant conditioning has significantly gained popularity in education as it is said to enhance children's GPA and overall classroom

behavior. This research investigates how modifying children's behavior in learning through consequences such as punishments and rewards affects their GPA and overall classroom behavior in the long run. The study will be observation-based and focus on collecting and analyzing data on teaching styles and retention rates. The hypothesis is that: (H1) utilizing operant learning techniques in the classroom will improve children's GPA and overall classroom behavior. The research will encompass male and female elementary-aged (grade one and two) teachers. A spreadsheet will be used to collect and record participants' information, such as each class's grade level, gender, race, current GPA scores, and any history of poor classroom behavior. The teachers will be observed for three months, and the impact of the children's classroom behavior will be recorded. Verifying whether operant conditioning positively impacts children's GPA and overall classroom behavior will allow further research on how best instructors can use Skinner's theory to enhance children's learning.

Session Abstracts

Session 1A: Slime Molds, Bacteria, and Neurotoxins

Impact of Variations in Moisture Availability on Myxomycete Moist Chamber Results

Lydia Thurman, Lincoln Memorial University
Faculty Advisor: Dr. Adam Rollins

As the literature on myxomycetes expands, more questions pertaining to their ecology, environmental requirements, and distribution patterns arise. Many sources note the significant role that temperature and humidity play in the outcome of their distribution; however, no studies involving the manipulation of humidity were found in the literature review. The goal of this project was to assess the effect of moisture on the production and abundance of myxomycete species. Samples of litter from the soil-litter interface were collected from second growth, southern Appalachia temperate forest sites on the campus of Lincoln Memorial University. The samples were dried, homogenized, and randomly assigned to treatments of varying moisture content. Samples were checked once per week for four weeks and then once every other week for the following four weeks. The results suggest that moisture is correlated with species richness and diversity. Treatments given higher amounts of water tended to be richer and more diverse. The results obtained from this study demonstrate that moisture can affect the results produced by moist chamber cultures, and help provide insight into the abundance, diversity, and distribution patterns

of myxomycetes inhabiting the soil-litter interface. This study may have implications for explaining the biogeography of myxomycetes.

An Ecological Survey of Tick Species in Determining the Presence of Rickettsiae Bacteria

Jake Stout, Carson-Newman University
Faculty Advisor: Dr. Jessica Evans

Many diseases are spread using vectors, which are capable of transmitting bacteria between organisms. To prevent the spread of such diseases, preventative testing can be performed to classify bacterial genomes from tissue samples for early detection of disease-causing bacteria. In this study, three separate sites were surveyed spanning the Jefferson County, Tennessee, area. Field surveys were carried out in thirty-minute intervals, and twenty-four specimens were obtained. Of the specimens, two different species were identified: *Dermacentor variabilis* (American Dog Tick) and *Amblyomma americanum* (Lone Star Tick). Captured specimen tissues were digested using catalytic enzymes, and DNA samples were extracted and incorporated into a nested polymerase chain reaction (nPCR) for DNA quantification. Replicated genomic material was then separated and analyzed using gel electrophoresis. From these analyses, four tissue samples were found to possess *Rickettsiae* DNA, suggesting that ticks found at the survey sites were carrying the bacteria. These findings are conclusive that, within the ecosystems at the three surveyed sites, the bacteria are present and readily transmissible through ticks as they feed on host animals coinciding in their habitats. This information could be valuable to local disease prevention efforts and awareness focused on tick-transmitted diseases.

Investigation of the Prevalence of the Trichy Protozoan Parasite, Trichomonas gallinae, in Hunter-Harvested Mourning Doves (Zenaida macroura) from East Tennessee

Morgan Simpson, Lincoln Memorial University
Faculty Advisor: Dr. Kathryn Purple

The protozoan parasites, *Trichomonas spp.*, have been responsible for significant mortality events in birds throughout recorded history. Mourning doves (*Zenaida macroura*), the most hunted game bird in North America, are negatively impacted by *trichomonosis* epizootics. Our aim is to determine the prevalence of *Trichomonas spp.* in hunter-killed mourning doves harvested over four seasons from the Forks of the River Wildlife Management Area in east Tennessee. The oral cavities of the doves were inspected for lesions and swabbed. Swabs were introduced into Hollander Fluid media, incubated at 37°C, and read by light microscopy every other day for 5 days. The prevalence of *Trichomonas* by culture was 2.1% (4/189) in 2016, 0% (0/50) in 2017, 2% (1/50) in 2021, and 2.1% (1/48) 2022, which

is a similar range of that in other U.S. dove populations. Culture samples were frozen at -20°C prior to DNA extraction. PCR targeting the internal transcribed spacer region (ITS) was performed on all culture positive samples and a subset of culture negative samples from 2016. By PCR, all positive cultures were positive and 10.5% (2/19) of the negative samples were positive. We will perform sequencing on PCR positive samples and continue PCR on samples from other years.

The Presence of Aetokthonos hydrillicola at Lake James, North Carolina

Catherine Causby, Warren Wilson College
Faculty Advisor: Dr. Kim Borges

Lake James is a recreational lake located in western North Carolina. The lake is home to two breeding pairs of eagles and several nests (Milenkaya and Baron, 2022). The lake also contains the non-native and invasive aquatic plant *Hydrilla verticillata*. A complicated problem that stems from the presence of hydrilla in bodies of water is the potential for growth of the cyanobacterium *Aetokthonos hydrillicola* (Wilde et al., 2014). The name *Aetokthonos hydrillicola* translates to “eagle killer living on hydrilla” (Wilde et al., 2014). This cyanobacterium produces a neurotoxin that causes Avian Vacuolar Myelinopathy (AVM), a neurological disease that is known to affect wildlife. Due to the presence of both hydrilla and bald eagles, Lake James has the potential for an AVM case. Because of this possibility hydrilla samples were screened for the presence of the cyanobacterium using PCR and microscopy. Through microscopy and epifluorescence *A. hydrillicola* was confirmed to be present at Lake James.

Session 1B: Pesticides, Pollution, and Renewable Energy

The Effect of Treatment of Pesticides on Hemlock Trees in Western North Carolina

Caroline Hoy, Brevard College
Faculty Advisor: Dr. Robert Cabin

Invasive species are species that are introduced to a habitat that they are not from. There are many of them found throughout the world causing many negative shifts in different ecosystems.

Focusing in the United States, Hemlock trees have suffered from Hemlock Woolly Adelgid attacks. Hemlock Trees that were treated with pesticides and not treated with pesticides were measured for DBH, Diameter at Breast Height, tape measuring size of the tree and the tree health from one to ten.

Through late September 2022 to mid-October 2022 data was collected at DuPont State Forest, in Brevard North Carolina six treated sites and one nontreated site. In total the treated sites had 72 trees while the untreated

sites had 16.

The average size of the trees with pesticide was 2.09 ft while no pesticide was 1.975 ft. With the difference between these two being 0.11 ft. While the average health of the tree with pesticides was 6.20 while no pesticides was 3.125 ft. With the difference between these being 3.08.

From the data collected it seems that the treated trees were healthier overall and the trees are making a nice comeback from Hemlock Woolly Adelgid.

Pre-Treatment of Nicotine as Protection against Neurodegeneration of Parkinson's Disease

Katy Neubert, King University
Faculty Advisor: Dr. Kelly Vaughan

Parkinson's disease, the second most common neurodegenerative disease, results from the degradation of dopamine neurons. Previous research has indicated that the consumption of nicotine is associated with a decreased risk of developing Parkinson's disease. Nicotine, the psychoactive component of tobacco, is known to be involved in addiction and reward pathways in the brain. Nicotine binds to nicotinic acetylcholine receptors, causing the influx of dopamine in the synapse. This release of dopamine protects against dopaminergic cell death, alleviating the debilitating motor symptoms associated with PD. *Caenorhabditis elegans* are used as a model organism because they are inexpensive, translucent, and have high genetic homology to humans. Manzate, the active ingredient in mancozeb, is the treatment used to induce Parkinsonian symptoms. The laboratory procedure involves synchronization, pretreatment with nicotine after 18 hours, treatment of manzate after 24 hours, and assays. Mechanosensation assays are used to measure the behavioral changes of the *C. elegans* after treatment with nicotine and manzate, while physiological assays are used to indicate the presence of active dopamine transporters. Ultimately, the treatment of manzate should generate detrimental effects to the dopaminergic system, while the pre-treatment of nicotine should point to its preventative role in the dopaminergic neurodegeneration seen in Parkinson's disease.

Microplastic Pollution in East Tennessee Freshwater Streams Surveillance Through Water Sampling

Mirna Jacinto Ramirez, Tusculum University
Faculty Advisor: Dr. Conor Keitzer

Microplastics (MPs) pollution is a global ongoing issue in freshwater ecosystems. The threat of MPs has only recently been recognized and research is needed to better understand how widespread this threat is. Plastic litter is the ultimate source of MPs and we might therefore expect MPs to be a greater threat in areas of high human use. To improve our

understanding of how MPs pollution might vary with human land use, we will survey for MPs in freshwater streams. To find the variation of land use this study would be sampling three major types of streams: forested, urban, and agricultural. MPs will be sampled from three streams in each landscape using 1 L grab samples. The freshwater will be filtered and MPs in each landscape will be compared using ANOVA. Each stream site will be sampled five times for a total of forty-five grab samples. The samples will take place in early spring, and sampling after a storm will be avoided to prevent bias data. The results of the project will improve our understanding of where MPs are a potential threat in East Tennessee, as well as our broader understanding of how human activity influences the distribution of this threat.

***Screening of Highly Active Hydrogen Evolution Reaction Catalysts:
Comparative Analysis of Typical Machine Learning Methods***

Jordan Mershimer, Warren Wilson College

Faculty Advisor: Dr. Yuemei Zhang

Hydrogen evolution reaction (HER) catalysts play a critical role in renewable energy technologies such as hydrogen production. Identifying novel catalysts with high efficiency and low cost is a significant challenge. In this study, we investigate the effectiveness of supervised machine learning techniques for screening HER catalysts. We applied various machine learning models to predict the probability of a list of 300 transition metal borides, carbides, and nitrides being a highly efficient HER catalyst. Elemental descriptors that can be easily obtained by the periodic table for Metal (M) and carbon, nitrogen, boron (X) were primarily used. Materials with published Gibbs free energy of hydrogen adsorption (ΔG_H^*) values were utilized for our training data. We compared the different machine learning models based on root mean square error (RMSE), speed of model generation, and speed of model prediction. Our results showed that the Random Forest Regression model produced the lowest testing RMSE and was chosen to examine the 300 materials, Out of which 29 materials were predicted to be high-performance HER catalysts. Our approach can efficiently identify promising HER catalysts with high accuracy, providing guidance for further experimental and theoretical investigations.

Session 1C: Personality Studies

***Parasocial Relationships and Using Social Media to Recruit
Participants***

Katherine Wilson, Warren Wilson College

Faculty Advisor: Dr. Duncan Overton

With no research investigating whether there is a relationship between having a chronic illness and developing a parasocial relationship, my thesis explored the two with the hypothesis being that loneliness mediates the relationship. PSRs are unreciprocated relationships between an individual and a media figure, with the individual investing time, emotions, and money into the object of their affection while the other party remains unaware. Humans have an innate need for connection but sometimes there can be a disconnect, resulting in people feeling lonely. Chronic conditions can also hinder connectedness with peers due to the time and management needed, making those affected vulnerable to loneliness. PSRs and loneliness were found to be correlated when looking at specific facets of loneliness and socially vulnerable populations. With mixed results in research, but associations found between the two, the “parasocial compensation hypothesis may predict the value of PSRs in times of crisis” such as having a chronic condition (Bond, 2022). Due to the nature of the research and the particular group of individuals needed, participants were recruited through the social media application Tumblr. This came with its share of benefits and pitfalls, which will be discussed in this talk along with future research considerations.

***Autoethnography: It's So Messy! Why Did I Choose This?! The
Process: What Process?***

Mira SpiritVoice, Warren Wilson College

Faculty Advisor: Dr. Duncan Overton

Why Autoethnography? I am a non-traditional student investigating how music as a language shapes a person's life. Music is a universal language. Well into 'The Process' now and yet, not really. Each time I think, 'ok I get it!' Do I? No, not really. I get it for a moment or an application of the method for a second or is it the analysis? Sometimes, well to be honest, most times I don't get it. What I do get is; this is a 'way' forward in finding out how to bring my life experiences into an academic framework to make sense of this very 'messy' - like life - Process. Sometimes it all comes together and makes so much sense and other times nothing makes sense and seems senseless. The Process similar to the journey of life IS the adventure! This presentation is about the adventure in The Process of Autoethnography.

The Association Between Adult Attachment Patterns and Personality Traits

Victoria Grant, King University

Faculty Advisor: Dr. Kevin DeFord

The purpose of this study is to examine Bowlby's Attachment Theory and Robert McCrae and Paul Costa's Five-Factor Model of Personality and determine if there is an association between attachment styles and personality traits. The data for this study was collected through an online screening of around 70 students that are 18 years or older. Professors e-mailed an easily accessible link to their students and gave them the option to complete the survey through Microsoft Forms; therefore, this is considered a convenience sample. The survey consisted of a total of 64 statements. 14 of these statements pertained to the measure of attachment qualities and 50 pertained to a five-factor personality inventory. After participants rated the level of agreement that they felt with each statement, a few demographic questions concerning race, gender, college level, degree, and age were asked. Results indicated that there is a significant correlation between personality traits and attachment styles. There is a positive, significant correlation between neuroticism and negative attachment styles, such as ambivalence worry, and ambivalence merger. There are also positive, significant correlations between security and positive personality traits, such as extraversion, and agreeableness. In conclusion, the information collected from this study and previous research may be beneficial and applicable in a counseling environment and help the counselor determine the proper interventions for each client.

A Personality Suiting Vocation: A Report on How Personal Inventory Relates with Career Choice

Maria Perkins, King University

Faculty Advisor: Dr. Kevin DeFord

Most everyone works, and typically, a person's career is preceded by school, internships, or training. Because of this time and effort directed toward a long-term occupation, it is beneficial to analyze the relation between personality and vocation as suggested in previous research. This present study seeks to further illustrate this relationship in a college level population and tested the hypothesis that students will choose majors in relation to Holland's vocational interests that are compatible with their personality types. A sample of college students (n = 112) was assessed using the Five Factor Model for personality traits (Buchanan et al., 2005; Costa & McCrae, 1992) via anonymous survey, alongside Holland's RIASEC vocational interests model (Holland, 1997; Nauta, 2010) to categorize their major selection and a participant rating of association to each RIASEC category. When considering participant association, this study found that there was a significant positive correlation between the

participant ratings of Investigative and Artistic with Openness to Experience, a significant positive correlation between the participant ratings of Social and Enterprising with Extraversion, but no significant correlation between Realistic and Conventional with Conscientiousness. When considering participant major, the results of this study suggested that Holland's vocational interest do not significantly relate with personality traits. The findings when assessing the participants' ratings of association to each category mostly reflected the previous research; however, the results of the one-way ANOVA test exhibited that the participants' major selection does not relate with their personality traits.

Session 2A: Examining Diversity in Political Leadership, Political Movements, and the Church

A Woman's Place in Political Leadership

Rory Church, Tusculum University

Faculty Advisor: Dr. Shelby Ward

Researchers have continually examined differences between the political ambition of men and women and what factors may lead to these differences between in ambition. This study explores the effect of how using certain communication to refer to women are described in communication in the political sphere. Because of the underrepresentation of women in the political sphere, they are consistently referred to as "the first." In this study, I found that the phrase "the first" does not have any effects on how people view a woman's leadership skills or competency. I also considered how high and low levels of gendered salience affect how people see women in the political sphere. In this study, gendered salience had no effect on the perceived competency or leadership skills of women. Regardless of the level of gendered salience, participants were more likely to see women politicians as compassionate. Additionally, I examined participants estimates of men and women in political and business leadership positions by 2050. Women were more likely to see more women in business leadership positions rather than political ones. Men saw an equal percentage of women in political and business leadership positions by 2050.

The History of Women in Far-Right Movements

Estefania Juarez, Tusculum University

The subculture of Right-wing extremism has become increasingly prominent in the western world. Following the deadly right-wing terrorist attacks in Charleston, El Paso, Charlottesville, and, most recently, the U.S. Capitol attack, there is a new urgency for understanding the nature of this threat. On

January 6th, 2021, the United States Capitol was subjected to arguably one of the worst attacks on American democracy. The events transcribed on January 6th have brought the issue of right-wing extremism and domestic terrorism to the front burner. One of the rioters, Ashli Babbitt, became a martyr-like figure for the far-right and white nationalist movements. Ashli Babbitt was a 35-year-old female veteran who was killed during the U.S. Capitol riots. Ashli Babbitt, like many of the other women of the far right, embraced QAnon conspiracy theories and spewed anti-immigration and nationalistic views [1]. The recent inclusion of male supremacy under the spectrum of far-right extremism can obscure the allure that the extreme and radical right holds for some women. While Far-right extremism is overwhelmingly composed of white men, women have played essential roles within the movement. Women have historically posed as violent and non-violent actors within the Far Right and have the power to influence ideology despite the presence of a hyper-misogynistic environment.

All throughout history, women have played vital roles behind the scenes as voters, fundraiser organizers, marchers, and communicators to uphold the ideals of white supremacy. Women have been deeply instrumental in everything from the KKK to the resistance to civil rights. And yet they have been repeatedly written out of the history of bigotry. There are common assumptions that women have an inherent goodness or an inherent fragility or vulnerability that prevents them from being thought of as violent aggregators of far-right extremism movements. The fact of the matter is, historically, women have expressed and perpetuated hate with as much vitriol as men. This presentation will define what exactly constitutes the far-right and right extremism and examine how women have participated in extreme and radical right movements throughout different U.S. historical eras.

One Neighborhood: Unity and the Character of God in the Intercultural Churches of Baltimore, Maryland

Madeline Manear, Milligan University

Faculty Advisor: Dr. Nikki Hunt

Baltimore is filled with racial and socioeconomic segregation that goes all the way back to the late 1800s. While the laws that previously allowed segregation have changed, the scars and pain they produce still negatively affect the city to this day. Intercultural churches in Baltimore were created to bring together diverse people groups in a place where unity could prevail. Through interviews, readings, and visits, I researched intercultural churches in Baltimore to prove that, while sometimes challenging to create and maintain, they ultimately express God's ideal creation and provide unity in a city with powerful division. This research does not argue that every church in Baltimore should become an intercultural church; instead, this research

emphasizes that intercultural churches must be more prevalent in the city, so that people can have the opportunity to experience intercultural ministry and the richness that flows from it. Through establishing a common memory and relationship building, the increased presence of intercultural churches in Baltimore City will uphold biblical expectations to promote personal growth and city-wide impact and reveal a more complete image of the nature and character of God.

Key Words: "Intercultural Church", "Baltimore", "Diversity"

Session 2B: Folk Science and Folksy Predictions

Astronomy in Appalachia: Soil in the Stars

Trevor Cox, East Tennessee State University

Faculty Advisor: Dr. Christi Erba

Cultural Astronomy sits at the intersection of our study of the universe and the human experience, exploring how we observe the stars, interpret their motions, and incorporate them into our perspectives of the nature of reality. In this talk, we will explore how the inherited experience of the night sky in Appalachia can be used as a part of Astronomy education, and how that can serve as a cross-cultural point of connection. Using Earth's seasons as an anchor, we will discuss several Appalachian folk science narratives, examining how they are rooted in Astronomy, and relating them to modern scientific interpretations of the cosmos. This presentation will focus on the first season in our program, Summer, and delve into the folk science known as Planting by the Signs.

Astronomy in Appalachia: The Lunar Effects on Appalachian Lives

Grace Anderson, East Tennessee State University

Faculty Advisor: Dr. Christi Erba

Cultural Astronomy sits at the intersection of our study of the universe and the human experience, exploring how we observe the stars, interpret their motions, and incorporate them into our perspectives of the nature of reality. In this talk, we will explore how the inherited experience of the night sky in Appalachia can be used as a part of Astronomy education, and how that can serve as a cross-cultural point of connection. Using the Moon as a centerpiece, we will discuss how the moon's phases can affect planting cycles, cultural folk science, and daily Appalachian life. This presentation is part of a more significant project which will eventually be presented as a planetarium show to the public later.

Climate Related Disasters and Hindsight Bias

Suzanne Aguirre, Milligan University

Faculty Advisor: Dr. Joy Drinnon

Hindsight bias is one of the biases that might influence decisions made in difficult situations, commonly known as the knew-it-all-along effect. The purpose of our study is to replicate both the studies of Walmsley et al. (2019) and Yama et al. (2021). A two-group study design was used with a convenience sample of 205 participants. Qualtrics, a web-based survey, was used to randomize participants into either a results group or a control group. We provide evidence of hindsight bias, including how it affects everyday people. We conducted an experiment with two dependent variables, each including three different hypotheses. We hypothesized that if a picture of a muddy riverbed and a photo of hailstorm clouds are shown to two groups of individuals while informing only one half of the group (Group A) of the flash flood and hailstorm actually occurring, then Group A will report that a flash flood and hailstorm will be more likely to occur whereas Group B will rate the likelihood of a flash flood and hailstorm to not be as probable. The results of this study demonstrated that even when posed with weather-related questions, people are frequently led by hindsight bias.

Session 2C: Medieval Literature and Modern Folklore

Psychoanalysis of Medieval Dream Poetry

Amanda Shoemaker, The University of Virginia's College at Wise

Faculty Advisor: Dr. Ken Tiller

Dreams are often regarded as reflections of the dreamer's mind processing reality. Since antiquity and through the Middle Ages, dreams have been a subject of literature – referred to as dream visions – and medieval poetic works like *Dream of the Rood* or *Pearl* are examples of this. Dream vision poetry narrates dreams that present events and images that have been thoroughly scrutinized by literary experts. However, there is a deficiency of psychoanalytic perspectives on early dream vision poetry such as the two aforementioned works. These poetic dream visions can benefit from psychoanalysis because dreams themselves are the subject of psychology. Therefore, my research will focus on the analysis of the symbols presented in the dreams of *Pearl* and *Dream of the Rood* from a psychoanalytic perspective. This will be a necessary perspective to take in order to draw conclusions about the dreamers' psychological makeup and how they reflected the era in which they were authored. In conclusion, by taking the psychoanalytical approach to dream vision literature and poetry, the

expected outcome of this analysis will demonstrate how both grief and religion affected the mindsets of the dreamers themselves and to discover the unknown authors on a psychological level.

Sir Gawain and the Green Knight: The Role of Magic in Arthurian Legend

Jonathan Collier, Bluefield University

Faculty Advisor: Dr. Joshua Pittman

Sir Gawain and the Green Knight is infamous for its final judgement of Gawain at Bertilak's chapel. Critics have long debated whether Gawain's, Arthur's, or Bertilak's judgement was truly just, or whether they were all incorrect. However, building upon the ideas of John Burrow and Ivo Kamps, I propose that the verdicts were not actually rooted in justice or any form of chivalric code, but that magic, in both its constructive and destructive forms, is responsible for these vastly differing judgements. By the end of the story, Gawain, and Camelot as a whole, have been found wanting, not because of Gawain's performance in the trial or any deviation from chivalric code, but rather because they lack any knowledge of magic or how it affects and controls the world around them. When this story is fitted into the larger world of Arthurian legend and mythology, it illustrates just how ignorant Arthur and his court were of how powerful Morgan la Fay or Merlin were, and that they were nothing but pawns for these masterful mystics.

Memes as Folklore: A Cataloging of Memes

Erin Achauer, Lincoln Memorial University

Faculty Advisor: Dr. Michael Giles

Memes are contemporary, visual folklore. In the current era, the internet functions as a digital community that connects people internationally and then divides into smaller sub-communities based on topics of interest, and memes are a medium through which these communities tell their stories to each other. Some memes are created in response to sociopolitical events, some are used for personal artistic expression, while others are centered around themes of absurdism and escapism. The reach and size of this medium are factors that make it an extremely notable pool of cultural output, but the most important factor to me is the authenticity of memes. There are no restrictions on meme production, meaning people can create exactly them exactly as they want, and there is little financial barrier to creating memes, so almost anyone can participate in their creation as long as they have internet access. With these set of conditions, memes become an unadulterated form of cultural expression for the masses. The internet also has an all-preserving element that makes memes the most complete collection of folklore available. No other body of folklore was so well-preserved and recorded with minimal restriction as seen with memes. Their cultural significance cannot be understated.

Session 3A: Mental Wellbeing

The Hidden Opponent: A Quantitative Study of Stress and Support of Injured Collegiate Athletes.

Angela Masiello, Tusculum University

Faculty Advisors: Dr. Katherine Smith and Dr. Michelle Hurley

Collegiate athletes have been an overlooked and vulnerable population regarding mental health concerns. Across the National Collegiate Athletic Association (NCAA) Division I and Division II, many athletes have taken on the mindset of “shake it off” or “get over it”, when dealing with physical or emotional pain (López and Levy, 2013). Additionally, collegiate athletes face barriers when considering treating pain, including the limited availability of time to use services, the stigma of being perceived as weak by coaches or other teammates, and the lack of counselors that have knowledge or experience with sports. Given these disparities, the current study attempted to understand the impact of injury, support, and emotional distress on current collegiate athletes. The researchers hypothesized that greater collegiate sports-related injuries, reduced team and coach support (Perceived Available Support in Sport Questionnaire), greater perceived stress (Perceived Stress Scale), and reduced readiness to return to sport following injury (Psychological Readiness to Return to Sport Scale) would be associated with reduced measures of psychological wellbeing (Student-Athlete Wellbeing Scale) and increases in athletic burnout (Athlete Burnout Scale). Participants included student-athletes from a private, liberal arts university, who completed an online survey. Multiple regression analysis revealed a significant association between number of collegiate injuries (NCI: $\beta=.533$, $p<.027$) and perceived stress (PSS: $\beta=.716$, $p<.012$) on the Athlete Burnout subscale, sports devaluation ($r^2 = .903$, $F(3,7) = 12.397$, $p < .017$). Furthermore, perceived stress was also significantly associated with athletic burnout subscales: reduced accomplishments ($r^2 = .942$, $F(3,7) = 21.555$, $p < .006$; $\beta=.750$, $p<.004$) and emotional & physical exhaustion ($r^2 = .883$, $F(3,7) = 10.100$, $p < .024$; $\beta=.943$, $p<.006$), as well as, psychological wellbeing (SAWS: $r^2 = .919$, $F(3,7) = 15.120$, $p < .012$; $\beta=-.922$, $p<.004$). Measures of support in sport and psychological readiness to return to sport after injury were not significant predictors of either athlete burnout or student-athlete wellbeing. This data suggests that perceived stress is a primary predictor of burnout and psychological wellbeing in student-athletes and may help to identify those athletes in need of additional support. However, further studies need to investigate this relationship as this fairly homogenous athlete population may not fully identify specific vulnerabilities of the larger collegiate athlete population.

A Comparison of Mental Hardiness and an Athlete's Psychological Response to Injury

Emma Bice, King University

Faculty Advisor: Dr. Kevin DeFord

When an athlete experiences an injury, they must be able to recover mentally and physically to return to their sport. This study's purpose is to better understand the correlation between the mental hardiness and psychological response to injury of an athlete. There are three main components of mental hardiness being observed in this study; Control, commitment, and challenge. They are thought to increase levels of sporting achievement, as well as psychological well-being. Psychological response to injury measures the athlete's mental response to injury by assessing devastation, dispirited, reorganization, feeling cheated, isolation, and restlessness. Individuals were asked to complete a series of seventy-six questions in Microsoft Forms by completing the psychological response to injury scale (Evans, et al., 2008), the mental hardiness scale (Bartone, et al., 1989), and a demographics section. To understand the mental and psychological side of recovery, athletes must answer questions based off their most recent injury. Mental hardiness and psychological response to injury are hypothesized to have a strong positive correlation. With any injury, an emotional response occurs, which triggers several psychological conditions. In athletes with more severe injuries, the mental hardiness results may be scored higher compared to those with a minimal injury. Data found in this research study will be important in understanding the correlation between mental hardiness and psychological response to injury in athletes.

Does Psychological Well-Being Have a Relationship with Hygiene Behaviors and Coping Strategies?

Johanna Palshan, King University

Faculty Advisor: Dr. Kevin DeFord

This study determines if there is a relationship between psychological well-being, hygiene behaviors, and coping strategies. The study will look at how certain kinds of coping strategies can relate to psychological well-being and predict hygiene behaviors. Ranasinghe found that there is a relationship between psychological well-being and hygiene behaviors (Ranasinghe et al., 2015). They found a significant positive relationship but did not consider the factor of coping strategies. The current study measured 193 participants with an average age of 19 years old. The survey consists of about 60 questions, the questions are split into three parts. The three parts were the adult well-being scale, The Home and Personal hygiene scale, and the BRIEF cope scale. The preliminary findings show no significant relationship between anxiety or outward direct irritability and home and personal

hygiene. The preliminary findings show a significant positive relationship between personal hygiene (higher score indicates lower hygiene behaviors) and depression. So, a positive relationship between personal hygiene and depression means that as personal hygiene decreases then it relates to a decrease of psychological well-being. The preliminary findings also show a significant positive relationship between personal hygiene and inward direct irritability, home hygiene and depression, and home hygiene and inward direct irritability. The preliminary findings support a relationship between psychological well-being and hygiene behaviors. The current research can help pinpoint what parts of psychological well-being that relates to a decrease in hygiene behaviors. This can be applied clinically for those who struggle with hygiene behaviors, the study also shows which coping strategies are more closely related to good hygiene behaviors.

Session 3B: The Role of Fear in the Arts, Propaganda, and Public Policy

Facing Fear

Johnnie Crawford, Lees-McRae College

Faculty Advisor: Dr. K.C. Clemens

Faces are integral to communication between human beings. As such, one minor infraction of a human face can promote an atmosphere of anxiety. Imagine a man delivering a violent speech of murder and gore, all the while having the most friendly and approachable smile on his face; or perhaps a clown with make-up to insinuate a large smile, yet the man is clearly upset, frightened, or sad. Due to the reliance of facial patterns in communication, it is easy for humans to become frightened or anxious when a face is promoting an uncertain or incorrect--in relation to the event--facial pattern. Horror films and movies use faces in order to attack audiences in a way that no other horror can match. While monsters, ghosts, hauntings, and possessions are all terrifying in their own rights, the usage of faces in horror is more than just frightening; it is an attack on the very psychology we use every single day, making it perhaps the most effective horror imaginable.

Freedom and Fear: Emotional Manipulation of Propaganda in WWI America

Reagan Lane, Brevard College

Faculty Advisors: Dr. Jordan Kuck & Dr. Margaret Brown

The United States citizens used propaganda as a main form of communication during the first World War. The sheer size of propaganda production meant that it was impossible not to be influenced on some scale. Content distributed by governmental agencies progressed from targeting

surface level concepts of rationing and funding to attacking the character of opposing forces with bloody, violent imagery. The progression of emotional manipulation combined with harsh censorship from the newly established Committee of Public Information allowed for control of public opinion. This style of propaganda during WWI would set the stage for production during following wars and modern forms of propaganda to engineer consent. This research addresses the concept of governmental manipulation through emotions to support an underlying agenda by the methodology of rhetorical analysis paired with a digital timeline. Through the process of timelining propaganda posters released in the U.S. from 1915 to 1918, the progression of manipulation can be documented as steadily increasing in use during the last two years of the data set. When comparing this progression to the incorporation of censorship by the CPI, there is an overlap between the governmental interference of public consumption. Publishing organizations can be found to transition from a variety of public and private to primarily governmentally controlled agencies. This paper will argue that using tactics of censorship and authority, the United States government began publishing propaganda that was designed to incite strong emotions to manipulate the public opinion.

Policymakers Target LGBTQ+ Youth: Banning LGBTQ+ Books from Schools and Libraries is Posing a Threat to the Survival of LGBTQ+ Youth

Rory Church, Tusculum University

Faculty Advisor: Dr. Shelby Ward

Politicians, parents, and others are working to ban conversations about the LGBTQ+ community in schools. This paper examines various young adult novels and children's books with LGBTQ+ characters while examining the dangers that are posed to our democracy when excluding truth from schools and curricula. Within these books, I consider common themes and messages while also putting into context the history of the LGBTQ+ community. There is a long history of banning books that include LGBTQ+ topics that go back to the 19th and 20th centuries. According to previous research, LGBTQ+ youth are less likely to consider suicide when they find their classrooms to be inclusive. The number of LGBTQ+ youth with suicidal thoughts and anxiety is so high because of anti-LGBTQ+ legislation, unsupportive peers and family members, social stigma, etc. In my research, I concluded that the message sent to LGBTQ+ youth when passing bills such as 'Don't Say Gay' or banning books is damaging. The inclusion of books by and about the LGBTQ+ community is essential for the survival of LGBTQ+ youth.